Comment Report

Project Name:	Project 2015-09 Establish and Communicate System Operating Limits | FAC-011-4
Comment Period Start Date:	7/14/2016
Comment Period End Date:	8/12/2016
Associated Ballots:	

There were 36 sets of responses, including comments from approximately 36 different people from approximately 34 companies representing 8 of the Industry Segments as shown in the table on the following pages.

Questions

1. Given how the revisions are intended to work together with the revised TOP and IRO Reliability Standards (including the definitions of OPA, RTA and Operating Plan), do you agree with the proposed revisions to the definition of SOL and new definition of "SOL Exceedance"? If not, please explain why you do not support the revisions, and what revisions you propose to align the definition(s) with the revised TOP and IRO Reliability Standards.

2. The suggested revisions would mean that the Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. OPAs and RTAs are performed to determine whether these SOLs may potentially be exceeded (through an OPA) or are actually being exceeded (through a RTA). Operating Plans are developed to address "'SOL Exceedances." Do you believe the proposed revisions to the definition of SOL (and companion definition of "SOL Exceedance") allow for a clear distinction between "what the limits are" and "how the system should be operated"

3. Do you agree with removing "the most limiting criteria," "specified system configuration," "operation within acceptable reliability criteria," and "pre- and post- Contingency" concepts from the definition of SOL? If no, please explain your concerns.

4. Do you agree that the TOP should determine the appropriate Facility Ratings for use in operations, in accordance with the requirements set in the RC SOL Methodology? Note: This assumes the Facility owner will continue to provide the Facility Ratings to the RC and TOP as currently required under FAC-008. The RC Methodology will simply describe the manner in which the TOP determines which of those owner-provided Facility Ratings are appropriate for use in operations.

5. Do you agree that the TOP should establish the System voltage limits pursuant to the RC SOL Methodology, and that the proposed Requirement R3 provides sufficient clarity for what the RC SOL Methodology must include?

6. Is it clear what System voltage limits are? Does a definition for "System Voltage Limits" need to be created? A draft definition under consideration by the SDT is "System Voltage Limits: The maximum and minimum steady-state voltages (both Normal and Emergency) that provide for reliable system operations." Please provide your perspective on whether, currently, it is clear what is meant by System voltage limits, and if not, what you believe to be the appropriate definition.

7. Do you agree that the proposed use of the word stability "limitations" is a better choice than "limit" to capture the full breadth of all phenomena and determination methods/time frames for stability concerns?

8. With regard to proposed Part 4.1: Do you agree that the RC SOL Methodology should have criteria that consider *all* items in Parts 4.1.1 – 4.1.4? Are there additional criteria that should be included? If yes, please list and explain. Are there criteria that are included, that you believe should *not* be included?

9. With regard to proposed Part 4.2: Do you agree that the RC SOL Methodology should consider the contingencies listed in Parts 4.2.1 and 4.2.2? Are there additional Contingencies that should be included? If yes, please list and explain. Are there Contingencies that are included, but you believe should *not* be included?

10. With regard to proposed Part 4.3: When instability risks are identified, there are various studies or assessments that analyze different transfer levels, load levels and generation dispatch combinations. The intent of Part 4.3 is to ensure that the RC SOL Methodology adequately describes how these various factors are considered in the identification of instability risks. In the identification of stability risks, the RC SOL Methodology should consider the levels of transfers, load and generation dispatch. Should the RC SOL Methodology include a description of any additional types of information?

a. Should proposed Part 4.3 specifically include "offline analyses"?

b. Should proposed Part 4.3 include forced Transmission and generation outages (*i.e.*, N-1-1)?

c. Should proposed Part 4.3 include planned outages (*i.e.*, all planned outages in the base case)?

11. With regard to proposed Part 4.3: The SDT used the term "realistic" as opposed to "expected" in order to perform sufficient assessment to identify potential stability risks. The SDT takes that position that "unrealistic" stressing scenarios may be more of an academic exercise to "break the system" and may not translate to actual operations preparedness. Is "realistic" transfer, Load and generation dispatch levels an adequate description or should more clarifying language be added, such as a reference to firm and non-firm transfers?

12. With regard to proposed Part 4.5: Current FAC-011-3 Part 3.1 requires that the study models include the entire RC Area. However, the SDT believes that it is not necessary for reliability that the entire RC Area is studied; instead, the area modeled may vary depending upon the facts and circumstances of the particular footprint or electrical area. Should Part 4.5 require the anything different for description of the study model used? If so, what should else be included and why?

13. With regard to proposed Part 4.5: The requirement specifically identifies Remedial Action Schemes (RAS), however other protective schemes (such as UVLS and UFLS) and their impact on stability performance were not included. Should the requirement specifically identify other types of protective schemes? If yes, please describe why.

14. With regard to proposed Part 4.6: Do you agree that the RC SOL Methodology should specifically address this issue?

15. Do you agree that the RC should continue to have a process to specify the multiple contingencies used in the evaluation for potential System instability, Cascading outages or uncontrolled separation?

16. The multiple contingencies referenced in Requirement R5 relate to those stability limitations established under Requirement R4, some of which may be IROLs, while others may not. The intent of SDT was to allow the RC flexibility in developing its RC SOL Methodology so that it can use the list of multiple Contingencies in a manner that is broader than solely for use in establishing IROLs. For example, the multiple Contingencies can be used by the RC in identifying the conditions referenced in Requirement R8. Additionally, the RC could use the multiple Contingencies in its OPA to identify potential instability and Cascading outages. Do you believe an additional requirement is necessary to specifically identify how an entity would implement the multiple Contingencies? If yes, please provide the specific language you propose for the requirement.

17. Do you agree that the RC SOL Methodology should be required to include *all* of the criteria included in proposed Parts 6.1 through 6.4? Do you believe there are additional criteria that are not currently included, but should be?

18. Should the criteria identified in proposed Parts 6.1 through 6.4 also include a minimum or maximum threshold? If so, what should the

thresholds be, and why?

19. Do you believe the IROL Tv definition should be modified to remove the 30 minute not-to-exceed time limit, and instead the specific time limit should be identified in the specific Reliability Standard requirement, as appropriate?

20. Do you agree with the proposed approach for addressing this Real-time operating state issue?

21. Do you believe there should be a timing requirement for implementing actions to address the risk (*e.g.*, 30 min)? If yes, when should the time start? End?

22. Do you believe that this issue is already addressed in other Reliability Standards (*i.e.*, IRO-009 and EOP-011)? If not, should it be?

23. If the proposed requirement is added, should a reciprocal requirement be added to require implementation of the method (*e.g.*, possibly a new TOP or IRO requirement)?

24. Do you agree with the proposed revisions? If not, please explain why and provide any changes that you propose to the language.

Organization Name	Name	Segment(s)	Region	Group Name	Group Member Name	Group Member Organization	Group Member Segment(s)	Group Member Region
Independent Electricity System Operator	Ben Li	2	NPCC	ISO/RTO Council Standards Review Committee	Charles Yeung	SPP	2	SPP RE
					Greg Campoli	NYISO	2	NPCC
					Ali Miremadi	CAISO	2	WECC
					Ben Li	IESO	2	NPCC
					Kathleen Goodman	ISO-NE	2	NPCC
					Nathan Bigbee	ERCOT	2	Texas RE
Duke Energy	Colby Bellville	1,3,5,6	FRCC,RF,SERC	Duke Energy	Doug Hils	Duke Energy	1	RF
					Lee Schuster	Duke Energy	3	FRCC
					Dale Goodwine	Duke Energy	5	SERC
					Greg Cecil	Duke Energy	6	RF
ACES Power Marketing	Colleen Campbell	6	NA - Not Applicable	ACES Standards Collaborators	Shari Heino	Brazos Electric Power Cooperative, Inc.	1,5	Texas RE
					Chip Koloini	Golden Spread Electric Cooperative, Inc.	5	SPP RE
					Greg Froehling	Rayburn Country Electric Cooperative	3	SPP RE
					John Shaver	Arizona Electric Power Cooperative, Inc.	1	WECC
					Mike Brytowski	Great River Energy	1,3,5,6	MRO
					Scott Brame	North Carolina Electric Membership Corporation	3,4,5	SERC
					Karl Kohlrus	Prairie Power, Inc.	1,3	SERC
					Paul Mehlhaff	Sunflower Electric Power	1	SPP RE

						Corporation		
					Kevin Lyons	Central Iowa Power Cooperative	1	MRO
					Bob Solomon	Hoosier Energy Rural Electric Cooperative, Inc.	1	RF
Tennessee Valley Authority	Dennis Chastain	1,3,5,6	SERC	Tennessee Valley Authority	DeWayne Scott	Tennessee Valley Authority	1	SERC
					Ian Grant	Tennessee Valley Authority	3	SERC
					Brandy Spraker	Tennessee Valley Authority	5	SERC
					Marjorie Parsons	Tennessee Valley Authority	6	SERC
Seattle City Light	Ginette Lacasse	1,3,4,5,6	WECC	Seattle City Light Ballot Body	Pawel Krupa	Seattle City Light	1	WECC
					Dana Wheelock	Seattle City Light	3	WECC
					Hao Li	Seattle City Light	4	WECC
					Bud (Charles) Freeman	Seattle City Light	6	WECC
					Mike haynes	Seattle City Light	5	WECC
					Michael Watkins	Seattle City Light	1,3,4	WECC
					Faz Kasraie	Seattle City Light	5	WECC
					John Clark	Seattle City Light	6	WECC
Southern Company - Southern Company Services, Inc.	Katherine Prewitt	1		Southern Company	Scott Moore	Alabama Power Company	3	SERC
					Bill Shultz	Southern Company Generation	5	SERC
					Jennifer Sykes	Southern Company	6	SERC

						Generation and Energy Marketing		
Con Ed - Consolidated Edison Co. of New York	Kelly Silver	1,3,5,6	NPCC	Con Edison	Kelly Silver	Con Edison Company of New York	1,3,5,6	NPCC
					Edward Bedder	Orange and Rockland Utilities	NA - Not Applicable	NPCC
Northeast Power Coordinating Council	Ruida Shu	1,2,3,4,5,6,7,10	NPCC	RSC no Con Edison and ISO-NE	Paul Malozewski	Hydro One.	1	NPCC
					Guy Zito	Northeast Power Coordinating Council	NA - Not Applicable	NPCC
					Mark J. Kenny	Eversource Energy	1	NPCC
					Gregory A. Campoli	NY-ISO	2	NPCC
					Randy MacDonald	New Brunswick Power	2	NPCC
					Wayne Sipperly	New York Power Authority	4	NPCC
					David Ramkalawan	Ontario Power Generation	4	NPCC
					Glen Smith	Entergy Services	4	NPCC
					Brian Robinson	Utility Services	5	NPCC
					Bruce Metruck	New York Power Authority	6	NPCC
					Alan Adamson	New York State Reliability Council	7	NPCC
					Edward Bedder	Orange & Rockland Utilities	1	NPCC
					David Burke	UI	3	NPCC
					Michele Tondalo	UI	1	NPCC
					Sylvain Clermont	Hydro Quebec	1	NPCC
					Si Truc Phan	Hydro Quebec	2	NPCC

					Sean Bodkin	Dominion	4	NPCC
					Silvia Parada Mitchell	NextEra Energy	4	NPCC
					Helen Lainis	IESO	2	NPCC
					Laura Mcleod	NB Power	1	NPCC
					Brian Shanahan	National Grid	1	NPCC
					Michael Jones	National Grid	3	NPCC
Southwest Power Pool, Inc. (RTO)	Shannon Mickens	2	SPP RE	SPP Standards Review Group	Shannon Mickens	Southwest Power Pool Inc.	2	SPP RE
					John Allen	City of Utilities of Springfield, MO	1,4	SPP RE
					Ron Losh	Southwest Power Pool Inc.	2	SPP RE
					Jim Nail	Independence Power and Light	3	SPP RE
					Robert Hirchak	Cleco	1,3,5,6	SPP RE

1. Given how the revisions are intended to work together with the revised TOP and IRO Reliability Standards (including the definitions of OPA, RTA and Operating Plan), do you agree with the proposed revisions to the definition of SOL and new definition of "SOL Exceedance"? If not, please explain why you do not support the revisions, and what revisions you propose to align the definition(s) with the revised TOP and IRO Reliability Standards.

Kelly Silver - Con Ed - Consolidated Edison Co. of New York - 1,3,5,6, Group Name Con Edison

Answer	No
Document Name	

Comment

The proposed definition for the new term SOL Exceedance is too broad and would create and undue burden for TOPs notifying their RCs when the reporting threshold for an exceedance has been met. To align the definition of the new term with our RC's current SOL Methodology, we propose the following changes to the definition of SOL Exceedance:

"An operating condition characterized by any of the following:

-Actual or pre-Contingency flow on a Facility is above the Normal Rating, for the associated time frame

-Calculated post-Contingency flow on a Facility is above the highest Emergency Rating

-Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occurs

-Actual or pre-Contingency bus voltage is outside normal System voltage limits, for the associated time frame

-Calculated post-Contingency bus voltage is outside applicable system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occur

-Operating parameters indicate the next Contingency could result in instability."

The rationale for the changes is as follows. Actual thermal and voltage limits may have associated timeframes which, if not exceeded, do not compromise the integrity of the equipment or the BES. Also, the bullet "calculated post-Contingency bus voltage is outside the emergency system voltage limits" is redundant with the bullet "Calculated post-Contingency bus voltage is outside applicable system voltage limits…"

Likes 0	
Dislikes 0	

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer	No
Document Name	

Comment

The new definition of SOL is appropriate. The last bullet of the "SOL Exceedance" definition needs to limit the instability to BES facilities. Bullet 3 and bullet 6 of the SOL Exceedance definition should state, “should the Contingency occur” instead of “should the Contingency occurs.”

Likes 0	
Dislikes 0	

Response

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

AZPS respectfully suggests that the last bullet in SOL Exceedance definition (Operating parameters indicate the next Contingency could result in instability) be clarified or deleted. AZPS agrees that the previous bullets thoroughly define what constitutes a SOL Exceedance in pre-, actual, and post- contingency conditions. However, the last bullet implies that, following a contingency, a system must immediately meet stability limits for the next contingency - even before system readjustments have been completed and even prior to the expiration of the Tv time period. This could create a contradiction and associated confusion relative to registered entity obligations within this reliability standard. .

The phrase “stability limitation” is not a defined term and, to ensure consistent interpretation, should be defined.

Likes 0	
Dislikes 0	

Response

Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO

Answer	No
Document Name	

Comment

Manitoba Hydro strongly believes that it is necessary to respect actual operating parameters such as Facility Ratings, System voltage limits and any known stability limitation in the real-time operating horizon.

The new SOL definition is much clearer than the existing one. However, by including stability limitations in the definition of an SOL, it is much more difficult to differentiate between an SOL and an IROL based on the existing definition of an IROL. By their very nature, stability limits are determined to prevent instability, uncontrolled separation or cascading outages. Perhaps the IROL definition also needs revision to help determine which stability limitations warrant special IROL designation and more careful scrutiny. However, the standard tries to address the “special nature” of the IROL. The existing IROL definition is confusing in the context of all these other revisions.

Manitoba Hydro does not support the proposed definition of SOL Exceedance for the following reasons.

1. Post contingency bus voltage and timing

It is difficult to differentiate between the following operating conditions:

- o
    - Calculated post-Contingency bus voltage is outside the emergency system voltage limits;
    - Calculated post-Contingency bus voltage is outside emergency system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs;

It appears that this definition is meant to mirror system operating conditions associated with post-contingency facility ratings (second and third bullets in SOL exceedance definition). While emergency Facility Ratings can reflect a maximum mitigation timeframe to address a thermal rating overload to manage equipment loss of life, voltage limits are not dynamic in the same way. Adding the mitigation timeframe doesn't make sense in the context of voltage – it's just confusing.

1. Potential SOL exceedance and actual SOL exceedance

While Manitoba Hydro believes that it may be necessary to take some pre-contingency action to operate the power system in a secure manner, a potential SOL exceedance and an actual SOL exceedance are not the same and should not be treated in the same manner. For example, if real-time contingency analysis identified a potential SOL exceedance, it does not make sense to notify the RC. The utility can take preventive action to address the potential SOL exceedance. On the other hand, an actual SOL exceedance should be reported to the RC.

Under the fourth bullet of "Overview of the proposed revisions to FAC-011-3, FAC-014-2 and defined terms SOL and SOL exceedance" it says that "A potential SOL Exceedance may be identified by an OPA, or an actual SOL Exceedance may be identified by an RTA". However, NERC glossary of term defines Real-time Assessment (RTA) as, "An evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post-Contingency) operating conditions…."

These two statements contradict each other. As described in the definition, RTA identify the actual SOL exceedance (corresponds to existing or pre contingency condition) and potential SOL exceedance (corresponds to post contingency condition). You've made a distinction here between the two time frames that is not reflected in the definition and requirements.

2. IROL exceedance Vs. SOL exceedance

Manitoba Hydro has concerns with the following bullet in the SOL exceedance definition:

- Operating parameters indicate the next Contingency could result in instability

Is this an SOL or an IROL? This operating condition is another reason to examine the IROL definition to add clarity.

Likes 0	
Dislikes 0	
Response	
Robert Roddy - Dairyland Power Cooperative - 1,5	
Answer	No
Document Name	
Comment	
See MISO TOP-IRO Task Team response.	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	No
Document Name	
Comment	
The first bullet in the SOL Exceedance definition should take into account the timeframes and level of risk that the TOP has determined when defining SOLs in accordance with the RC's SOL Methodology. As currently written, the proposed definition for SOL Exceedance redefines SOL (i.e. System Operating Limits) from what the team is proposing for SOL. Note that the SOL definition imports all of the meaning of the defined terms used within the proposed SOL definition. The first bullet of the proposed SOL Exceedance definition ignores that flow can be above the Normal Rating of a Facility without being above the System Operating Limit (i.e. not an SOL Exceedance) since the condition being experienced could be a post-contingency condition where the amount of flow is within the relevant flow limit for a limited period of time. Suggested wording: "Actual or pre-Contingent flow on a Facility is above the applicable rating for longer than the allowable time frame for that Rating". By similar argument, the same wording should be used for the fourth bullet: "Actual or pre-Contingent voltage on a Facility is outside the applicable voltage limit for longer than the allowable time frame for that voltage limit." The fifth bullet should be removed as the sixth bullet correctly covers the time frame to resolve the bus voltage outside of the emergency voltage limits.	
Likes 0	
Dislikes 0	
Response	
Don Schmit - Nebraska Public Power District - 1,3,5	
Answer	No
Document Name	

Comment
NPPD supports the comments submitted by the MISO TOP-IRO Task Team. In addition we have the following comment: Recommend adding “as applicable” or some similar term after stability limits in the definition of System Operating Limit. Not all Facilities will have stability limits. In addition, stability limits can and do involve a set of Facilities and not just a single Facility. The definition must be flexible enough to recognize these nuances in the way stability limits are developed and utilized. The current definition is not clear. A situation where a Compliance Enforcement Entity is looking for stability limits for every facility to demonstrate compliance would be very cumbersome and should be avoided.

Likes 0	
Dislikes 0	

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	No
Document Name	

Comment
Definition of SOL: Duke Energy requests more clarification on the lack of inclusion/distinction between normal and emergency ratings in the proposed definition of SOL. This implies that if an entity had a 2 hour rating (long term emergency rating), and the entity was operating within that 2 hour rating, this would be an SOL, and based on the proposed definition SOL Exceedance, you would have exceeded the SOL. We think clarification as to whether the definition of SOL will includes only normal ratings, or both normal and emergency ratings would greatly increase clarity, and becomes more relevant when reviewing the proposed definition of SOL Exceedance. Definition of SOL Exceedance: Duke Energy questions the assertion made in the first bullet under the proposed definition of SOL Exceedance. The instance in which an Actual Flow exceeds a Normal Rating, should not be considered as an SOL Exceedance. An entity would have Emergency Rating that would cover this instance. Also, there may be some confusion on the difference between Actual and pre-Contingency used in bullets 1 & 4. We suggest replacing that language with “Actual Flow on a Facility”. We think the addition of the language “and pre-Contingency” is a relative term and confusing and doesn’t really add any clarity to the definition. We also suggest the drafting team consider reducing the definition of SOL Exceedance to the 1st and 4th bullets. We disagree with the assertion that calculations or computer models of instances that haven’t actually occurred yet should be considered as an SOL Exceedance. If the drafting team insists on including instances discovered by tools, calculations, or computer models, we suggest the team consider breaking the definition down into Actual and/or Potential Exceedances.

Likes 0	
Dislikes 0	

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6

Answer	No
Document Name	

Comment

SOL Exceedance definition:

3rd bullet uses the term sufficient. This term is undefined and open to interpretation. Suggest re-phrasing to read: "…for which the flow cannot be reduced to acceptable levels within 30 minutes should the Contingency occur."

6th bullet also uses the term sufficient. Suggest rephrasing to read: "…for which the condition cannot be relieved within 30 minutes should the Contingency occur."

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

System Operating Limits are not reliability limits. SOL Exceedance defines abnormal operating conditions that, although must be cleared, for the most part do not present a reliability problem. Suggest removing "Reliability" from the SOL definition.

The sixth bullet embellishes the wording of the fifth bullet by the addition of the words "…for which there is not sufficient time to relieve the condition should the Contingency occurs…". The fifth and sixth bullets are redundant, and only the sixth bullet is needed.

Suggest changing the wording in the bullets of SOL Exceedance from "flow on" to "flow through".

Likes 0	
Dislikes 0	

Response

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF

Answer	No
Document Name	

Comment

We disagree with the proposed revision to the SOL definition. In particular, the removal of the "most limiting" language introduces additional challenges since each component of the definition (Facility Ratings, System voltage limits, and stability limitations) are now individually and simultaneously SOLs for a given facility. This introduces unintended complexities compared to the existing definition. The rationale that the current definition presumes an operating paradigm whereby a study or analysis is performed ahead of time to establish an SOL and the proposed definition somehow does not is

incorrect. In order to determine any limit an analysis has to be done. Also, the notion that entities continuously assess system performance based on actual operating conditions for each of these components is incorrect as well. While some TOPs have implemented real time voltage stability analysis they are by far the exception. Also, real time transient stability analysis is even more rare. Requiring all TOPs to perform these assessments in real time through the SOL definition will cause undue burden on the industry. While we don't necessarily agree that the current definition needs to be changed we do think it could be simplified by tweaking the proposed language to: "System Operating Limits: The value (such as MW, Mvar, amperes, frequency, or volts) that is the most limiting of the known Facility Ratings, system voltage limits, and stability ratings for a Facility and/or a group of Facilities and system configuration".

We disagree with the proposed definition of SOL Exceedance. Proposed definition of SOL Exceedance does not align with the concept of SOL exceedance described in NERC white paper on SOL definition and exceedance clarification. Proposed definition does not factor in the legitimacy of Emergency Ratings. Emergency Ratings are designed to reliably support the flow for a defined time frame. Actual flow between the Normal and Emergency Rating should not be an SOL Exceedance unless the flow is not reduced to the normal rating within the time frame associated with the Emergency Rating. If all flow/voltage normal limit exceedances are treated as SOL Exceedances TOP-001-3 R15 will require the Transmission Operator to inform the RC of actions taken to return the System to within limits even when flows or voltages are within defined limits for acceptable timeframes. This will be detrimental to reliability since it will create unnecessary burden and distractions for the TOP and RC.

The SOL exceedance definition states" Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occurs". This criterion is not practical as it will require the operator to monitor and evaluate all post contingent flows which are above normal rating but below emergency rating and determine operating actions feasibility. This will create significant burned with very little or no reliability value. This criterion should be removed from the definition from SOL exceedance.

The criterion "Calculated post-Contingency bus voltage is outside the emergency system voltage limits" and "Calculated post-Contingency bus voltage is outside emergency system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs" seem contradictory as one states post contingent bus voltage outside emergency system limit is SOL exceedance while other states that it is an SOL exceedance when there is not sufficient time to relieve the condition. The definition should only include one criterion which should state "Calculated post-Contingency bus voltage is determined to be outside emergency system voltage limits for a timeframe longer than the allowable timeframe associated with that limit during implementation of mitigating steps should the Contingency occurs".

The SOL Exceedance definition states:

- 'Actual or pre-Contingency bus voltage is outside normal System voltage limits'
- 'Calculated post-Contingency bus voltage is outside the emergency system voltage limits'.

This definition does not account for practical differences between the impacts of high voltage and low voltage limits. Equipment tripping as a result of high voltage is much different than voltage collapse. Exceeding high voltage limit may not necessarily risk the reliability of the system but may cause local equipment outage. The high voltage limit exceedance should be treated as SOL exceedance only if the contingency of equipment experiencing high voltage shows other potential SOL exceedances. Treating all high voltage normal limit exceedances as SOL Exceedances will require initiation of the Operating Plan to mitigate the SOL Exceedance which may require unnecessary actions such as opening other transmission lines which can create more severe operating challenges compared to having facilities experience voltages between normal and emergency limits.

Likes 0	
Dislikes 0	

Response

Diana McMahon - Salt River Project - 1,3,5,6 - WECC

Answer	No
Document Name	

Comment
SRP agrees with the proposed definition of Sytem Operating Limit. SRP does not support the definition for SOL Exceedance as it does not allow for the timely operation in a contingency state where the "Calculated post-contingencyflow..." under this definition operators would be required to operate to an N-1-1 state.

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	No
Document Name	

Comment
Texas RE has several concerns with the proposed definition of System Operating Limit (SOL). • “Reliability limits” is undefined. The prior definition contained values to be operated within which is preferable because of a consistent approach with compliance monitoring and enforcement. Texas RE is unaware of any confusion around SOLs and since the FACs were effective there have been little to no violations related to SOLs which some may argue is evidence that there is not confusion around this issue that the SDT purports on the part of industry and the ERO. • Currently, the Standards appear to ignore Normal and Emergency Ratings (FAC-008-3) regarding Facility Ratings for Generator Owners. Texas RE is concerned this issue will be exacerbated by the proposed definitions and possibly allow more unreliable behavior. When an entity decides to create a new rating other than Normal or Emergency, which is done, there is not clarity on how this definition would be applied. Texas RE suggests only allowing Emergency and Normal Ratings to be defined and have those be different values (which unfortunately does not always occur and reliable operations suffer because of lack of clarity.) • The explanation indicates SOLs are only used in the operating horizon. Although TPL-001-4 does not specifically address SOLs or IROLs, the studies performed in order to meet the Requirements of TPL-001-4 may identify stability limits and IROLs that are more limiting than the Facility Ratings. These studies will likely be more in-depth than an OPA or RTA, and will allow a better opportunity to stress the System in order to identify potential stability limits and IROLs. If the Planning Coordinator is not required to establish a criteria for identifying stability limits and IROLs (FAC-010-3), it is likely that these limits will not be identified or there will be inconsistencies across the Planning Coordinator Area in identifying the limits. • Texas RE is concerned with eliminating FAC-010-3. All aspects of SOLs, as currently defined and proposed, will not be met by TPL-001-4 without supporting mechanism to recognize SOLs (as determined by FAC-010). Also, without an SOL methodology for the planning horizon (FAC-010-3), there may be inconsistencies in steady state voltage limits across the Planning Coordinator Area, as TPL-001-4 R4 indicates the TP and PC are allowed to independently specify criteria for steady state voltage limits, post-Contingency voltage deviations, and the transient voltage response for its System. Texas RE suggests the SDT consider the following:

- If the Planning Coordinator (PC) is no longer required to have an SOL methodology, it is unlikely that the PC will identify IROLs. Does this mean that elements of an IROL are no longer applicable in FAC-003-4 since they were not identified by the PC?
- The Applicability section 4.1.1.3 of CIP-014 includes Transmission Facilities at a single station or substation location that are identified by its Reliability Coordinator, Planning Coordinator, or Transmission Planner as critical to the derivation of Interconnection Reliability Operating Limits (IROLs) and their associated contingencies. If the PC and TP are no longer required to identify IROLs, does this mean that these Facilities will not be identified as applicable until a real-time IROL is identified? If so, the implementation of physical security measures may not be completed for years after the IROL is identified.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] We have a concern that the proposed definitions do not consider whether 'calculated' post-contingency values are valid or not. The concern is that if the calculated value is found to not be valid (possibly used incorrect input data), then there may not be an actual 'exceedance'. We also wish to point out that IRO-018/TOP-010 have requirements related to quality of RTA. However, those two standards do not apply to OPA. As written, the proposed definitions may lead to 'bad' OPA/RTA results being considered exceedances. Some guidance should be given that identified exceedances should be validated as real at some point in the identification process and then once found to be real, then labeled officially as an exceedance. Our concern is also related to the obligation in reporting from TOP-001-3 R15.

We also request some further guidance on the last bullet on the proposed SOL exceedance definition. We are concerned it may lead to an interpretation that there is a requirement to have 'online stability tools' in order to adequately be determining whether or not SOLs are being exceeded. We understand the bullet to apply to those who DO have online stability tools, and have an indicated exceedance as well as those who may have an 'unsolved' RTCA contingency. Does the team support the concept that an entity may be able to only evaluate stability against any stability limits previously identified from their TPL studies, rather than being required to have online stability analysis?

It is still not clear to us when exceedances that are in the process of being mitigated or exceedances above the highest limit available cross the line into 'compliance violation' territory. We understand the requirements in TOP/IRO regarding how we are supposed to have a plan, and then implement the plan. However at some point some situations would require load shed that the entity may elect not to shed pre-contingent. How long is acceptable for an entity to be in an exceedance situation above the highest limit before it becomes a compliance issue?

We also wanted to point out that there is a typo in the proposed SOL Exceedance definition. The last word in a couple of the bullets is "occurs". This should be changed to "occur".

We also have a concern that now with 'exceedance' being broadened to include possibly more issues, the volume of necessary data collection/logging could be significant. We ask the team to consider any impact to reliability by requiring operators to now further increase gathering proof of implementing Operating Plans for each and every exceedance. RTCA runs very frequently (10 times per hour) and may have several new issues come in and out.

Also, what is the team's thinking in regard to needing to log when a flow is drifting above and below the established limit, but very minimally. For example the post-contingent calculated flow hovering near the Emergency limit +/- a few MW's. Do we need to be concerned about capturing those

instances in the consideration of ‘zero tolerance’?

Likes 0	
Dislikes 0	

Response

sean erickson - Western Area Power Administration - 1,6

Answer	No
Document Name	

Comment

WAPA agrees with the broad intent for definition of SOL Exceedance, but WAPA would official request the SDT draft language regarding:

1) Definition of an SOL Violation, e.g. Is an SOL Violation = Actual flow above the highest posted rating exceeding the associated time limit?

2) From the material it was stated a Calculated Post-Contingent Exceedance identified in an OPA (one of more days out) is a potential SOL Exceedance that may need an Operating Plan? But it is not clear in the Standard that interpretation is the case. To that point reiteration of the process for an RTA may be helpful to Industry, as RTA inherently implies a process to validate system conditions and results. It would appear that a “post-Contingency flow or System Voltage calculated as part of the valid analysis supporting the RTA” would qualify as an SOL Exceedance for bullets 2,3,4 and 5.

2) Add BES to the definition. In light of the “Approved” edits to TOP-001-4 it would be beneficial to be explicit.

3) Change Bus Voltage to System Voltage.

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

We do not agree with the proposed definition because it lends itself to confusion between the limit and the performance criterion.

For example, new requirement 4.2 states that the SOL methodology shall:

“Require that stability limitations are established to meet the BES performance criteria specified in Part 4.1 for the following Contingencies”

In this requirement, what is the difference between “stability limitations” and “BES performance criteria”? As an example, is the statement “transient voltage dip must not be lower than 0.8 pu” a BES performance criteria or a stability limitation.

We do not agree with the proposed new definition of SOL exceedance. Specifically, we believe there are two sets of duplicated conditions:

First Set (Bullets 2 and 3):

- **Calculated post-Contingency flow on a Facility is above the highest Emergency Rating.**
- **Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occur.**

We believe the definition needs only to present the second bulleted condition since the first condition does not say whether or not there is sufficient time to reduce the flow to acceptable levels. If there is sufficient time, then it's not an exceedance (i.e., not the condition presented in the next bullet). If there isn't sufficient time, then it is duplicating the next bullet. We therefore suggest removing the first bulleted condition.

Second Set (Bullets 5 and 6):

- **Calculated post-Contingency bus voltage is outside the emergency system voltage limits.**
- **Calculated post-Contingency bus voltage is outside emergency system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs.**

Our comment and suggestion are similar to the above (for the first set).

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

We have a concern that the proposed definitions do not consider whether 'calculated' post-contingency values are valid or not. The concern is that if the calculated value is found to not be valid, then there may not be an actual 'exceedance'. We also wish to point out that IRO-018/TOP-010 have requirements related to quality of RTA. However, those two standards do not apply to OPA. As written, the proposed definitions may lead to 'bad' OPA results being considered exceedances. Some guidance should be given that identified exceedances should be validated as real at some point in the identification process and then once found to be real, then labeled officially as an exceedance. Our concern is also related to the obligation in reporting from TOP-001-3 R15.

We also request some further guidance on the last bullet on the proposed SOL exceedance definition. We are concerned it may lead to an interpretation that there is a requirement to have 'online stability tools' in order to adequately be determining whether or not SOLs are being exceeded. We understand the bullet to apply to those who DO have online stability tools, and have an indicated exceedance as well as those who may have an 'unsolved' RTCA contingency. Does the team support the concept that an entity may be able to only evaluate stability against any stability limits identified from their TPL studies, rather than being required to have online stability analysis?

It is still not clear to us when exceedances that are being mitigated, or exceedances above the highest limit available cross the line into 'compliance violation' territory. We understand the requirements in TOP/IRO regarding how we are supposed to have a plan, and then implement the plan. However at some point some situations would require load shed that the entity may elect not to shed pre-contingent. How long is acceptable for an

entity to be in an exceedance situation above the highest limit before it becomes a compliance issue.

Likes 0	
Dislikes 0	

Response

Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

NIPSCO agrees with comments submitted by the MISO TOP-IRO Task team. NIPSCO believes the proposed definition by the MISO TOP-IRO Task Team provides a definition for SOL Exceedance based on the way the system is designed, engineered and operated. NIPSCO would also like point out an inconsistency withEOP-004 (which is effective at this time). In EOP-004 a voltage deviation on a facility is defined as reportable in Requirement 1 which refers to Attachment 1. On page 9 of the standard, attachment 1 defines a voltage deviation on a facility as: "TOP Observed within its area a voltage deviation of ± 10% of nominal voltage sustained for ≥ 15 continuous minutes." The time frame is not included in any of the proposed definitions. Does anyone feel there is a problem with reporting a voltage deviation as part of EOP-004 but not in the SOL definition? This seems like an inconsistency that needs to be addressed possibly by the SDT. NIPSCO feels the time frame should be removed from EOP-004 and a reference the SOL exceedance added.

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	No
Document Name	

Comment

1. We agree with the definition of SOL. We agree with much of the definition of SOL Exceedance. However, the definition does not account for Operator action. For example – “Actual or pre-Contingency flow on a Facility is above the Normal Rating” does not factor in the legitimacy of Emergency Ratings. Emergency Ratings are designed to reliably support the flow for a defined time frame. Actual flow between the Normal and Emergency Rating should not be an SOL Exceedance unless the flow is not reduced to the normal rating in the time frame used to develop the Emergency Rating, i.e. 15 minutes, 30 minutes, etc.
2. We have a concern that the proposed definitions also fail to consider whether ‘calculated’ post-contingency values are valid or not. If the calculated value is found to not be valid, then there may not be an actual ‘exceedance’. We also wish to point out that IRO-018/TOP-010 have requirements related to quality of RTA. However, those two standards do not apply to OPA. As written, the proposed definitions may lead to ‘bad’ OPA results being considered exceedances. Some guidance should be given that identified exceedances should be validated as real at some point in the identification process and then once found to be real, then labeled officially as an exceedance. Our concern is also related to the obligation in reporting from TOP-001-3 R15.
3. Guidance on the last bullet on the proposed SOL exceedance definition is needed. We are concerned it may lead to an interpretation that there is a requirement to have ‘online stability tools’ in order to adequately be determining whether or not SOLs are being exceeded. We understand the bullet to apply to those who DO have online stability tools, and have an indicated exceedance as well as those who may have an ‘unsolved’

RTCA contingency. Does the SDT team support the concept that an entity may be able to only evaluate stability against any stability limits identified from their TPL studies, rather than being required to have online stability analysis?

4. It is still not clear to us when exceedances that are being mitigated, or exceedances above the highest limit available cross the line into 'compliance violation' territory. We understand the requirements in TOP/IRO regarding how we are supposed to have a plan, and then implement the plan. However, at some point some situations would require load shed that the entity may elect not to shed pre-contingent. How long is acceptable for an entity to be in an exceedance situation above the highest limit before it becomes a compliance issue?

Likes 0	
Dislikes 0	

Response

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company

Answer	No
Document Name	

Comment

Southern believes that the bulleted items of the proposed new SOL Exceedance definition should be included in the proposed definition of System Operating Limits. Our concern is that every time we have a OPA contingency analysis that identifies a contingency overload that is greater than the emergency rating of a facility, it would be declared at that time as an actual SOL Exceedance. We believe this condition should not be part of the definition of SOL Exceedance. Southern suggests a third definition, "Potential SOL Exceedance".

Likes 0	
Dislikes 0	

Response

Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE

Answer	No
Document Name	

Comment

We would note that the SDT is presented with considerable challenges to address in this project and are grateful for the opportunity to offer our comments, which are shared with the greatest respect and appreciation for the work of the SDT.

We address our concerns and offer suggestions, below, to address: Proposed SOL Exceedance term; Measurable Compliance Thresholds; Consideration of Risk; Applicability; and a Practical Suggestion.

Exceedance: The word "exceedance" is used throughout the Reliability Standards, including Standards that incorporate the definitions for OPA, SOL, and IROL. As noted in the Project 2015-09 System Operating Limits Technical Conference Background Materials (TCBM), referencing "SOL Exceedance White Paper" (SOLEWP) section, "SOL Definition and Exceedance Clarification" (See TCBM, pp. 5-9), the proposed SOL Exceedance definition attempts to align with how the word "exceedance" is used throughout the Standards and to add clarity. The use of "exceedance" as proposed suggests something that may or may not represent noncompliance and, therefore, creates what it seeks to solve, ambiguity and a lack of clarity.

Background. "Exceedance" is used in Standards and in conjunction with OPAs, SOLs and IROLs; it also informs associated Violation Severity Level

(VSL) descriptions. The Project 2014-03 SOLEWP seeks to characterize SOL exceedance as, "…unacceptable system performance as indicated by Real-time Assessments [equating] to SOL exceedance." (SOLEWP, p.7). The SOLEWP continues by identifying unacceptable system performance with scenarios which are now incorporated, in some form, as part of the proposed SOL Exceedance definition. The elements listed in the proposed SOL Exceedance definition, if accepted, create a compliance threshold. We believe compliance thresholds should be unambiguous and clearly identify, as in this case, a given system condition that consistently, without waver, represents either compliance or noncompliance. However, the scenarios do not necessarily represent system conditions that provide a consistent, without waver, determination of either compliance or noncompliance. For example, the proposed SOL Exceedance condition, no. 7, does not contemplate there are contingencies that can cause "unit instability (local)" that would not cause "System instability (regional)". This situation would likely fall within condition no. 7 but is not an instance of noncompliance.

Discussion. The use of "exceedance" as proposed—SOL Exceedance—muddies compliance obligations and creates an unmeasurable threshold for compliance when considering how "exceedance" is already used throughout the Standards and used to create a compliance threshold.

The dictionary definition of "exceedance" supports that a limit is traversed, which is how the word is already used throughout the Standards. The proposed elements for the definition of SOL Exceedance characterize conditions of the BES but may not necessarily represent going over a material limit that impacts the BES.

Suggestion: Alternative Term for SOL Exceedance. Since the proposed term, SOL Exceedance, will be used to identify conditions that will determine issues of compliance and, yet, does not establish a clear compliance threshold, we respectfully encourage the use of another term. We recognize that would be a bold stroke for the SDT and, while not perfect substitutions, offer the following alternative terms:

"SOL States", "SOL Elements", "SOL Factors", "SOL Operating Conditions"

Other Issues

Measurable Compliance Thresholds. The current proposed SOL Exceedance definition does not offer clear and measurable thresholds to establish compliance obligations. The current language provides a characterization of the operating system and incorporates an interpretation, to determine limits, from, for all intents and purposes, FAC-011-2.

Suggestion: Do not add a SOL Exceedance definition and incorporate the operating conditions from the proposed definition into the TOP-002 or TOP-007 Standards to establish the operational compliance thresholds.

Consideration of Risk. There are occasions when the State Estimator and the Real-time Contingency Assessment produce invalid results. Also, actual and calculated conditions can oscillate just below and just above a limit and, when considered with TOP-007, necessitate continuous reporting to the RC. Invalid results and oscillating conditions beg the question, "What is really necessary to report to the RC to maintain the reliability of the BES?"

When we think about the fact freeway traffic routinely drives above the speed limit without accidents, does an exceedance on the BES that is only 0.1% really represent a reliability risk substantial enough to require reporting?

Granted, operating the BES is not like traffic on a freeway but the analogy highlights that whatever the definition or characterization of operating conditions of the BES is used, consideration of the risk of unfavorable impacts to the BES needs to be a part of the equation.

Suggestions: To highlight consideration of risk, we offer the following:

Add the word "valid" before "post-Contingency" in the proposed SOL Exceedance definition, as provided, below.

Also, while not a risk issue, the instability referenced in condition no. 7 can only be inferred. We suggest adding the NERC Glossary term, "System," before "instability" to clarify the object of the instability.

SOL Exceedance: An operating condition characterized by any of the following:

1. Actual or pre -Contingency flow on a Facility is above the Normal Rating
2. Calculated **valid** post -Contingency flow on a Facility is above the highes
3. Calculated **valid** post -Contin

acceptable levels should the Contingency occurs

4. Actual or pre -Contingency bus voltage is outside normal System voltage limits
5. Calculated **valid** post -Contingency bus voltage is outside the emergen
6. Calculated **valid** post -Contingency bus voltage is outside emergency voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs
7. Operating parameters indicate the next Contingency could result in **System** instability.

Suggestion: The proposed SOL Exceedance definition is, for the most part, without limitation. In further consideration of risk and the evaluation of the impact on BES reliability versus the compliance burden, we would suggest an engineering study, or some form of empirical analysis, to potentially establish a range to the applicability of the SOL Exceedance definition. For example, the study or data may determine applying the definition to Facilities under 200kV offers little benefit to increasing reliability and carries a high cost. Also, if such a change was made, that the applicability would continue to be evaluated as experience is gained operating within the limits to ensure reliability had not been unfavorably impacted.

Practical Suggestion. Recognizing the standards' formatting guidelines may be driving the format of the proposed SOL Exceedance term, we would offer replacing bullet points with numbers or letters, making it easier to cite to a particular element in the definition.

Likes 0	
Dislikes 0	

Response

Gregory Campoli - New York Independent System Operator - 2

Answer	No
Document Name	

Comment

The drafting team should make a stronger distinct between ratings and limits. Every piece of equipment has a rating, thermal, voltage, frequency that is defined to protect the equipment from damage. The system is operated to limits that are determined by OPA's, RTA's. Limits may also be determined by a stability condition, transient or equipment stability. Operators are responsible for operating to the most limiting of conditions determined through the OPA's and RTA's. The propose definitions have lost the concept of a 'safe operating region' by removing the reference to most limiting condition. This concept should be revisited in the current standards or captured in the IRO and TOP Standards.

We recommend a change to the proposed SOL definition to include the following concepts:

System Operating Limits:

Reliability limits used for operations to meet acceptable BES performance,

identified through OPA's and RTA's,

from facility ratings that include thermal, voltage and frequency ratings,

that result in transfer Limits, system voltage limits, and stability limitations

Likes 0	
Dislikes 0	

Response

Terry Volkmann - MISO TOP-ISO Task Team - 1,2 - MRO,SPP RE,RF

Answer	No
Document Name	

Comment

The MISO TOP-IRO Task Team disagrees with the definition of SOL. In particular, the removal of the “most limiting” language introduces additional challenges since each component of the definition (Facility Ratings, System voltage limits, and stability limitations) are now individually and simultaneously SOLs for a given facility. The notion that entities continuously assess system performance based on actual operating conditions for each of these components is incorrect as well. While some TOPs have implemented real time voltage stability analysis they are by far the exception. Also, real time transient stability analysis is even more rare. Requiring all TOPs to perform these assessments in real time through the SOL definition will cause undue burden on the industry. While we don’t necessarily agree that the current definition needs to be changed we do think it could be simplified by tweaking the proposed language to: “System Operating Limits: The value (such as MW, Mvar, amperes, frequency, or volts) that is the most limiting of the known Facility Ratings, system voltage limits, and stability ratings for a Facility and/or a group of Facilities and system configuration”.

In addition we cannot see how the SOL Exceedance definition can be made clear without relating it to “pre- and post- Contingency” concepts.

We do not agree with the definition of SOL Exceedance.

The SDT proposed definition of the SOL exceedance fails to recognize the important difference between actual, pre-contingency SOL exceedance and calculated, post-contingency risk of SOL exceedance. This attempt to include both of them under the single, generic term “SOL exceedance” may easily cause an incorrect expectation that TOP/RC control action response to these two types of Exceedances should be similar.

The actual, pre-contingency SOL Exceedance is a real-time condition exceeding the equipment’s rated capabilities, while the calculated, post-contingency risk of SOL Exceedance requires another event to happen in order to become real and actual issue. It is clear that both of these types of exceedances require some control action to be implemented, but they might be treated differently in terms of urgency and severity of mitigating control actions, as they have different repercussions on system reliability. However, the distinction between the actual, pre-contingency SOL Exceedance and the calculated, post-contingency risk of SOL Exceedance has to be recognized in the definition, so that misconceptions that are incorporated in the definition do not subsequently cause confusion and inadequate response from real-time personnel in control centers.

In addition the proposed SDT SOL Exceedance definition does not factor in the collaboration on the RC and TOP in development of joint operating guides and in particular post contingency action plans.

The MISO TOP-IRO task team recommends a definition for SOL Exceedance that better reflects the difference in actual, pre-contingency SOL Exceedance, and the calculated, post-contingency risk of SOL Exceedance, which allows flexibility for TOPs and RCs to manage post-contingency risk of exceeding an SOL while taking operating actions to address that risk. As long as a post-contingent action plan exists or is agreed upon by the TOP and RC, the calculated, post-contingency risk of SOL Exceedance would not be considered as an SOL Exceedance. Our proposed definition of SOL Exceedance follows.

A. SOL exceedance identified in real-time monitoring (pre-contingency) based on real time system conditions

· Actual steady state flow on a BES Facility is greater than the Facility's highest Emergency Rating for any time period.

· Actual steady state flow on a BES Facility is above the Normal Rating but below the next Emergency Rating for longer than the time frame of the next Emergency Rating.

· Actual steady state voltage on a BES Facility is greater than the emergency high voltage limit for time frame identified by the TOP.

· Actual steady state voltage on a BES Facility is less than the defined emergency low voltage limit for any time period.

· Any established Stability Limit (non-IROL) is exceeded for longer than 30 minutes or defined by Operating Plan.

B. SOL exceedance identified in the real-time assessment based on Post Contingent system conditions

· Projected Post Contingent Flow on a BES Facility > highest Emergency Rating and no specific post-contingency action plan agreed upon by TOP and RC. The post-contingent action plan must address potential impacts were the contingency to occur prior to normal congestion management procedures returning projected Post Contingent Flow within the highest Emergency Rating.

· Projected Post Contingent voltage on a BES facility< emergency low voltage limit and no specific post-contingency action plan developed by TOP or RC to address potential impacts were the contingency to occur..

Also, we do not agree that "Actual or pre-Contingency flow on a Facility above the Normal Rating" and "Actual or pre-Contingency bus voltage outside normal System voltage limits" are SOL exceedances. In both cases, we recommend use of Emergency Rating as opposed to Normal Rating, and have reflected this in the proposed definition of SOL Exceedance above. The technical rationale for our recommendation is based on the TOP rating methodology which considers all limiting factors for transmission facilities and assesses no reliability repercussions as long as the flow on facility or voltage in the bus is returned below normal rating during time that was assigned for the emergency rating. In the matter of fact, this is one of main reasons that transmission operators are given an emergency ratings and that fact should be correspondingly recognized in the SOL exceedance definition.

We disagree with the bullets 3 and 6 in the SDT proposed definition due to use of the term "sufficient time to relieve the condition should the Contingency occurs". We believe that the fundamental principle of the SOL Exceedance definition should be that it is clear, simple and understandable to transmission operators and RCs in control center. It will be quite challenging task for operators to determine "sufficient time" especially for those exceedances that occur suddenly due to unforeseen and not previously analyzed system conditions or after forced outages. Furthermore, this part of the SDT's proposed definition of SOL exceedances is currently being addressed by emergency operations in operating plans of TOPs. In other words, if TOPs realize, during real-time events, that the flow on facility would not be able to be returned below normal rating within the time assigned for emergency rating, TOPs would implement emergency control actions such as load shedding or generator tripping. Therefore, these types of issues do not need to be separately included into the SOL exceedance definition, and have been removed from our proposed definition of SOL Exceedance above.

Finally we disagree with treating high and low voltage the same in the SOL Exceedance definition. The definition does not account for practical differences between the impacts of high voltage and low voltage limits. Equipment tripping as a result of high voltage is much different than voltage collapse. Usually occurring at low loads and low transmission loading, exceeding high voltage limit may not necessarily risk the reliability of the system but may cause local equipment outage

Likes 0	
Dislikes 0	

Response

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3

Answer	No
Document Name	2015-09_FAC-011-4 - Comment Form Questions - TOP-IRO TT response to Q 1 - 3 Aug 11..docx

Comment

The MISO TOP-IRO Task Team disagrees with the definition of SOL. In particular, the removal of the "most limiting" language introduces additional challenges since each component of the definition (Facility Ratings, System voltage limits, and stability limitations) are now individually and simultaneously SOLs for a given facility. The notion that entities continuously assess system performance based on actual operating conditions for each of these components is incorrect as well. While some TOPs have implemented real time voltage stability analysis they are by far the exception. Also, real time transient stability analysis is even more rare. Requiring all TOPs to perform these assessments in real time through the SOL definition will cause undue burden on the industry. While we don't necessarily agree that the current definition needs to be changed we do think it could be simplified by tweaking the proposed language to: "System Operating Limits: The value (such as MW, Mvar, amperes, frequency, or volts) that is the most limiting of the known Facility Ratings, system voltage limits, and stability ratings for a Facility and/or a group of Facilities and system configuration".

In addition we cannot see how the SOL Exceedance definition can be made clear without relating it to "pre- and post- Contingency" concepts.

We do not agree with the definition of SOL Exceedance.

The SDT proposed definition of the SOL exceedance fails to recognize the important difference between actual, pre-contingency SOL exceedance and calculated, post-contingency risk of SOL exceedance. This attempt to include both of them under the single, generic term "SOL exceedance" may easily cause an incorrect expectation that TOP/RC control action response to these two types of Exceedances should be similar.

The actual, pre-contingency SOL Exceedance is a real-time condition exceeding the equipment's rated capabilities, while the calculated, post-contingency risk of SOL Exceedance requires another event to happen in order to become real and actual issue. It is clear that both of these types of exceedances require some control action to be implemented, but they might be treated differently in terms of urgency and severity of mitigating control actions, as they have different repercussions on system reliability. However, the distinction between the actual, pre-contingency SOL Exceedance and the calculated, post-contingency risk of SOL Exceedance has to be recognized in the definition, so that misconceptions that are incorporated in the definition do not subsequently cause confusion and inadequate response from real-time personnel in control centers.

In addition the proposed SDT SOL Exceedance definition does not factor in the collaboration on the RC and TOP in development of joint operating guides and in particular post contingency action plans.

The MISO TOP-IRO task team recommends a definition for SOL Exceedance that better reflects the difference in actual, pre-contingency SOL Exceedance, and the calculated, post-contingency risk of SOL Exceedance, which allows flexibility for TOPs and RCs to manage post-contingency risk of exceeding an SOL while taking operating actions to address that risk. As long as a post-contingent action plan exists or is agreed upon by the TOP and RC, the calculated, post-contingency risk of SOL Exceedance would not be considered as an SOL Exceedance. Our proposed definition of SOL Exceedance follows.

1. **SOL exceedance identified in real-time monitoring (pre-contingency) based on real time system conditions**

- Actual steady state flow on a BES Facility is greater than the Facility's highest Emergency Rating for any time period.
- Actual steady state flow on a BES Facility is above the Normal Rating but below the next Emergency Rating for longer than the time frame of the next Emergency Rating.
- Actual steady state voltage on a BES Facility is greater than the emergency high voltage limit for time frame identified by the TOP.
- Actual steady state voltage on a BES Facility is less than the defined emergency low voltage limit for any time period.
- Any established Stability Limit (non-IROL) is exceeded for longer than 30 minutes or defined by Operating Plan.

2. **SOL exceedance identified in the real-time assessment based on Post Contingent system conditions**

- Projected Post Contingent Flow on a BES Facility > highest Emergency Rating and no specific post-contingency action plan agreed upon by TOP and RC. The post-contingent action plan must address potential impacts were the contingency to occur prior to normal congestion management procedures returning projected Post Contingent Flow within the highest Emergency Rating.

- Projected Post Contingent voltage on a BES facility< emergency low voltage limit and no specific post-contingency action plan developed by TOP or RC to address potential impacts were the contingency to occur..

Also, we do not agree that “Actual or pre-Contingency flow on a Facility above the Normal Rating” and “Actual or pre-Contingency bus voltage outside normal System voltage limits” are SOL exceedances. In both cases, we recommend use of Emergency Rating as opposed to Normal Rating, and have reflected this in the proposed definition of SOL Exceedance above. The technical rationale for our recommendation is based on the TOP rating methodology which considers all limiting factors for transmission facilities and assesses no reliability repercussions as long as the flow on facility or voltage in the bus is returned below normal rating during time that was assigned for the emergency rating. In the matter of fact, this is one of main reasons that transmission operators are given an emergency ratings and that fact should be correspondingly recognized in the SOL exceedance definition.

We disagree with the bullets 3 and 6 in the SDT proposed definition due to use of the term “sufficient time to relieve the condition should the Contingency occurs”. We believe that the fundamental principle of the SOL Exceedance definition should be that it is clear, simple and understandable to transmission operators and RCs in control center. It will be quite challenging task for operators to determine “sufficient time” especially for those exceedances that occur suddenly due to unforeseen and not previously analyzed system conditions or after forced outages. Furthermore, this part of the SDT’s proposed definition of SOL exceedances is currently being addressed by emergency operations in operating plans of TOPs. In other words, if TOPs realize, during real-time events, that the flow on facility would not be able to be returned below normal rating within the time assigned for emergency rating, TOPs would implement emergency control actions such as load shedding or generator tripping. Therefore, these types of issues do not need to be separately included into the SOL exceedance definition, and have been removed from our proposed definition of SOL Exceedance above.

Finally we disagree with treating high and low voltage the same in the SOL Exceedance definition. The definition does not account for practical differences between the impacts of high voltage and low voltage limits. Equipment tripping as a result of high voltage is much different than voltage collapse. Usually occurring at low loads and low transmission loading, exceeding high voltage limit may not necessarily risk the reliability of the system but may cause local equipment outage

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	

Comment

We agree with the comments of the MISO TOP-IRO Task team. Additionally, we don't believe that every facility limit is an SOL nor is reaching a normal rating of a facility is an SOL exceedance. A different term is needed for this.

Likes 0	

Dislikes 0	

Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	

Comment

We ask the drafting team for the rationale in the proposed new definition of SOL exceedance. We believe there are two sets of duplicated conditions:

First Set (Bullets 2 and 3):

- **Calculated post-Contingency flow on a Facility is above the highest Emergency Rating**
- **Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occur**

What is the intent of the second bulleted condition since the first condition does not say whether or not there is sufficient time to reduce the flow to acceptable levels? If there is sufficient time, then it's not an exceedance (i.e., not the condition presented in the next bullet). If there isn't sufficient time, then it is duplicating the next bullet.

Since some TOs may provide more than just the Emergency Rating, which can be a 5-minute rating or a 15-minte rating for a transmission line could the term "Emergency Rating" be better stated as "applicable rating"? A TO may also provide 30-minute rating, or 1-hour or 4-houir rating, and requests the TOP and/or the RC to apply the 30-minutes or 1-hour rating (hence the applicable rating). In this case, if and when a contingency occurs, the TOP needs to return loading of the facility to within the applicable rating, NOT the emergency rating. The applicable rating (NOT the Emergency Rating) thus sets the limitation for the calculation of SOL.

Second Set (Bullets 5 and 6):

- **Calculated post-Contingency bus voltage is outside the emergency system voltage limits**
- **Calculated post-Contingency bus voltage is outside emergency system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs**

Our comment and suggestion are similar to the above (for the first set). **Note: ERCOT does not support the above comment.**	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
The following answers for all questions 1 - 24 are provided by our City Light SMEs. After the submittal, the SMEs asked to make some additional changes to the original submittal. If yes/no vote changed I placed it in the comment section. Thank you. The new definitions appear to be superior to the old versions, but we still have some comments: 1. The new SOL definition includes Facility Ratings and Voltage Limits as separate items. I think this is appropriate, but elsewhere in this document, it is stated plainly several times that the drafters expect that FAC-008-3 Facility Ratings should include voltage ratings. I have never seen voltage ratings included with FAC-008-3 ratings and the standard (including the definition of “Facility Ratings”) is not clear on whether it is required. There should be some effort to clarify where the responsibility for developing voltage limits lies, although depending on the desired direction, this may have to be in FAC-008 and not in this standard. 2. In the SOL Exceedance definition, the third bullet says “a Facility Rating” where the term “Emergency Rating” seems more appropriate. “Emergency Rating” is used in the explanation for that bullet item and in the parallel item for voltage limits (sixth bullet) the term “emergency system voltage limits” is used. 3. Including Bullet #1 in the SOL Exceedance definition may restrict TOP operations. It would require a TOP to report exceeding a SOL for instances where a facility exceeded its normal SOL but was less than emergency time SOL for even a few scan cycles. Currently, this is not considered “unacceptable system performance.” Recommend the following wording for Bullet #1: **Actual or pre-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow below the Normal Rating.*	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	

Comment
However, in the SOL Exceedance definition, we are unable to appreciate the distinction between bullet 5 (outside the emergency system voltage limits) and bullet 6 (outside the emergency system voltage limits for which there is not sufficient time to relieve the condition) - please provide a more detailed explanation of the intended difference between them.

Likes 0	
Dislikes 0	

Response

Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	Yes
Document Name	

Comment
Within the SOL Exceedance definition, the 4th bullet refers to “System voltage limits” while the 5th bullet refers to “system voltage limits”. Consistent capitilzation suggested.

Likes 0	
Dislikes 0	

Response

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	

Comment
We would like to acknowledge the great effort and work of the SDT in improving the SOL related standards and we support the new definitions of SOL and SOL Exceedance. We would like to point out the following for consideration by the SDT. 1- Concerning the language “sufficient time to …” in bullets 3 and 6, it is unclear how the “time evaluation” to address the issue needs to be managed in real time when actual system conditions may vary from the day-ahead OPA and Operating Plan used to mitigate the SOL Exceedance. We understand and agree that the day-ahead OPA may identify a “time to relieve the condition” that exceeds the allowed time to respect the Facility Rating or voltage limit, but in real-time the actual availability of resources and time to complete the operating actions may vary widely. For example, what happens if the time to get the appropriate reactive resources available to mitigate a voltage-related SOL is different in real time from what was planned in the OPA? How often does the “sufficient time” need to be evaluated in real-time by the TOP to take the decision of treating a SOL Exceedance (initiate an Operating Plan before the contingency actually occurs)? 2- There is confusion between bullets 5 and 6, both addressing the post-Contingency bus voltage outside the emergency limits. In particular, bullet 6 is logically redundant to bullet 5. 3- Concerning the last bullet, “Operating parameters indicate the next Contingency could result in instability”, we understand that the intent is to capture

all the possible stability limitations that could be identified in real-time. However, since industry practice includes a good proportion of “maximum MW transfer” on equipment and interfaces to manage stability constraints (often with offline studies), it would seem appropriate to add a separate bullet (or at least some additional rationale) to clearly state that “Pre-Contingency flow on an interface exceeds the identified stability limit” constitutes an SOL Exceedance. There are 3 bullets to address Facility Ratings, thus it would make sense to be more explicit on stability related SOLs.

4- In terms of the SOL definition itself – Assuming all limits are Facility Ratings, Systems voltage limits and stability limitations, the definition can be aligned more closely with the purposes of the standards and avoid the use of the ambiguous “Reliability limit”– i.e. “SOL - Facility Ratings, System voltage limits and stability limitations relevant for the reliable operation of the BES” or perhaps “Limits relevant to the operation of the BES arising from Facility Ratings, System voltage limits and stability limitations”.

Likes 0	
Dislikes 0	

Response

Jared Shakespeare - Peak Reliability - 1 - WECC

Answer	Yes
Document Name	

Comment

The revised definition of SOL is good. The SDT might consider using “Stability Limits” in the definition and then revising the definition of Stability Limits in the NERC glossary so that it goes well with this definition of SOL. The stability limitations language in the current definition can work but it may lead to some confusion.

Likes 0	
Dislikes 0	

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Answer	Yes
Document Name	

Comment

- BPA recommends the following language be added to the first bullet of the SOL Exceedance definition: “Actual or pre-Contingency flow on a Facility is above the Normal Rating *****for more than (X) minutes, as defined in the TOP’s Operating Plan***.”

- BPA also recommends the following language be added to the fourth bullet of the SOL Exceedance definition: “Actual or pre-Contingency bus voltage is outside normal System voltage limits *****for more than (X) minutes, as defined in the TOP’s Operating Plan.”***

Many times in operations, a facility may exceed its Normal Rating for two minutes and then resolve below the Normal Rating. BPA believes this additional language would prevent the potential need for a TOP to document and/or report every occurrence of operating above the Normal Rating.

From a pragmatic perspective, this language would eliminate a potential resource burden to complete a compliance reporting task that does not enhance reliability. (**As noted by the SDT in paragraph 1 in the explanation column of 'Proposed New Definition of SOL Exceedance' table.)	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
The two post contingency bus voltage bullets seem to be in disagreement. The first says an exceedance is if you are outside the voltage limits. The second is outside limits AND there is not enough time to relieve the condition. You can never reach the second bullet due to the first bullet that doesn't allow time. Otherwise I like the revised definition.	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

2. The suggested revisions would mean that the Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. OPAs and RTAs are performed to determine whether these SOLs may potentially be exceeded (through an OPA) or are actually being exceeded (through a RTA). Operating Plans are developed to address "'SOL Exceedances." Do you believe the proposed revisions to the definition of SOL (and companion definition of "SOL Exceedance") allow for a clear distinction between "what the limits are" and "how the system should be operated"

Terry Volkmann - MISO TOP-ISO Task Team - 1,2 - MRO,SPP RE,RF

Answer	No
Document Name	

Comment

We agree Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. However, the removal of the "most limiting" language introduces additional challenges since each component of the definition (Facility Ratings, System voltage limits, and stability limitations) are now individually and simultaneously SOLs for a given facility. The notion that entities continuously assess system performance based on actual operating conditions for each of these components is incorrect as well. While some TOPs have implemented real time voltage stability analysis they are by far the exception. Also, real time transient stability analysis is even more rare. Requiring all TOPs to perform these assessments in real time through the SOL definition will cause undue burden on the industry. While we don't necessarily agree that the current definition needs to be changed we do think it could be simplified by tweaking the proposed language to: "System Operating Limits: The value (such as MW, Mvar, amperes, frequency, or volts) that is the most limiting of the known Facility Ratings, system voltage limits, and stability ratings for a Facility and/or a group of Facilities and system configuration".

In addition we cannot see how the SOL Exceedance definition can be made clear without relating it to "pre- and post- Contingency" concepts.

The SOL Exceedance definition needs to be changed to reflect appropriate control action responses from TOPs/RCs in accordance with our technical rationale provided in answer to the previous question.

Likes 0	
Dislikes 0	

Response

Gregory Campoli - New York Independent System Operator - 2

Answer	No
Document Name	

Comment

see Q1

Likes 0	
Dislikes 0	

Response

Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE	
Answer	No
Document Name	
Comment	

We incorporate our response to Question 1.

Additionally, while we support the SDT's direction of simplifying the SOL definition, the language, "any identified stability limitations" is vague and not measureable. The use of "any identified" does not provide a clear compliance threshold. Also, while this may have already been addressed by the SDT, "Stability" and "Stability Limit" are NERC Glossary Terms and it is unclear if the intent is to incorporate the words as Glossary Terms. Granted, "Stability Limit" does not necessarily define "stability limitations," so there is the potential for confusion.

Suggestion: We offer the following modification to the proposed revisions to SOL.

Reliability limits used for **operating the BES**, to include Facility Ratings, System voltage limits, and limitations **established by the Reliability Coordinator's System Operating Limit methodology.**

Likes 0	
Dislikes 0	
Response	

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	

Southern believes a SOL exceedances should only be applied in real time. Bullet #2 of the proposed definition of SOL Exceedance, suggest that OPA contingency analysis identifying potential SOLs that violate emergency ratings is a SOL Exceedance.

Likes 0	
Dislikes 0	
Response	

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	No
Document Name	
Comment	

1. We agree Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. However, the SOL Exceedance definition does not allow for Operator action.

An example:

a. Excursions above the normal rating, but below the emergency rating should not be SOL Exceedance if flow is reduced to the normal rating in the time frame used to develop the Emergency rating.

b. Excursions outside of the normal voltage limits should not be SOL Exceedances if returned within the normal range within a specified time. IROL have a default 30 minutes criteria for operator action. SOL Exceedances should be given similar opportunity for operator action.

Likes 0	
Dislikes 0	

Response

Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

NIPSCO agrees with comments submitted by the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

Today, there is a very clear distinction between the performance criteria that we're attempting to observe (e.g. voltage declines at a bus must be less than 10%) and how the system is operated to meet this criteria (e.g. establishing SOLs, directly monitoring criteria and adjusting dispatches if a criteria violation is observed). We're not sure that these proposed definitions add any more clarity – in fact our concern is that these proposed definitions confuse the ideas of "performance criteria" and "system operating limits" (see our comments to 1).

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	No
Document Name	
Comment	

Texas RE is concerned the proposed definition of an SOL Exceedance provides more confusion then clarification. Texas RE recommends the following in order to provide clarification:

1. For Actual or pre-Contingency flow on a Facility is above the Normal Rating, the definition should consider post-Contingency above Normal Rating (which could be below Emergency Rating).

2. For Calculated post-Contingency flow on a Facility is above the highest Emergency Rating, Texas RE inquires as to how there can be multiple Emergency Ratings. As written an entity could claim there is a "higher" Emergency Rating and avoid compliance, lower reliability, and submit the System/Facility/Element to a higher risk. Typically, the RC and TOP will define pre-contingency and post-contingency voltage limits. Texas RE recommends using these terms in place of "emergency system voltage limits" in the SOL exceedance definition and updating FAC-011-4 R3 to address these limits.

3. Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occurs. This would be more helpful if there is a defined time period and a definition for "acceptable level".

4. Actual or pre-Contingency bus voltage is outside normal System voltage limits—System voltage may not be equivalent to bus voltage. This will result in System voltage being set to the extreme edges of what the most extreme bus voltage may be present. System configurations change and elements must remain within element limitations. A 1.07 pu voltage may be reasonable in an industrialized location but not across the Interconnection.

5. For Calculated post-Contingency bus voltage is outside the emergency system voltage limits, a definition of "emergency system voltage limits" would increase clarity.

6. For Calculated post-Contingency bus voltage is outside emergency system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs—This is vague in that it does not describe who sets these limits, how are the limits are communicated, and whether or not there is a methodology.

7. For Operating parameters indicate the next Contingency could result in instability, Texas RE recommends defining "operating parameter". It appears that instability itself may not be considered an SOL exceedence. Was this the SDT's intent?

Likes 0	
Dislikes 0	
Response	

Diana McMahon - Salt River Project - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	

Given the language within the Reliability Standards there still remains confusion between "SOL Exceedance" and violating and SOL or IROL.

Likes 0	
Dislikes 0	

Response

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF

Answer	No
Document Name	

Comment

We disagree with SOL and SOL Exceedance definitions. **Refer to comments on question 1 for SOL Exceedances.**

Likes 0	
Dislikes 0	

Response

Don Schmit - Nebraska Public Power District - 1,3,5

Answer	No
Document Name	

Comment

NPPD supports the comments submitted by the MISO TOP-IRO Task Team.

Likes 0	
Dislikes 0	

Response

Andrew Pusztai - American Transmission Company, LLC - 1

Answer	No
Document Name	

Comment

The SOL Exceedance definition ignores the possibility that the system can be operated in real-time operation above the Normal rating of a Facility but within an Emergency rating for less than the time allowed by the Emergency rating and not be an exceedance of the SOL.

Likes 0	
Dislikes 0	
Response	
Robert Roddy - Dairyland Power Cooperative - 1,5	
Answer	No
Document Name	
Comment	
See MISO TOP-IRO Task Team response.	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
See the above comments	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 3,5	
Answer	No
Document Name	
Comment	
The proposed definition for bullet item #2 states, “Calculated post-Contingency flow on a Facility is above the highest Emergency Rating”. What if there are two (2) levels of Emergency Ratings, say a 30 minute rating and a 15 minute rating? In this case, it would appear there is no SOL Exceedance and thus no operating plan needing developed until the 15 minute rating is exceeded.	
Likes 0	

Dislikes 0	

Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	

Comment
While we agree that the combination of a revised definition of SOL and a new definition of SOL Exceedance could support a better distinction between “what the limits are” and “how the system should be operated”, we do not agree that the Facility Ratings, System voltage limits, and stability limitations are the actual SOLs, nor do we agree with the revised definition of SOL and the proposed definition of SOL Exceedance. Please see our comments under Q1, above. **While we agree that the combination of a revised definition of SOL and a new definition of SOL Exceedance could support a better distinction between “what the limits are” and “how the system should be operated”, we do not understand what the reliability need is to identify that the Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. Also, we request the drafting team to provide the rationale for the new definition of SOL and the proposed definition of SOL Exceedance. Please see our comments under Q1, above.** **Note: ERCOT and CAISO do not support the above comments.**

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	

Comment
We agree with the comments of the MISO TOP-IRO Task team. Additionally, we don't believe that every facility limit is an SOL nor is reaching a normal rating of a facility is an SOL exceedance. A different term is needed for this.

Likes 0	
Dislikes 0	

Response

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	

We agree Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. However, the removal of the “most limiting” language introduces additional challenges since each component of the definition (Facility Ratings, System voltage limits, and stability limitations) are now individually and simultaneously SOLs for a given facility. The notion that entities continuously assess system performance based on actual operating conditions for each of these components is incorrect as well. While some TOPs have implemented real time voltage stability analysis they are by far the exception. Also, real time transient stability analysis is even more rare. Requiring all TOPs to perform these assessments in real time through the SOL definition will cause undue burden on the industry. While we don’t necessarily agree that the current definition needs to be changed we do think it could be simplified by tweaking the proposed language to: “System Operating Limits: The value (such as MW, Mvar, amperes, frequency, or volts) that is the most limiting of the known Facility Ratings, system voltage limits, and stability ratings for a Facility and/or a group of Facilities and system configuration”.

In addition we cannot see how the SOL Exceedance definition can be made clear without relating it to “pre- and post- Contingency” concepts.

The SOL Exceedance definition needs to be changed to reflect appropriate control action responses from TOPs/RCs in accordance with our technical rationale provided in answer to the previous question.

Likes 0	
Dislikes 0	
Response	

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	

Yes, after much study and reflection. It is a somewhat complicated situation.

Likes 0	
Dislikes 0	
Response	

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	

Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] Yes, after much study and reflection. It is a somewhat complicated situation.	
Likes 0	
Dislikes 0	
Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	Yes
Document Name	
Comment	
PJM agrees that Facility Ratings, System voltage limits, and stability limitations comprise the set of SOL. Removing performance criteria from the limit definition helps to clarify the limits.	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
See AZPS's answer to Question #1	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	

No comments	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
We agree that this approach allows for a clear distinction. In addition, although we understand IROLs, as a subset of SOLs, are addressed by the SOL Exceedance definition and OPA/RTA concept, it would be helpful to have more guidelines and rationales on the application of the SOL Exceedance definition to address IROL[GM1] .	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	

Response

3. Do you agree with removing “the most limiting criteria,” “specified system configuration,” “operation within acceptable reliability criteria,” and “pre- and post- Contingency” concepts from the definition of SOL? If no, please explain your concerns.

Robert Roddy - Dairyland Power Cooperative - 1,5	
Answer	No
Document Name	
Comment	
See MISO TOP-IRO Task Team response.	
Likes 0	
Dislikes 0	
Response	

Don Schmit - Nebraska Public Power District - 1,3,5	
Answer	No
Document Name	
Comment	
NPPD supports the comments submitted by the MISO TOP-IRO Task Team.	
Likes 0	
Dislikes 0	
Response	

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	No
Document Name	
Comment	
We disagree with removal of most limiting criterion. Refer to comments in Q1.	
Likes 0	
Dislikes 0	
Response	

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	No
Document Name	
Comment	
The removal of “most limiting criteria” creates a scenario where multiple SOLs may exist, causing confusion as to which limits the System should be operated to. Also, the removal of “specified system configuration” may prevent stability limits from being identified in real-time, as entities may work under the assumption that stability limits are based on study cases and not real-time System conditions.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
NIPSCO agrees with comments submitted by the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Gregory Campoli - New York Independent System Operator - 2	
Answer	No
Document Name	
Comment	
No. We believe a fundamental concept of system operations is lost with the removal of most limiting criteria. This defines a safe operating range for operators to meet acceptable BES performance. From a 2007 NERC document, we need to tie the concept of boundary conditions – the specific set of study assumptions and associated outcomes that resulted in acceptable interconnection performance – to the system operating limits within which system operators must operate the system. We also agree that SOL's may be constently changing and that RTAs are very dynamic. However this suggestion puts a boundary on compliance obligations, without limiting what an entity chooses to do on his own system.	
Likes 0	
Dislikes 0	

Response	
Terry Volkmann - MISO TOP-ISO Task Team - 1,2 - MRO,SPP RE,RF	
Answer	No
Document Name	
Comment	
We do not agree with removing the terms “pre- and post- Contingency” and “the most limiting criteria” from the definition of SOL, as previously stated.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	
We do not agree with removing the terms “pre- and post- Contingency” and “the most limiting criteria” from the definition of SOL, as previously stated.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	
Comment	
Related to our comments in Q1 and Q2, above, we ask the SDT to elaborate why: **a. There is no variability that a Facility rating may or may not be an SOL; and** **b. The Emergency Rating is used instead of applicable rating since in some cases, a TOP may apply a rating that is lower than the**	

Emergency Rating; and

c. There are apparent duplicated conditions for SOL exceedance.

Note: ERCOT and CAISO do not support the above comments.

Likes 0	
Dislikes 0	

Response

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body

Answer	Yes
Document Name	

Comment

No comment

Likes 0	
Dislikes 0	

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer	Yes
Document Name	

Comment

We agree with removing the language from the definition of SOL. System Operating Limits are limits no matter if they are the most limiting or not. It makes more sense to move the operating language from the old SOL definition to the SOL Exceedance definition.

Likes 0	
Dislikes 0	

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	Yes
Document Name	

Comment
While Duke Energy agrees with the removal of the phrases listed in the question, we still have concerns regarding the proposed definition. As written, it appears that the definition of SOL is not a standalone definition in that it does not distinguish between a normal or emergency rating, and needs the definition of SOL Exceedance which includes this distinction, to provide some clarity. The proposed definition of SOL Exceedance includes references to Pre- and post- Contingency, so it could be argued that the phrases the drafting team points to in the question have not been completely removed, as they are still present in the SOL Exceedance definition. We reiterate that a specific reference to both Normal and Emergency Ratings could aid in clearing up the ambiguity that presently exists in the definition of SOL.

Likes 0	
Dislikes 0	

Response

Mark Holman - PJM Interconnection, L.L.C. - 2

Answer	Yes
Document Name	

Comment
A limit, including SOL, is a parameter. Removal of the identified terms eliminates performance criteria from the SOL definition. Married with the proposed new definition for SOL Exceedance, this change to SOL makes the definition much cleaner with SOL being a set of parameters, each of which must be addressed within RTA/OPA.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	Yes
Document Name	

Comment
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	Yes
Document Name	
Comment	
We agree providing that our comments above are duly addressed.	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
1. SOL Exceedance need to have a time frame to allow operator action. SOL Exceedances, by themselves, may not considered non-compliance issues. However, not allowing operator action to avoid declaring an SOL Exceedance will create an unnecessary burden of evidence capture for condition that the System Operator have under control.	
Likes 0	
Dislikes 0	
Response	
Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE	
Answer	Yes
Document Name	
Comment	
the most limiting criteria: The phrase, even with the parenthetical examples, was subject to unlimited interpretations. *specified system configuration*: The new and future enforceable Standards focus on Facilities and their impact to the System. The term does not add clarity in light of the new and future enforceable Standards. *operation within acceptable reliability criteria*: The word, “Acceptable,” is vague and not measurable. “Reliability criteria” is undefined, vague and can only be inferred. *pre- and post- Contingency*: Contingency awareness is addressed in TOP-002-4.	
Likes 0	

Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	

4. Do you agree that the TOP should determine the appropriate Facility Ratings for use in operations, in accordance with the requirements set in the RC SOL Methodology? Note: This assumes the Facility owner will continue to provide the Facility Ratings to the RC and TOP as currently required under FAC-008. The RC Methodology will simply describe the manner in which the TOP determines which of those owner-provided Facility Ratings are appropriate for use in operations.

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	
if the SDT wants to standardize existing methodologies, this is not the place to do it as FAC-008 addresses facility ratings.	
Likes 0	
Dislikes 0	
Response	

Diana McMahon - Salt River Project - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
The TOP should be developing their own Facility Rating methodology. As the individuals most familiar with their system.	
Likes 0	
Dislikes 0	
Response	

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy	
Answer	No
Document Name	
Comment	
Duke Energy does not agree with the proposed direction of having the TOP to determine the appropriate Facility Ratings for use in operations. We believe that the TO/GO should be determining the rating, as they already have their own ratings methodology (FAC-008). We disagree with the premise that the RC may overtake the TO's ratings methodology. We suggest the drafting team consider bypassing the requirement of an RC creating an SOL Methodology, and require that the TOP create its own SOL Methodology under FAC-014. Dependence on the actions/intervention of the RC may vary by region, and we suggest that if a particular region relies more heavily enough on the RC to require an RC SOL Methodology, perhaps a specific	

regional standard should be created for that region.

An overarching clarification we would like made, is in regards to the apparent shift towards considering the actual Facility Rating as the SOL. If this is the drafting team's intent, we ask how the outlining of a specific SOL Methodology affects the determination of a Facility Rating being the SOL. Will the SOL Methodology be used to re-visit the Facility Rating and its appropriateness as the SOL? More clarification as to how these two approaches will interact would be appreciated.

Lastly, based on our review, it appears that some aspects of the proposed would require entities to operate in a more limiting fashion, and in some cases intruding upon current TPL standards. For example, the proposed definition of SOL Exceedance has appeared to eliminate the possibility of an entity using its Emergency Ratings pre-Contingency. This conflicts with current TPL standards. For single contingency under the TPL standards, the requirement is that you do not have consequential or inconsequential load loss. There is nothing there about not being able to use your long term Emergency rating on a pre-contingency basis.

Likes 0	
Dislikes 0	

Response

Don Schmit - Nebraska Public Power District - 1,3,5

Answer	No
Document Name	

Comment

The intent of the requirement as outlined in the explanation/rationale and the question is not clear from the requirement. The requirement should be clear that the RC SOL Methodology must utilize Facility Ratings that are provided by the TO and operate within those Facility Ratings. As written, it may be implied that the RC SOL Methodology may require the TOP to develop ratings that are different or use different methodologies than the TO's Facility Ratings. Recommend R2 be rewritten as: "Each Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to determine the applicable Facility Ratings **provided by the Transmission Owner** to be used in operations. The method shall address the use of common Facility Ratings between the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator Area."

Likes 0	
Dislikes 0	

Response

Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO

Answer	No
Document Name	

Comment

Facility owners should decide what kind of risk they are willing to take in operating their facilities. These assumptions are rolled in to the facility rating methodology. It is not appropriate to take this away from the facility owners.

Some RCs serve a very large geographic area with varying environmental conditions (i.e. Northern Canada vs. Southern US). These RC will have a difficult time developing uniform criteria valid for the entire region.

Likes 0	
Dislikes 0	

Response

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

AZPS does agree that the TOP should determine the appropriate Facility Ratings; however, the last sentence in the requirement is confusing. Because the RC does not derive the facility ratings, the use of the word “common” is confusing. AZPS respectfully requests that the sentence be clarified.

Likes 0	
Dislikes 0	

Response

Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE

Answer	Yes
Document Name	

Comment

Concern: The Requirement states the “…Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to determine the applicable Facility Ratings to be used in operations.” The language is broadly written to, likely, provide flexibility to the RC in creating its Methodology. However, the potential unintended effect with the RC unilaterally determining the Methodology is it may not address the materiality of Facilities, possibly requiring assessment of each Facility on the TOP’s system and creating an onerous task for TOPs executing the Methodology—all with little benefit to reliability.

For example: In R3, the TOP is required to provide a “System Voltage Limit.” For the purpose of this example, an unbound Methodology, one without a single high and low limit that is appropriate for the TOP’s System, could require calculation of System Voltage Limits for every Facility on the TOP’s System.

Also, while collaboration between the RC and TOP can be inferred, the proposed revised Standard is without explicit guidance or recourse should the TOP have concerns about the scope of the RC’s Methodology.

Suggestion: Add language to provide that the RC create its Methodology in consultation and collaboration with the TOPs. Also, that the RC and TOPs come to a consensus regarding the scope of the Methodology. We recognize, for purposes of compliance determinations, it is difficult to provide evidence supporting “consultation and collaboration” so focused the suggested Requirement language on consensus. We offer the following

Requirement and Measure language as a framework for further consideration.

FAC-011-4

R1.1

Each Reliability Coordinator shall come to a consensus through consultation and collaboration with the Transmission Operators regarding the following points of its SOL Methodology:

R1.1.1

The method Transmission Operators use to determine the applicable Facility Ratings to be used in operations and the use of common Facility Ratings between the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator Area.

R1.1.2

The method Transmission Operators use to determine the applicable steady-state System voltage limits to be used in operations.

R1.2

Each Reliability Coordinator shall come to a consensus through consultation and collaboration with the Transmission Planners regarding the following points of its SOL Methodology:

R1.2.1

The study models and the level of detail the Reliability Coordinator requires determining the stability limitations to be used in operations.

R1.2.2

How stability limitations are established when there is an impact to more than one Transmission Operator in the Reliability Coordinator Area.

Measures for R1

The Reliability Coordinator shall have evidence the Transmission Operators and Transmission Planners accepted the points of the SOL Methodology as listed in R1.

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	Yes
Document Name	

Comment

1. We agree that the TOP should make the determination, but ask the SDT to take into consideration that TOPs have existing documented processes and methodologies that would no longer apply when determining Facility Ratings for use in operations. This requirement imposes a process onto TOPs that may drastically deviate from existing practices, therefore we suggest an addition to this requirement that the RC gather and review

existing methodologies from each TOP in their reliability area and come to a mutually agreed upon methodology with the affected TOPs.

2. Also the standard should require the RC to obtain TOP agreement anytime the SOL Definition inserts the usage of “sufficient time” into the determination of an SOL Exceedance.

3. Additionally, will the RC set requirements for the TOP determine equipment ratings for set ambient temperature ranges and establishing emergency ratings on set time lengths, such as 30 minutes – or 2 hours?

Likes 0	
Dislikes 0	

Response

Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6

Answer	Yes
Document Name	

Comment

NIPSCO is concerned that the requirement does not provide adequate assurance that the RC will respect the ratings established by the TO or the TO’s FAC-008 methodology. As written, the language is vague and could be interpreted as allowing an RC to determine the ratings that a TOP must use (including normal and emergency ratings and seasonal changeover dates) without respecting the TO’s authority to establish such Facility Ratings.

Likes 0	
Dislikes 0	

Response

sean erickson - Western Area Power Administration - 1,6

Answer	Yes
Document Name	

Comment

Given FAC-014-3/R2 requires the TOP to establish SOLs, there can (and often does) exist a time lapse between a TO establishing a Facility Rating and the TOP using that Facility Rating to establish/implement the SOL. Similarly, sometimes the “schedule (per FAC-008-3/R6)” is different between RCs and TOPs, leading to different entities having different Facility Ratings information depending upon when they were informed by the TO. Suggested comment is: recommend modifying the applicability of FAC-014-3 to include Transmission Owners. Likewise, recommend adding a requirement that, when a Transmission Owner changes a Facility Rating prior to a scheduled request, the Transmission Owner shall provide the updated Facility Rating to its associated Reliability Coordinator(s), Planning Coordinator(s), Transmission Planner(s), Transmission Owner(s) and Transmission Operator(s).

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Texas RE recommends this requirement include additional details that the SOL determined by the TOP should not exceed the Facility Rating. Part 3.1 of proposed FAC-011-4 includes a requirement that “System voltage limits are not outside of the Facility voltage ratings”, but there is no requirement that SOLs should not exceed the thermal limit component of a Facility Rating.	
Likes 0	
Dislikes 0	
Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	Yes
Document Name	
Comment	
PJM agrees that the TOP is the appropriate reliability entity for Facility Rating usage in the agreed upon manner established by their RC.	
Likes 0	
Dislikes 0	
Response	

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
By definition, Facility Ratings are one factor in determining SOLs so all Facility Ratings need to be incorporated into the determination of SOLs. The requirement should be modified to “Each Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to incorporate the Facility Ratings in establishing SOLs. The method shall address the use of common Facility Ratings between the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator Area.”	
Likes 0	
Dislikes 0	
Response	

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
The word “determine” in the requirement can be confusing. The requirement could be interpreted that the Transmission Operator calculates the facility ratings. The following language may be more clear, “Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to determine **which of the owner-provided** Facility Ratings **should** be used in operations. The method shall address the use of common Facility Ratings between the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator Area.”	
Likes 0	
Dislikes 0	
Response	

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
Yes. It’s not fully clear whether this will eliminate the risks outlined above, since it seems there is still potential that the Facility Ratings provided by the TO may not provide what is required, but it will depend on what the actual RC methodology says.	
Likes 0	

Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
Note: ERCOT does not support the above comment.	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
BPA believes the TOP should follow a consistent methodology, and continue to provide the RC its application Facility Ratings used in Operations. BPA believes this benefits all TOPs.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
We agree with R2, although we are concerned that the non-uniformity of the Facility Ratings provided by the TO can add burden to the application of the method to all scenarios. Also, guidelines regarding an appropriate method would be helpful in the final version of the standard. To “address" the use of common FR does not require the common FR be used. Suggestion: “The method shall **require** the use of common Facility Ratings between the RC and the TOPs in its RC area.”	

The language can also be simplified slightly – Suggestion: "The method shall require the **same** Facility Ratings by used by the RC and the TOPs in its RC area."	
Likes 0	
Dislikes 0	
Response	
Gregory Campoli - New York Independent System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Volkmann - MISO TOP-ISO Task Team - 1,2 - MRO,SPP RE,RF	
Answer	
Document Name	
Comment	
The MISO TOP-IRO TT is only responding to Questions 1, 2 and 3	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	

5. Do you agree that the TOP should establish the System voltage limits pursuant to the RC SOL Methodology, and that the proposed Requirement R3 provides sufficient clarity for what the RC SOL Methodology must include?

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

AZPS respectfully suggests that Requirement 3.3 is troublesome because the minimum operating system voltage under multiple contingencies could be below the highest UVLS settings where the UVLS is used as a safety net. Because it is acceptable for UVLS to act and stabilize the system voltage to a more acceptable level, the "lowest allowable System voltage" could differ depending upon the system topology and characteristics in effect. Stated another way, while the intent of requirement 3.3 is reasonable for the all lines in service condition, it may not be for an N-1 or N-2 conditions.

Likes 0	
Dislikes 0	

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	No
Document Name	

Comment

See our comments to question 4 above. Duke Energy has no issue with the TOP establishing the System voltage limits or even the criteria proposed, however, we do not see justification to impose the RC's SOL Methodology onto the TOP.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

The Transmission Operator and Transmission Owner should establish voltage limits because of Facility considerations. Regarding Part 3.5, common voltage limits may not be appropriate between the Reliability Coordinator and Transmission Operators in its footprint. Voltage limits should be identified uniquely between a RC and each of its TOPs.

Likes 0	
Dislikes 0	

Response

Mark Holman - PJM Interconnection, L.L.C. - 2

Answer	No
Document Name	

Comment

PJM agrees that the TOP is the appropriate reliability entity for this determination and with the predominant sentiment of the requirement.

- However, the proposed R3 does NOT provide sufficient clarity in its present draft construct. Nor does it remain true to the intended objected stated within the SOL Definition Explanation of Proposed Revision section [above] to respect advancements in technology. R3.1 & R3.2 require that "System voltage limits are not outside" of the Facility voltage ratings or NPIR requirements. Technology advancements permit the setting of discrete limitations, including facility voltage limitations, on any bus on a given system. For facilities where no discrete facility voltage limitation is applied, the system can implicitly apply the System voltage limit on a voltage class or per unit level, which may be outside the limits for any given discrete facility ratings. Each can be analyzed, monitored and controlled reliably within OPA/RTA, without the requirement that the System voltage limit not be outside of the Facility voltage ratings and/or NPIR requirements.
- Suggested language change options:
  - (3.1) Require that Facility voltage ratings are respected by and coordinated with System voltage limits;
  - (3.2) Require that Nuclear Plant Interface Requirements are respected by and coordinated with System voltage limit

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer	No
Document Name	

Comment

Texas RE recommends the RC SOL methodology address pre-contingency and post-contingency voltage limits, with the SOL exceedance definition updated to match this terminology.

Texas RE noticed FAC-011-3 R1 is not fully mapped to FAC-011-4 Part 3.1, as Part 3.1 does not address thermal limits.

Likes 0	

Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] We believe an additional bullet (3.7) should be added that says “Address coordination of System voltage limits between adjacent Reliability Coordinator Areas.” There should be some coordination so that along RC Area seams there do not continue to be issues where differing voltage limit criteria results in real-time issues.	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	
Yes it provides clarity but Requirement 3.5 should be handled via a revision of FAC-008.	
Likes 0	
Dislikes 0	
Response	
Diana McMahon - Salt River Project - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
As mentioned in the response to question 1 above, while this document states that FAC-008-3 should include facility voltage ratings, that is not something that we have seen TOs do in practice. If the intention is that they are required, then it needs to be clarified and communicated somehow. If these facility voltage rating exist, why can they not be used directly instead of requiring the TOP to develop separate system voltage limits? Lack of voltage monitoring? Are there voltage considerations that the TOP would have that wouldn't be covered under a rating (and wouldn't be covered under voltage stability limits)?	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
Requirement text should be modified to "Each Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to incorporate the steady-state System voltage limits in operations establishing SOLs. We agree that TOP should establish the system voltage limits pursuant to RC SOL methodology however there seems to be redundancy between this requirement and existing VAR-001-4 R1. The intent of VAR-001-4 R1 is for TOP to system establish voltage schedules which may use low and high limits in accordance with SOLs. If FAC-011-4 R3 will require establishment of system voltage limits then the VAR-001-4 R1 should be removed as it creates duplicate requirement. R3.2 should be modified to state 'Require that System voltage limits are not outside of voltage limits identified in Nuclear Plant Interface Requirements for buses/equipment identified in NPOA'.	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	

Comment	
In regards to System Voltage.	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
We believe an additional bullet (3.7) should be added that says “Address coordination of System voltage limits between adjacent Reliability Coordinator Areas.” There should be some coordination so that along RC Area seams there do not continue to be issues where differing voltage limit criteria results in real-time issues.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
NIPSCO is concerned that the requirement does not provide adequate assurance that the RC will respect the Facility voltage ratings established by the TO or the TO’s FAC-008 methodology. As written, the language is vague and appears to allow the RC to determine the voltage ratings that a TOP must use.	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	

Comment
1. We agree that the TOP should make the determination, but ask the SDT to take into consideration that TOPs have existing documented processes and methodologies specific to their needs that would no longer apply when establishing System voltage limits for use in operations. This requirement imposes a process onto TOPs that may drastically deviate from existing practices, therefore we suggest an addition to this requirement that the RC gather and review existing methodologies from each TOP in their reliability area and come to a mutually agreed upon methodology with the affected TOPs. 2. To avoid issues where differing voltage limit criteria result in Real-time issues, we believe an additional bullet (3.7) should be added that says "Address coordination of System voltage limits between adjacent Reliability Coordinator Areas" to allow for coordination along RC Area seams.

Likes 0	
Dislikes 0	

Response

Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE	
Answer	Yes
Document Name	

Comment
We incorporate our response to Question 4.

Likes 0	
Dislikes 0	

Response

Gregory Campoli - New York Independent System Operator - 2	
Answer	Yes
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	

We agree with the intent of R3, but the sub-bullets are a burden to compliance with no benefit to reliability. They tell the “how” more than the “what” and should be part of the guidelines to the requirements. Why is R3 so detailed regarding the content of the method compared to R2? More uniformity of structure between R2, R3 and R4 would be beneficial. More precisely, we think that 3.4 is redundant with the body of the requirement and not needed, and 3.3 addresses the allowed use of UVLS in SOL determination that should be a separate requirement (combined with allowed use of RAS in R4). Alternately, if 3.3 is maintained, it should take into consideration voltage triggered RAS.

3.5 should be reworded in line with our suggestion for R2. Require the “same” System voltage limits be used by the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator instead of "common".

Likes 0	
Dislikes 0	
Response	

Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	

With regard to proposed requirement R3.1, equipment/facility voltage ratings come from Transmission Owner and Generation Owner. While the establishment of equipment/facility voltage ratings may be implied through the NERC definition of Facility Ratings, there is no direct requirement in FAC-008-3 for TOs and GOs to determine equipment/facility voltage ratings. There may be value in having a corresponding requirement added to FAC-008-3 requiring TOs and GOs to determine equipment/facility voltage ratings and to communicate those upon request. This would close the loop, allowing TOPs to have access to the equipment/Facility voltage ratings they need in order to establish system voltage limits. The SDT might also consider adding “equipment voltage ratings” to proposed requirement R3.1.

Likes 0	
Dislikes 0	
Response	

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Bilke - Midcontinent ISO, Inc. - 2	
Answer	
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	

6. Is it clear what System voltage limits are? Does a definition for "System Voltage Limits" need to be created? A draft definition under consideration by the SDT is "System Voltage Limits: The maximum and minimum steady-state voltages (both Normal and Emergency) that provide for reliable system operations." Please provide your perspective on whether, currently, it is clear what is meant by System voltage limits, and if not, what you believe to be the appropriate definition.

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company

Answer	No
Document Name	

Comment

Yes it is clear; however, we do not feel a definition of System Voltage Limits should be created.

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	No
Document Name	

Comment

1. It is not clear if a TOP would be required to provide a "System Voltage Limit" for EACH Facility on its system, or if a single high and low limit that is appropriate for its system should be provided.

2. The System Voltage Level in the definition should refer to steady state condition to avoid nuisance SOL Exceedances. In addition SOL Exceedance definition should have a time frame to allow System Operator action to return voltage within the normal range, such as reactive device switching, generator voltage schedules. IROL Exceedance has a time frame to allow System operator action, so should SOL Exceedances.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

It is not clear if a TOP would be required to provide a "System Voltage Limit" for EACH Facility on its system, or if a single high and low limit that is

appropriate for its system should be provided.

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

It is not clear what system voltage limits are without a definition. Using another term in place of system voltage limit like “allowable voltage range” may help clarify.

Likes 0	
Dislikes 0	

Response

sean erickson - Western Area Power Administration - 1,6

Answer	No
Document Name	

Comment

Please develop language clarifying System Voltage from a Single Bus Voltage.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] It is not clear if a TOP would be required to provide a “System Voltage Limit” for EACH Facility on its system, or if a single high and low limit that is appropriate for its system should be provided.

Likes 0	
Dislikes 0	

Response

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF

Answer	No
Document Name	

Comment

The System Voltage Level in the definition should refer to steady state condition to avoid nuisance SOL Exceedances. In addition SOL Exceedance definition should have a time frame to allow System Operator action to return voltage within the normal range, such as reactive device switching, generator voltage schedules. IROL Exceedance has a time frame to allow System operator action, so should SOL Exceedances.

It is not clear what System voltage limits are. For example, system voltage schedules are required per VAR-001-4 R1. Is a system voltage schedule a System voltage limit? System Voltage Limit should be defined and the term system voltage schedule should no longer be used to avoid redundancy as having both creates confusion.

The proposed draft definition of system voltage limits should not use terms maximum and minimum and normal and emergency. The definition should define these as System Operating Limits that that provide for reliable system operations. Using the terms maximum/minimum and normal/emergency may make it prescriptive as TOP can determine these limits based on SOL methodology specified by RC and voltage ratings determined by TO.

- *Actual or pre-Contingency bus voltage is outside normal System voltage limits;*

Likes 0	
Dislikes 0	

Response

Andrew Pusztai - American Transmission Company, LLC - 1

Answer	No
Document Name	

Comment

Although a System Voltage Limits definition is needed, the proposed definition, as found in the question, ignores that the acceptable voltage levels can vary according to the duration of the voltage excursion. The drafting team would review the recently released NERC draft Reliability Guidelines for Reactive Power Planning and Operations and its explanation of the need to permit something other than static voltage limits from the planning horizon into the operating horizon (i.e. note pages 24-25 of the document found here http://www.nerc.com/comm/PC/Documents/Reliability%20Guideline%20-%20Reactive%20Power%20Planning%20and%20Operations.pdf).

Likes 0	
Dislikes 0	

Response

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
It would be helpful to define the “System Voltage Limits” so that it is clear that the system voltage limit is not one value, but could be different values at each bus.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	No
Document Name	
Comment	
A definition for System Voltage Limits would be beneficial. There seems to be some confusion if system voltage limits are system-wide voltage limits or if each facility can have different voltage limits similar to System Operating Limits. Also FAC-008 does not seem to mention voltage limits. Where is the requirement for the facility owners to provide facility voltage ratings to be used in the calculation of System Voltage Limits?	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	No
Document Name	
Comment	
It would be helpful to have a definition for System Voltage Limits. In addition to the definition considered above, it may be useful to add that the system voltage limits, “and is within applicable facility voltage ratings”.	
Likes 0	
Dislikes 0	

Response	
Diana McMahon - Salt River Project - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Gregory Campoli - New York Independent System Operator - 2	
Answer	Yes
Document Name	
Comment	
I would like to suggest that System Operating Limits are determined by factility voltage ratings that are processed through the OPA/RTA.	
Likes 0	
Dislikes 0	
Response	
Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE	
Answer	Yes
Document Name	
Comment	
We support a new System Voltage Limits definition. Definitions clarify compliance determinations and entities' implementation of Standards.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	

Answer	Yes
Document Name	
Comment	
NIPSCO does note that like ATC believes that the definition of system voltage limits does need to allow for differing time components that may be associated with short term or dynamic ratings.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
System voltage limits does not require a definition in the NERC glossary. Most users, owners, and operators of the BPS are familiar with the term and the proposed definition is not necessary.	
Likes 0	
Dislikes 0	
Response	
Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy	
Answer	Yes
Document Name	
Comment	
Duke Energy believes that it is clear what System voltage limits are. However, if the SDT chooses to pursue an industry wide definition, we would support the definition proposed in question 6.	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	

Answer	Yes
Document Name	
Comment	
New definition for “System Voltage Limits” is not required.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
It is clear what System voltage limits are - and to the extent it is not, this clarity must be covered within the RC's SOL Methodology. There is no need to create a NERC Glossary definition for this.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
We interpret System voltage limits to mean voltages on the system or specific buses. We do not believe a definition is needed. However, if one is needed, then the one proposed above seems reasonable. Still, that definition does not imply that System voltage limits are SOLs. **Note that the proposed definition of System voltage limits more or less concurs with our comment under Q1 that System voltage limits may not be the SOL. There are a number of places in the Eastern Interconnection that have SOL defined as the total MW flow on an interface (e.g. in IESO, NYISO, APS, etc.) that are restricted by the post-contingency voltage levels in the area (on buses) near or within the defined interfaces.** **We suggest the SDT consider distinguishing between a voltage limit and a voltage rating. Where the rating is set to protect equipment**	

damage or the ability for equipment to operate and the voltage limit is a value to operate to, to protect the voltage ratings. **Note: ERCOT does not support the above comment.**	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Yes, BPA has a clear understanding of System voltage limits. BPA supports the SDT's draft definition of "System Voltage Limits", as it would be valuable to the industry.	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Peak supports the proposed definition and believes it is a good idea to create a definition for system voltage limits. Doing so will bring more clarity.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	

We think that the proposed definition is useful and a useful addition to the SOL related standards. Again, guidelines on the determination of those limits with regards to the applicable requirements would be helpful.	
Likes 0	
Dislikes 0	
Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE does not agree with the proposed definition of “System Voltage Limits”, as the term emergency voltage limits is not clear. Texas RE recommends modifying the definition and using the terms pre-contingency and post-contingency in place of Normal and Emergency.	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	

Answer	
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	

7. Do you agree that the proposed use of the word stability "limitations" is a better choice than "limit" to capture the full breadth of all phenomena and determination methods/time frames for stability concerns?

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	No
Document Name	

Comment

Duke Energy disagrees that the use of the term "limitations" is a better choice than "limit". The term "limit" is already widely used and accepted throughout the industry. Replacing it with a term unfamiliar to the industry without clearly stated justification, would be confusing to some in the industry.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Limitation is defined as "the act of limiting or the state of being limited, a restriction". A limit is a "boundary, something that confines or restricts". Requirement R4 addresses Contingencies which are better described by "limit".

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

As noted in Q1 there seems to be confusion between the words "limitation" and "criterion" which is evident in 4.2. There needs to be clarity.

Likes 0	
Dislikes 0	

Response	
Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE	
Answer	No
Document Name	
Comment	
As previously noted, “Stability” and “Stability Limit” are NERC Glossary Terms and it is unclear if the intent is to incorporate the words as Glossary Terms. Also, “Stability Limit” does not necessarily define “stability limitations,” so there is the potential for confusion. Additionally, we agree that “limit” does not capture the system’s phenomena.. **Suggestion**: Use “limits,” the plural form to capture the system’s phenomena.	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
No Comment	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
As stated in comments for requirements above the text of this requirement should be changed to “Each Reliability Coordinator shall include in its SOL Methodology the method for incorporating stability limitations in establishing SOLs.	
Likes 0	

Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
1. This requirement does not state that the TOP would determine the minimum stability limitations, based on the RC's methodology. This needs to be revised to similar wording in Requirement R2 and R3. 2. We agree that the TOP should make the determination, but ask the SDT to take into consideration that TOPs have existing documented processes and methodologies specific to their needs that would no longer apply when establishing stability limitations for use in operations. This requirement imposes a process onto TOPs that may drastically deviate from existing practices, therefore, we suggest an addition to this requirement that the RC gather and review existing methodologies from each TOP in their reliability area and come to a mutually agreed upon methodology with the affected TOPs.	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
The SDT might consider using "Stability Limits" in the revised SOL definition and then revising the definition of Stability Limits in the NERC glossary so	

that it goes well with this definition of SOL. The stability limitations language in the current definition can work but it may lead to some confusion.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Gregory Campoli - New York Independent System Operator - 2	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	

Document Name	
Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	

8. With regard to proposed Part 4.1: Do you agree that the RC SOL Methodology should have criteria that consider *all* items in Parts 4.1.1 – 4.1.4? Are there additional criteria that should be included? If yes, please list and explain. Are there criteria that are included, that you believe should *not* be included?

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

Yes, all of the criteria should be included. No, additional items are needed.

Likes 0	
Dislikes 0	

Response

sean erickson - Western Area Power Administration - 1,6

Answer	No
Document Name	

Comment

On a case by Case basis: In the Operations Horizon and specifically OPA/RTA time frames, angular, frequency deviation (not listed), and system damping thresholds should not be considered.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] There are too many questions here to answer. We wish to answer Yes that all items in 4.1.1 – 4.1.4 should be included and also wish to say No there are no additional criteria that should be included.

Likes 0	
Dislikes 0	

Response
Diana McMahon - Salt River Project - 1,3,5,6 - WECC
Answer	No
Document Name	
Comment
Transient studies should be performed "offline"
Likes 0	
Dislikes 0	
Response
Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy
Answer	No
Document Name	
Comment
This requirement is too long, and too prescriptive to be in the standard. We recommend removing the criteria from the requirement. We suggest stating the requirement, and then state directly that a TOP must determine an SOL consistent with the requirement. It is unproductive to be this prescriptive in a requirement, and require an RC to have an SOL Methodology. An RC would be able to just copy what is in the requirement, and place in its methodology. There is no need for a methodology when the requirement is this prescriptive. We do not disagree with the content of the criteria, just that it is placed in the requirement.
Likes 0	
Dislikes 0	
Response
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3
Answer	No
Document Name	
Comment
The SOL Methodology for determining the stability limitations to be used in operations shall be primarily based on 0ff-line studies with an exception of limited number of facilities that are of critical importance for reliability of BES where on-line stability tools have to be used. This has to be clearly stated due to limited availability of high quality on-line stability tools and applications and their challenging robustness and accuracy.
Likes 0	

Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
No other criteria are needed.	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
We agree, and do not believe there should be any additional criteria included.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
No additional criteria are neccesary. No criteria are included that should not be.	
Likes 0	
Dislikes 0	
Response	

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
Each RC area should have a criterion for each stability item identified in Parts 4.1.1-4.1.4. However for any particular TOP or RC area of the BES a particular criterion may at the present time have little bearing on determining SOLs. Over time, this may change and therefore the need for a review and criteria is important. However, coordination should be considered with the requirements of TPL-001-4. Having significantly different criteria between the RC and the PC's within an RC's area could become problematic if issues are "missed" in the planning assessments due to the differences in criteria.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Yes, it should include all of the defined criteria.	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Yes, the RC methodology should have criteria that consider all the items. There are no additional criteria that should be included. There are no criteria listed that should be excluded.	
Likes 0	
Dislikes 0	

Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Stability criteria in Parts 4.1.1 - 4.1.4 are adequate - no additions or deletions recommended.	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
What is the difference between a voltage limit and a steady state voltage stability limit?	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
BPA supports the proposed revisions and believes specifying a regional performance criteria is a great addition.	
Likes 0	
Dislikes 0	
Response	

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
We agree with the proposed criteria, but would all RCs be automatically obligated to define criteria for all the 4.1 sub-bullets? What if angular stability is not relevant in a particular RC area? TPL-001-4 R6 should be revised to include all these elements.	
Likes 0	
Dislikes 0	
Response	
Gregory Campoli - New York Independent System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	

Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	
Document Name	
Comment	
Yes, for the first question and no for the second and third questions.	
Likes 0	
Dislikes 0	
Response	

9. With regard to proposed Part 4.2: Do you agree that the RC SOL Methodology should consider the contingencies listed in Parts 4.2.1 and 4.2.2? Are there additional Contingencies that should be included? If yes, please list and explain. Are there Contingencies that are included, but you believe should *not* be included?

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

Requirement 4.2.1 contains the phrase “or without a fault.” Because the “with” fault condition is more severe, if performance is acceptable with the fault condition, it would be acceptable without the fault also. For this reason, AZPS recommends that this phrase be removed. If the SDT disagrees, AZPS requests that it provide an explanation or example of why the no fault case is needed. It should also be made clear that stability studies are not expected in real time (using RTCA for example).

Likes 0	
Dislikes 0	

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	No
Document Name	

Comment

See our comment to question 8 above. We do not disagree with the content of the criteria, just that it is placed in the requirement in this manner.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Sub-Part 4.2.1 should read “…by single phase Fault to ground, or three phase Fault with normal clearing…”.

To include all Elements that could affect stability, suggest revising sub-Part 4.2.1 to read in its entirety:

4.2.1 With normal clearing, with or without a Fault, the loss of any System Element.

This encompasses all faults.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] There are too many questions here to answer. We wish to answer Yes that all items in 4.2.1 – 4.1.2 should be included and also wish to say No there are no additional criteria that should be included.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

Yes, all of the criteria should be included. No, additional items are needed.

Likes 0	
Dislikes 0	

Response

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company

Answer	No

Document Name	
Comment	
Yes on Part 4.2.1. No on Part 4.2.2.	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	No
Document Name	
Comment	
Does R4.2 mean that every possible event that meets the criteria be simulated to find limitations? Or is the intent to allow the RC and/or TOP to select the events most likely to be cause a severe event and test those? The requirement should be written to clarify that either way since the current writing would allow for either interpretation.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Contingencies listed in Parts 4.2.1 and 4.2.2 are adequate - no additions or deletions recommended.	
Likes 0	
Dislikes 0	
Response	

Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	

The standard should explain what it means by “or” for single phase versus three phase faults. This is important because the system is often operated beyond how the system is evaluated in the planning horizon. Specifically, the TPL standards only require the system to be studied for single line to ground faults with a failure of a protection system. However, when a protection system is removed from service in the operating horizon, which is required to perform maintenance, any operating horizon requirement to examine three phase faults puts the TOP in a condition beyond what the TP has designed the system for. By using “or” between single phase and three phase, or by adding words like, “whichever is more severe”, the TOP will likely be forced to study a three phase fault for this short duration operating scenario, regardless of the very low probability of a three phase fault occurring while the protection system is out of service for maintenance. Suggested wording: “Loss of one of the following by three phase Fault for Normal Clearing scenarios, single phase Fault for delayed clearing scenarios, or without a Fault.”

Additionally, The single block DC should also clarify it means a single faulted pole as three phase fault for a DC circuit is undefined and could be ambiguous.

Likes 0	
Dislikes 0	
Response	

Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	

Yes, it should include all of the defined contingencies.

Likes 0	
Dislikes 0	
Response	

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	

Concerned with the premise identified in R5 that the RC may identify a methodology beyond that studied and documented by the Transmission Planner as required in TPL-001-4. Both the RC and the Transmission Planners should have a mutual understanding of the stability issues of the system and

how these could impact an SOL. This should be discovered through the review of a planning assessments required to be performed in TPL-001-4, not an SOL methodology.	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
We suggest removing “loss of any” as the terms “loss” and “contingency” are redundant.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
No additional contingencies are neccesary. No contingencies are included that should not be.	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
We agree, and do not believe any additional contingencies should be included.	

Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
We agree with the listed contingencies as the minimum to be considered for SOL evaluation, but it is not clear why they are listed in R4 and applicable only to stability related SOLs. What about Facility Ratings and System Voltage limits? What contingencies need to be used for “Calculated post-Contingency flow on a Facility is above the highest Emergency Rating”? In TPL-001-4, “Applicable Facility Ratings shall not be exceeded” for the contingencies listed in the tables: the same approach should apply here. We suggest removing the contingencies from R4 and providing a table, perhaps as an attachment that would be used for defining the single Contingencies relevant for this standard. 4.2.2 needs to be reworded : “Multiple Contingencies identified in Requirement R5.” Delete “loss of any”.	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
BPA supports the criteria.	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Gregory Campoli - New York Independent System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	

Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	
Document Name	
Comment	
Yes for the first question and no for the second and third questions.	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	
Document Name	
Comment	
Contingencies identified are adequate.	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	

Likes 0	
Dislikes 0	
Response	

10. With regard to proposed Part 4.3: When instability risks are identified, there are various studies or assessments that analyze different transfer levels, load levels and generation dispatch combinations. The intent of Part 4.3 is to ensure that the RC SOL Methodology adequately describes how these various factors are considered in the identification of instability risks. In the identification of stability risks, the RC SOL Methodology should consider the levels of transfers, load and generation dispatch. Should the RC SOL Methodology include a description of any additional types of information?

a. Should proposed Part 4.3 specifically include "offline analyses"?

b. Should proposed Part 4.3 include forced Transmission and generation outages (*i.e.*, N-1-1)?

c. Should proposed Part 4.3 include planned outages (*i.e.*, all planned outages in the base case)?

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company

Answer	No
Document Name	

Comment

a-yes

b-no

c-yes

Likes 0	
Dislikes 0	

Response

Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

A. Yes. NIPSCO believes "offline analyses" should be included.

B-C. NIPSCO believes that specifying N-1-1 or planned outages reduces the flexibility that the SDT is trying to preserve for the RC.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	
Comment	
Yes there should be more discussion of any intended requirements regarding “online vs offline” stability analysis.	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	No
Document Name	
Comment	
We believe Part 4.3 as presented is sufficient. There is no need to indicate “offline analyses” since whether the SOL is determined through on-line or off-line studies is irrelevant. Further, whether or not SOLs need to be developed for outage conditions or their development considers planned or forced outages is a matter of what SOLs are needed for the anticipated or encountered conditions, not a part of methodology to be documented.	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	No
Document Name	
Comment	
4.3 is Administrative in nature and open to Auditor interpretation and as such needs to be rewritten. Moving forward it would be expected that Stability studies should be assessed in the Outage Coordination (IRO-017) time frame – for those entities without Real Time Stability Tools - and per engineering judgement Parts a, b, and c can be addressed in that venue and do not need to be stated explicitly here.	
Likes 0	
Dislikes 0	
Response	

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] 4 questions here....Yes there should be more discussion of any intended requirements regarding “online vs offline” stability analysis.	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	No
Document Name	
Comment	
The type of stability studies, online verses offline, should be left to the individual TOP or TP. As for Parts b and c, these are studied as part of TOP-002. This work would include voltage schedule, unit output, and other adjustments as typically considered when performing stability analysis. If anything, a reference only to the already required studies might be appropriate.	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Part 4.3 is not required. The information being asked for can be gleaned from the preceding Parts. “How” should not be in a requirement.	
Likes 0	
Dislikes 0	
Response	

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy	
Answer	No
Document Name	
Comment	
Duke Energy does not believe that these items should be included in an SOL Methodology. Perhaps planned outages may be appropriate, but disagree with the addition of “offline analyses” and N-1-1. Also, as written, it is not clear how section 4.4 in the proposed FAC-011 will adequately synch up with what is required in FAC-014. Each RC or TOP must consider what limitations a Planning Coordinator provides in its planning assessments, but it is not clear on what information is supposed to be conveyed, and how it should be applied.	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	No
Document Name	
Comment	
The standard should avoid being overly prescriptive. The RC should determine for itself what forced outages should be included. The RC should determine for itself what planned outages should be included.	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Proposed 4.3 is sufficient	

Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
To retain its flexibility the RC Methodology should not require any additional items.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	No
Document Name	
Comment	
The descriptions of additional types of information in a, b, and c are not needed. 4.1 already requires stability performance criteria for single contingency and multiple contingencies. The additional language in a, b, and c, may limit TOP and RC flexibility in developing their processes for identifying instability risks.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	
Comment	
We believe Part 4.3 as presented is sufficient. There is no need to indicate “offline analyses” or “forced or planed outages” since whether the SOL is determined on or off-line is irrelevant for. Further, whether or not SOLs need to be developed for outage conditions or their development considers planned or forced outages is a matter of what SOLs are needed for the anticipated or encountered conditions, not a	

part of methodology to be documented.

Note: ERCOT does not support the above comment.

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	

Comment

We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Aaron Staley - Orlando Utilities Commission - 1 - FRCC

Answer	No
Document Name	

Comment

I also comment some in question 11.

I suggest being a little more detailed in what the RC should provide.. IE

-If simulating a specific time then outages planned for that time

- If simulating a generic time (Summer Peak) then room for the RC to specify that certain N-1-1 or G-1+N-1 combinations are run, but not require a brute force running of all N-1-1. Alternatively, criteria that the RC sets and then the TOP determines what N-1-1 to test. For example, the RC could require that the TOP select their most limiting events and run them in N-1-1 configuration with each other.

4.3 should specify that it requires offline studies but does not precluding the use of real time simulation.

Likes 0	
Dislikes 0	

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
BPA believes bullet 'a' is not needed as long as there is flexibility between on and offline analyses. Bullet 'b' should be included. However, there needs to be more description of what a forced outage is. Bullet 'c' should be included.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	
Comment	
We think that "the levels of transfers, load and generation dispatch" is general to SOLs and should be applicable outside of R4, not only for stability limitations (e.g. offline load flow study that is used to identify System Voltage limits violations). The planned or forced outages to consider in the studies should be defined by the RC Methodology according to "expected" or "credible" operating conditions.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	
We agree that the Part 4.3 should specifically include the term "offline analyses". We do not agree that the Part 4.3 should include N-1-1 outages, as that may contradict the underlying strength of the transmission infrastructure during the planning phase and consequently may flag issues in operations that may not be solvable. We do agree with including known planned outages in the base case for studies being performed well in advance and for sensitivity studies. However, we do not agree to (possibly unintended) expectation that stability studies have to be re-run for each planned outage.	

Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
1. Regarding item ‘a.’ – Yes, there should be more discussion of any intended requirements regarding “online vs offline” stability analysis. 2. Regarding item ‘b.’ – No, forced Transmission and generation outage information isn’t necessary. 3. Regarding item ‘c.’ – Yes, planned outage information should be included.	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
If the RC and TOPs are dependent on an OPA and RTA to identify stability limitations, Texas RE recommends all outages be considered in these assessments. If the SOL definition is modified to remove the “specified system configuration”, it is important that the Standard specifies that stability limits and IROLs be determined with all known outages applied.	

Likes 0	
Dislikes 0	

Response

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE

Answer	Yes
Document Name	

Comment

We support using the qualifier "realistic" in Part 4.3.

Specifying "off-line analyses" is not necessary since, as currently worded, Part 4.3 seems to allow use of both on-line and/or off-line analyses.

All credible contingencies to consider must be addressed in R5 - do not muddy the water by specifying contingencies in Part 4.3. Wouldn't all planned outages already be included in the day-ahead or hour-ahead operations base case? We do not see the need for planned outages to be specifically mentioned in Part 4.3.

Likes 0	
Dislikes 0	

Response

Tammy Porter - Oncor Electric Delivery - 1 - Texas RE

Answer	Yes
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body

Answer	
Document Name	

Comment

We would like to change our vote to NO at this time but edit mode does not allow me to since I already submitted once.

Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	
Document Name	
Comment	
Something to consider for FAC-011-3 R4 is for the RC to identify the criteria that will qualify a stability limitation to be considered an IROL. In other words, RC should specify a clear criteria as to when a stability limitation becomes an IROL. Regarding N-1-1 forced outage operations, it might be a good idea for there to be a requirement in FAC-011 for the RC's SOL Methodology to specifically address SOL/IROL establishment for N-1-1 scenarios, where the first N-1 is either a planned outage or a forced outage. No need for offline analysis to be addressed in FAC-011.	
Likes 0	
Dislikes 0	
Response	

11. With regard to proposed Part 4.3: The SDT used the term “realistic” as opposed to “expected” in order to perform sufficient assessment to identify potential stability risks. The SDT takes that position that “unrealistic” stressing scenarios may be more of an academic exercise to “break the system” and may not translate to actual operations preparedness. Is “realistic” transfer, Load and generation dispatch levels an adequate description or should more clarifying language be added, such as a reference to firm and non-firm transfers?

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	No
Document Name	

Comment

We disagree with the use of the term “realistic” as opposed to using the term “expected”. We see no justification to change an already familiar and understood term by the industry.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Part 4.3 is not required. The information being asked for can be gleaned from the preceding Parts. “How” should not be in a requirement.

Likes 0	
Dislikes 0	

Response

Mark Holman - PJM Interconnection, L.L.C. - 2

Answer	No
Document Name	

Comment

PJM believes additional clarifying language is needed. Suggest the following language which is taken from the Explanation of Proposed Revision for R4.3:
(4.3) Describe how instability risks are identified, considering realistic levels of transfers, Load and generation dispatch as anticipated within the operations time horizon;

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

We do not agree with the use of “realistic” in place of “expected”. As a general practice, personnel conducting SOL calculations would usually assume anticipated system conditions for the period that the SOL would apply. Every assumed condition is “anticipated” or “expected” based on the information available at the time of SOL calculation. If the intent is to assess potential risk if the anticipated or expected conditions do not materialize, then a more appropriate stipulation could be: “a range of expected….”. Keeping it simple with “expected” will achieve the intent of calculating SOL that is valid for the expected conditions. To force an entity to re-calculate the SOL, an additional requirement could be to stipulate that the methodology presents the conditions under which the SOLs are valid. This is in fact a general practice for most entities that currently calculate SOLs.

Likes 0	
Dislikes 0	

Response

Douglas Webb - Great Plains Energy - Kansas City Power and Light Co. - 1,3,5,6 - SPP RE

Answer	No
Document Name	

Comment

Concern: The term “realistic” is vague and not measurable. We agree “…that “unrealistic” stressing scenarios may be more of an academic exercise to “break the system” and may not translate to actual operations preparedness.”

Suggestion: We offer the following revisions for consideration.

Describe how instability risks are identified, considering **historical and future loadings** of transfers, Load and generation dispatch.

Likes 0	
Dislikes 0	

Response

Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	No
Document Name	

Comment

Overall I really like the intent of the requirement.

I read Realistic as "Expected". Now that I've read this and think about that was my mistake, however I won't be the only one to not think deep enough into what I'm reading. So I believe a little more clarification would help even if it's in technical supporting material like the TOP standards used.

If the intent is to require the RC to look at more than expected, then a little more language is probably called for.

For example, specify that not just expected but also realistic stressed condition such as different load levels, transfer conditions, typical nonfirm, typical (but not expected) generation patterns, etc should be run. (It could also be lower load or lower transfer). It should also allow the RC room to specify unrealistic conditions if they want, if someone is willing to undertake the exercise we should not preclude them if they find value in it. The requirement could follow the TPL 001-4 model of requiring that the RC select one or more sensitivities "expected to stress the system" be run in addition to the base expected conditions.

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	

Comment

We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee

Answer	No
Document Name	

Comment

We do not agree with the use of "realistic' in place of "expected". As a general practice, personnel conducting SOL calculation would usually assumes anticipated system conditions for the period that the SOL would apply. Every assumed condition is "anticipated" or "expected"

based on the information available at the time of SOL calculation, hence nothing is "realistic" until real-time. If the intent is to assess potential risk if the anticipated or expected conditions do not materialize, then a more appropriate stipulation could be: "a range of expected….". Even with that, it will become an argument when it comes compliance audit time whether or not the responsible entity looks and if not, why not. Keeping it simple with "expected" will achieve the intent of calculating SOL that is valid for the expected conditions.

Likes 0	
Dislikes 0	

Response

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body

Answer	Yes
Document Name	

Comment

SMEs would like to Change to NO.

Wording should be changed to read: *Describe how instability risks are identified,* ***considering realistic maximum and minimum*** *levels of* ***expected*** *transfers, Load and generation dispatch*

Likes 0	
Dislikes 0	

Response

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE

Answer	Yes
Document Name	

Comment

We support using the qualifier "realistic" in Part 4.3.

Likes 0	
Dislikes 0	

Response

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer	Yes
Document Name	

Comment	
A lot more transfer impacts fall within the “loop flow” category and therefore by stating “realistic transfers”, it is all encompassing. By including a reference to firm and non-firm transfers, entities may only include transmission service that they have sold and not all transfer impacts on their system.	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
The term realistic is sufficient	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Recommend that “severe but credible” is another alternative to “expected”.	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] The use of the word ‘realistic’ should be sufficient.

Likes 0	
Dislikes 0	

Response

sean erickson - Western Area Power Administration - 1,6

Answer	Yes
Document Name	

Comment

WAPA agrees with the intent and suggests more clarification should be added in the RC’s Methodology and Outage Coordination documentation, i.e. The terms: “realistic levels of transfers”, “consider”, and “unacceptable quantity” are subject to interpretation.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	Yes
Document Name	

Comment

The use of the word ‘realistic’ should be sufficient.

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	Yes
Document Name	

Comment

The use of the word ‘realistic’ seems appropriate.

Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
The term "realistic" is sufficient.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
Realistic is better than "expected". “Credible” would also be appropriate and is used in other standards.	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
BPA agrees with the term “realistic”. We do not feel additional language is needed.	
Likes 0	
Dislikes 0	

Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
The term “Realistic” is too vague, and may allow entities to apply a single scenario to all of its assessments. Texas RE recommends using the term “Anticipated” as it implies that the entity will apply forecasted conditions to its assessments. In this scenario, “Anticipated” is stronger language and would require entities to apply current conditions to its assessments.	
Likes 0	
Dislikes 0	
Response	

12. With regard to proposed Part 4.5: Current FAC-011-3 Part 3.1 requires that the study models include the entire RC Area. However, the SDT believes that it is not necessary for reliability that the entire RC Area is studied; instead, the area modeled may vary depending upon the facts and circumstances of the particular footprint or electrical area. Should Part 4.5 require the anything different for description of the study model used? If so, what should else be included and why?

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

We believe not specifying the "entire RC Area" does not leave any reliability gap since a responsible entity needs to consider the reliability impact on its own and adjacent area when it determines the SOLs.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Part 4.5 is not required. The information being asked for can be gleaned from the preceding Parts. "How" should not be in a requirement.

Likes 0	
Dislikes 0	

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	No
Document Name	

Comment

Duke Energy agrees with the SDT that it is not necessary for reliability that the entire RC Area is studied. We recognize the flexibility that would be provided allowing an entity may choose to model a smaller area, or model the entire RC Area if necessary.

Likes 0	

Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Current description is sufficient. Manitoba Hydro agree that it is not necessary for reliability that the entire RC Area is studied; instead, the area modeled may vary depending upon the facts and circumstances of the particular footprint or electrical area	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
Part 4.5 is adequate as currently worded.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	
Comment	
We believe not specifying the “entire RC Area” does not leave any reliability gap since a responsible entity needs to consider the reliability impact on its own and adjacent area when it determines the SOLs. **Note: ERCOT does not support the above comment**	

Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	No
Document Name	
Comment	
FAC-011 should not require that the study models used for SOL establishment include the entire RC Area.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	
Comment	
The proposed 4.5 is appropriate regarding the study model description, but the allowed use of RAS should be in a separate requirement (see next question) and the study model is relevant to all SOLs, not just stability.	
Likes 0	
Dislikes 0	

Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	No
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
1. We request that the team review the inclusion of non-BES data and Facilities as is currently being included in a revision to TOP-001 (Project 2016-01). The RC should address whether or not those facilities may be required to be included in the model also, as determined by the TOP.	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
We request that the team review the inclusion of non-BES data and Facilities as is currently being included in a revision to TOP-001 (Project 2016-01). The RC should address whether or not those facilities may be required to be included in the model also.	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
The entire RC Area should be Studied and Stable and the question (not the Standard) implies that RC does not have to study its entire Area which is incorrect. As the Standard is written WAPA agrees that a finer detailed study would be more applicable as the conditions arise.	
Likes 0	
Dislikes 0	

Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] We request that the team review the inclusion of non-BES data and Facilities as is currently being included in a revision to TOP-001 (Project 2016-01). The RC should address whether or not those facilities may be required to be included in the model also.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
'realistic' is an adequate descriptor.	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
AZPS recommends that the requirement 4.5 be deleted entirely or defer responsibility for the study model details to the TOP.	
Likes 0	
Dislikes 0	
Response	

Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	

I think 4.5 is almost perfect. I do wonder if RAS should get a little more description on what you mean. For example is the intent to allow the RC to decide if the SOL limit should be set to avoid RAS triggering or allowing for RAS triggering? If so maybe that should be a little more descriptive.

There is too much diversity among the RC systems to be specific in what the model should include. In some cases, it might even make sense for an RC to have multiple smaller models that give them a better range of results for the same investment then a single large model would. As written 4.5 allows that and the measure should be written accordingly.

Likes 0	
Dislikes 0	
Response	

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	

Texas RE does not agree that the entire RC Area should not be studied. Study models should include the entire RC Area in order to determine the consequences of any actions that may be taken to mitigate instability issues.

Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	
Document Name	
Comment	
NO!	
Likes 0	
Dislikes 0	
Response	

13. With regard to proposed Part 4.5: The requirement specifically identifies Remedial Action Schemes (RAS), however other protective schemes (such as UVLS and UFLS) and their impact on stability performance were not included. Should the requirement specifically identify other types of protective schemes? If yes, please describe why.

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Use of UVLS and other scheme should be allowed for their intended use but should not be required. For example, UVLS should be allowed for multiple or extreme contingencies.	
Likes 0	
Dislikes 0	
Response	

Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	
Comment	
No, but language should be added to include any other study schemes that could have an impact upon stability performance.	
Likes 0	
Dislikes 0	
Response	

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Part 4.5 is not required. The information being asked for can be gleaned from the preceding Parts. “How” should not be in a requirement.	
Likes 0	
Dislikes 0	

Response
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF
Answer	No
Document Name	
Comment
If the system maintains stability these schemes should not play a significant role in determining an SOL.
Likes 0	
Dislikes 0	
Response
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE
Answer	No
Document Name	
Comment
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] The RC can still dictate the allowed uses of UVLS and UFLS in relation to SOLs without it being in the standard, correct?
Likes 0	
Dislikes 0	
Response
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group
Answer	No
Document Name	
Comment
The RC can still dictate the allowed uses of UVLS and UFLS in relation to SOLs without it being in the standard, correct?
Likes 0	
Dislikes 0	
Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	No
Document Name	
Comment	
1. The RC is allowed to direct uses of UVLS and UFLS in relation to SOLs without it being in the standard.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	
This will cause more confusion and burden than benefit to reliability.	
Likes 0	
Dislikes 0	
Response	
Terry Bilke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No

Document Name	
Comment	
Proposed change: Stability Analysis should also be aware of UVLS and UFLS. However as stated by FERC should not be used to set stability limits. **Note: ERCOT does not support the above comment.**	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	No
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
It would make sense to include UVLS since many of them are installed to prevent voltage instability resulting from credible multiple contingencies. But UFLS could be excluded since the unacceptable frequency response mitigated by UFLS is trypically caused by multiple contingencies associated with extreme events.	
Likes 0	

Dislikes 0	

Response

Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	

Comment
The requirement should include reference to other protective schemes, such as UFLS and UVLS so the full event is considered when determining stability SOLs.

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	

Comment
Since UVLS action can improve voltage stability, it should be considered in identify stability limitations.

Likes 0	
Dislikes 0	

Response

sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	

Comment
Regardless if the assumption is that UVLS/UFLS are the Interconnection wide safety nets and not a part of identified local uvls/ufls the stability assessment should still consider their impact.

Likes 0	
Dislikes 0	

Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
A separate requirement should address the allowed use of RAS and other protections schemes (including UVLS and UFLS) in SOL determination. This should include the description of the allowed loss of load (consequential/non-consequential, single versus multiple contingencies, adverse system conditions, etc.). A mapping is required with FAC-011-3 R2.3. In any case, RAS and other protection schemes should be addressed for the different types of limits, not just stability limitations.	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
The SDT should consider using broader language here rather than limiting the application of R4.5 specifically to RAS. One suggestion is to use the phrase “automatic post-Contingency mitigation actions”, which could include any automatic action that is designed to render the system in a state of acceptable post-Contingency system performance upon occurrence of identified Contingency event(s). The RC’s SOL Methodology could then address UVLS and UFLS in their SOL Methodology as they deem necessary.	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
BPA believes that UVLS, UFLS and runback schemes should be included, as these types of actions are included in the contingency definitions which allow for increased transfer capability.	

Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	
Document Name	
Comment	
YES. Other types of protective schemes can have significant impact on system performance. UVLS and UFLS can prevent cascading. Automatic load restoration and switching schemes can significantly vary expected system conditions post-contingency. The wording should be changed to be*: Include a description of the study models, including the level of detail that is required and the **use of protective isolation and load restoration schemes.***	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	
Document Name	
Comment	
If the intent that the SOL should be set to avoid UVLS and UFLS activation for a range of realistic system conditions, then that should probably be specified somewhere. I believe the UVLS is mentioned in the system voltage limits, but perhaps should be addressed in this later section as well.	

Likes 0	
Dislikes 0	
Response	

14. With regard to proposed Part 4.6: Do you agree that the RC SOL Methodology should specifically address this issue?

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	No
Document Name	

Comment

No additional comments.

Likes 0	
Dislikes 0	

Response

Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

It should also include adjacent systems in other RCs.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Part 4.6 is not required. The information being asked for can be gleaned from the preceding Parts. “How” should not be in a requirement.

Likes 0	
Dislikes 0	

Response

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
The RC SOL methodology will define stability limitation as proposed in R4. Why would it vary from one TOP to other?	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	
Comment	
R4 already requires a description of the method used in operations to determine stability limitations. R4.6 is not necessary.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No

Document Name	
Comment	
This will cause more confusion and burden than benefit to reliability.	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
It will force communication of potential issues between TOP areas in determining SOLs and identifying a common limit.	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	

I believe the SME's changed this vote to NO. Stability limitations should be established the same way no matter how many TOP's are effected.

Likes 0	
Dislikes 0	

Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee

Answer	Yes
Document Name	

Comment

Note: ERCOT does not support the above comment.

Likes 0	
Dislikes 0	

Response

Aaron Staley - Orlando Utilities Commission - 1 - FRCC

Answer	Yes
Document Name	

Comment

Yes. As written, this gives quite a bit of flexibility to the RC to handle their different areas. In some areas it may be sufficient that the RC Specify that both TOP's agree to the limit, and in other areas the RC may need to be more specific in how that is done. The ideal situation for some requirements is that the encourage correct behavior, without ever actually being invoked.

Likes 0	
Dislikes 0	

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Answer	Yes
Document Name	

Comment	
BPA believes criteria specifically addressing stability will allow for consistency amongst TOPs in a regional area.	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	

15. Do you agree that the RC should continue to have a process to specify the multiple contingencies used in the evaluation for potential System instability, Cascading outages or uncontrolled separation?

Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO

Answer	No
Document Name	

Comment

Transmission operators and planners are most knowledgeable of their system. Therefore, it is best to leave the task of coming up with contingencies to planner and operators. What additional role the RC can play in this regard is not clear.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Sub-Part 4.2.2 addresses multiple Contingencies, and refers to Requirement R5. Requirement R5 is a “how” requirement, and not needed. Sub-Part 4.2.2 should be revised to remove the reference to Requirement R5.

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

The RC should have a process to specify the multiple contingencies that should be considered in the calculation of SOL, which is more precise than just saying “used in the evaluation for potential System instability, Cascading outages or uncontrolled separation”. The intent is that the RC needs to consider multiple element contingencies in its assessment when calculating SOLs and IROLs, which are applied in real-time, to prevent System instability, Cascading outages or uncontrolled separation. Evaluating the potential for such occurrences does not drive home the notion of what’s presented in the explanation column, namely, to “establish stability limitations and IROLs”. We therefore

suggest R5 be revised to:

R5. Each Reliability Coordinator shall include in its SOL Methodology the method for determining the multiple Contingencies used in the calculation of SOL to mitigate the potential for System instability, Cascading outages or uncontrolled separation.

Likes 0	
Dislikes 0	

Response

Aaron Staley - Orlando Utilities Commission - 1 - FRCC

Answer	No
Document Name	

Comment

Is the intent to REQUIRE every RC to have a method of determining multiple contingencies and including them? Alternatively, is the intent to give them permission to do so? If the intent is to give permission, but not require, then the requirement needs to be a little less directional or the measure could identify that an acceptable "method" is to not have any.

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	

Comment

We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	
Comment	
We agree that the RC should have a process to specific the multiple contingencies that should be considered/applied in the calculation of SOL, but not in "the evaluation for potential System instability, Cascading outages or uncontrolled separation". The intent is that the RC needs to consider or include in its assessment when calculating SOLs and IROLs which are applied in real-time to prevent System instability, Cascading outages or uncontrolled separation. Evaluating the potential for such occurrences does not drive home the notion of what's presented in the Explanation column, namely, to "establish stability limitations and IROLs". We therefore suggest R5 be revised to: **R5. Each Reliability Coordinator shall include in its SOL Methodology the method for determining the multiple Contingencies used in the calculation of SOL to mitigate the potential for System instability, Cascading outages or uncontrolled separation.** **Note: ERCOT does not support the above comment.**	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	

No opinioin	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Texas RE recommends this Requirement include additional details about what must be included in the RC's method for determining the multiple Contingencies used in the evaluation for potential System instability, Cascading outages or uncontrolled separation. As this Requirement is currently written, an RC would be allowed to create a method that would not identify any multiple contingencies, and therefore no multiple contingencies would be considered.	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	

We agree and have no additional comments.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	
Document Name	
Comment	

Specifically related to Operational Credibility vs Planning Credibility for Multiple Contingencies as these two are not the same.	
Likes 0	
Dislikes 0	
Response	

16. The multiple contingencies referenced in Requirement R5 relate to those stability limitations established under Requirement R4, some of which may be IROLs, while others may not. The intent of SDT was to allow the RC flexibility in developing its RC SOL Methodology so that it can use the list of multiple Contingencies in a manner that is broader than solely for use in establishing IROLs. For example, the multiple Contingencies can be used by the RC in identifying the conditions referenced in Requirement R8. Additionally, the RC could use the multiple Contingencies in its OPA to identify potential instability and Cascading outages. Do you believe an additional requirement is necessary to specifically identify how an entity would implement the multiple Contingencies? If yes, please provide the specific language you propose for the requirement.

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	No
Document Name	

Comment

No additional comments.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]

Likes 0	
Dislikes 0	

Response

Andrew Pusztai - American Transmission Company, LLC - 1

Answer	No
Document Name	

Comment

How multiple contingencies are used should be left up to the RC.

Likes 0	

Dislikes 0	

Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	

Comment
We do not think that a separate requirement to specify how an entity would implement the multiple Contingencies given that Requirement R5 already stipulate the need to include multiple contingencies in SOL calculations (especially with our proposed language change). **Note: ERCOT does not support the above comment.**

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	

Comment
We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	No
Document Name	

Comment
The proposed language allows for adequate flexibility for the RC’s SOL Methodology.

Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	
Comment	
“how an entity would implement the multiple Contingencies” should be addressed in the guidelines. Addressing the methodology for performing OPA and RTA, if necessary, should be addressed elsewhere, probably in a distinct standard.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	
An additional requirement isn't necessary to specifically identify how an entity would implement the multiple Contingencies. NERC standards are to address "what" and not "how". Specifying "how" isn't flexible nor useful in a mandatory standard.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	

Please see our answer to question 15.	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
The TOP(s) should identify the Credible Multiple Contingencies and implementation used in the Operations time frame in question.	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
A requirement specifying when and how multiple contingencies should be evaluated fits better with TOP-001-3 than with this Standard. These multiple contingencies should be evaluated in the OPA and RTA, especially with the proposal to remove the planning horizon from the SOL definition.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
“The Reliability Coordinator shall describe how the multiple contingencies identified in R5 will be used by the RC and TOP for identifying SOLs and	

IROLs.”	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Does the current R5 allow for the monitoring of a double within the OPA and in real time for finding potential system instability, cascading outages or uncontrolled separation? If so, does that monitored double also have to meet the Facility ratings (SOL Exceedance) criteria? For example can a RC monitor a common structure and not react if it is over its emergency rating as long as there is no risk of potential system instability, cascading outages or uncontrolled separation as defined by the RC? For that matter if an RC or TOP decides to monitor a Multiple Contingency, does that obligate them to list it under R5 and meet that criterion?	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

17. Do you agree that the RC SOL Methodology should be required to include *all* of the criteria included in proposed Parts 6.1 through 6.4? Do you believe there are additional criteria that are not currently included, but should be?

Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO

Answer	No
Document Name	

Comment

IT depends on the RC footprint.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Requirement R6 should not specify the method (“how”). In the Parts for Requirement R6, what is unacceptable?

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

6.4 is a catch all that captures 6.1 – 6.3. Therefore listing 6.1 – 6.3 is not necessary. However, if industry feels that this is required, then a subpart should be added to reflect “unacceptable loop flow” through neighboring systems.

Likes 0	
Dislikes 0	

Response

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	

Comment
We agree with the intent of R6, but we think it deserves some rewording: 1- 6.3 could be limited to “Unacceptable inter-area oscillations”. However, we don’t think 6.3 captures the “non-localized or uncontained instability” concept described in the explanation. 2- Unacceptable quantity of load loss (or supply loss) should be independent of “due to “System instability, Cascading outages or uncontrolled separation”. An unacceptable quantity of load loss (or supply loss) can itself cause “System instability, Cascading outages or uncontrolled separation”. What if a system condition makes the loss of a major transformer a contingency for which the “Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occurs”…which could overload another transformer beyond its protection setting, that would then trip and cause an unacceptable quantity of supply loss? Thus, we suggest combining 6.1 and 6.2 with “Unacceptable quantity of load or supply loss” and removing the reference to instability, etc. 3- A bullet should be added to specifically address unacceptable “System instability, Cascading outages or uncontrolled separation” (that would cover the “non-localized or uncontained instability” concept) in relation with the definition of IROL.

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	

Comment
We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
No additional criteria are necessary.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
No additional criteria needed.	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
The acceptable amount of load or supply loss should be determined by TOP and not by RC. This is because much depends upon the size of the TOP	

total load and the specific operational and topographical aspects of the TOP's system. For example, a 500 MW load loss in a metropolitan city may not be large enough to cascade; however, the same load loss in a rural area could be large enough to cascade. Because TOPs are most familiar with their systems and associated operations, the determination of the acceptability of a certain amount of load or supply loss should be determined by the TOP. AZPS recommends that the SDT revise this requirement to reflect this.	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
The proposed criteria are fine.	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] Yes it should be included. Nothing else is needed	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	

Yes it should be included. Nothing else is needed.

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	Yes
Document Name	

Comment

1. Yes, we agree that all criteria should be included.
2. No, we do not believe anything additional is needed.

Likes 0	
Dislikes 0	

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Answer	Yes
Document Name	

Comment

BPA believes no additional criteria are required.

Likes 0	
Dislikes 0	

Response

Aaron Staley - Orlando Utilities Commission - 1 - FRCC

Answer	Yes
Document Name	

Comment

I think R6 is good as written, however changes should be considered as the team reviews the results of surveying the RC's IROL methodologies. The

Requirement or Measure should specify that the unacceptable quantity of load can be a set MW value, a percentage of system load, or could even be a different value for different areas of the system. In our region we have TOP's that only have 800 MW of load, and TOP's that consider an 800 MW substation a medium size substation. Therefore, a one number for the whole region may not set a meaningful threshold for everyone.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	

Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	

18. Should the criteria identified in proposed Parts 6.1 through 6.4 also include a minimum or maximum threshold? If so, what should the thresholds be, and why?

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company

Answer	No
Document Name	

Comment

Southern believes that the criteria should be left to the RC to define. However, if the SDT were to establish the criteria, we believe that the minimum criteria should be established in generic terms to give RCs in different geographical areas the flexibility to define the criteria themselves.

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	No
Document Name	

Comment

1. Each RC's needs may be different. Including minimum or maximum criteria to the statements would create a one size fits all areas which would not be appropriate across the Interconnections. As well the criteria across a single RC Area may not be appropriate do to the vast differences within the RC's Area. (Example: The criteria used around critical Load areas such as major Department of Defense facilities might not be the same as sparsely populated areas where there are hundreds of square miles - might not qualify under the one size rules.)

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

Each RC's needs may be different.

Likes 0	

Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	No
Document Name	
Comment	
The thresholds are best left to each RC according to its area's consideration, criteria and restrictions.	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] Each RC's needs may be different.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	
Comment	
No, establishing a hard minimum and maximum could be counter-productive to reliability since facts and circumstances determine the appropriate values.	
Likes 0	
Dislikes 0	
Response	

Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	No
Document Name	
Comment	
The RC should determine appropriate thresholds.	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Again, it depends on the RC footprint. There needs to be some latitude/discretion for the RC to make the best decisions for its footprint.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
Giving RC the discretion to determine what thresholds are most suitable for its RC Area would be best.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	

Answer	No
Document Name	
Comment	

The thresholds are best left to each RC according to its area's consideration, criteria and restrictions.

Note: ERCOT does not support the above comment.

Likes 0	
Dislikes 0	
Response	

Terry BIlke - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	
Comment	

We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	
Response	

Aaron Staley - Orlando Utilities Commission - 1 - FRCC

Answer	No
Document Name	
Comment	

There is an enormous range of system sizes across the country. Setting a range that is meaningful for an TOP whose peak load is 800 MW but is also meaningful for a TOP that find 800 MW to be a typical substation would result in such a large range as to not be of value.

A percentage might be of more value, however the same scaling factor occurs. A threshold of 10% would result in a TOP with only 10 substation to not be able to lose one station, and by the same token might mean 20 substations for an entity with two hundred stations.

Perhaps a threshold based on substations, rather than MW. That you are not allowed to lose more then so many stations be in generation or load.

Or perhaps set a range, but allow exceptions with explanation.

Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	No
Document Name	
Comment	
While prescribed thresholds would improve clarity and consistency for IROL establishment, doing so might also have an unintended consequence of undermining the flexibility needed for RCs to address the unique situations and challenges in the RC Area.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	
Comment	
Definitely not. This is way too system specific. It is the responsibility of the RC to define such thresholds. However, guidelines to explain the industry practice regarding this topic would be appropriate.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	
The criteria identified in proposed Parts 6.1 through 6.4 should allow for Regional and Local variances regarding determination of a minimum or maximum threshold.	

Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	

Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
The minimum threshold should be 1% of the RC area peak load, and a maximum threshold should be 10% of the RC area peak load. This is based upon the fact that we are dealing with multiple contingencies and loss of less than 1% of the RC area peak load loss should be acceptable and not be	

called cascading.	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
6.1 wording: Unacceptable quantity of load loss equal to 500MW or greater due to System instability, Cascading outages or uncontrolled separation. This value is 2.5 times the EOP-004 firm load loss reporting requirement and represents significant impact to the public. *6.2 wording: Unacceptable quantity of supply loss greater than the value of the interconnection's MSSC due to System instability, Cascading outages or uncontrolled separation*. This is based on a loss bigger than an interconnections MSSC.	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	

19. Do you believe the IROL Tv definition should be modified to remove the 30 minute not-to-exceed time limit, and instead the specific time limit should be identified in the specific Reliability Standard requirement, as appropriate?

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

We are not in a position to provide feedback on modifying the IROL Tv definition until we review the revised IROL definition being proposed.

Likes 0	
Dislikes 0	

Response

Andrew Pusztai - American Transmission Company, LLC - 1

Answer	No
Document Name	

Comment

The 30 minute maximum time limit is appropriate for IROLs.

Likes 0	
Dislikes 0	

Response

Mark Holman - PJM Interconnection, L.L.C. - 2

Answer	No
Document Name	

Comment

The time limit can remain in the IROL Tv definition and reside within R7 as proposed.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	No
Document Name	
Comment	
No, the IROL Tv definition should not be modified to remove the 30 minute not-to-exceed time limit.	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	No
Document Name	
Comment	
30 minutes is still a good value.	
Likes 0	
Dislikes 0	
Response	
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No

Document Name	
Comment	
We agree with the proposed R7 and with the IROL Tv definition.	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	
Comment	
No, the IROL Tv definition should not be modified to remove the 30 minute not-to-exceed time limit. Rather, the proposed R7 should have that last sentence removed. **Note: ERCOT does not support the above comment.**	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	

Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	No
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
For IROLs identified in real-time the 30 minute threshold does not give the operators much time to assess the situation and could lead to load-shed for non-IROL exceedences. In some instances such as real-time identified IROLs versus pre-defined IROLs, a greater than 30 minute Tv could be warranted and should be allowed.	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
The 30 minutes limit on Tv is arbitrary and should be eliminated.	
Likes 0	
Dislikes 0	
Response	

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
Establishing all critical time to be no longer than 30 minutes; may not be realistic depending on the viability of the contingencies required to fulfill the IROL. If a Tv has not been established than using the no longer than 30 minutes would be appropriate.	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
It is redundant to the Glossary Terms as well.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
NIPSCO believes the 30 minutes belongs in the specific Reliability Standard requirements.	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	

Answer	Yes
Document Name	
Comment	

1. With the criteria not set with firm minimums and maximums in (Requirement R6) to allow flexibility in IROL's, the same should be allowed in determination of the allowable time associated with the IROL.

2. IROL’s should not have a maximum time limit of 30 minutes established. The Tv time frame was established to allow the appropriate time to be associated with the IROL in question. Establishing all critical timeframes to be no longer than 30 minutes may not be realistic, depending on the viability of the contingencies required to fulfill the IROL. Where a Tv has not been established, using the “no longer than 30 minutes” requirement would be appropriate.

Likes 0	
Dislikes 0	
Response	

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3

Answer	Yes
Document Name	
Comment	

We do not see strong technical rationale for having the 30 minutes threshold. We consider the broader Tv definition to be more appropriate.

Likes 0	
Dislikes 0	
Response	

Jared Shakespeare - Peak Reliability - 1 - WECC

Answer	Yes
Document Name	
Comment	

Peak supports having the IROL TV as a requirement and removing it from the NERC definition of IROL TV.

Likes 0	
Dislikes 0	
Response	

Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
Alternatively, the standard could set a default maximum of 30 minute but allows greater than 30 minutes with an explanation.	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	
Document Name	
Comment	
No!	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	

Document Name	
Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	

20. Do you agree with the proposed approach for addressing this Real-time operating state issue?

Leonard Kula - Independent Electricity System Operator - 2	
Answer	No
Document Name	

Comment

We agree with having a requirement to address real-time situations where the need for a new or revised or re-confirmed set of SOLs needs to be established, when operators encounter an unknown or unstudied state. However, we feel this should be done such that actions can be taken to return the system to a known state within 30 minutes.

This was the intent of Requirement R4 of the retired TOP-004-2. While the IRO/TOP SDT for the TOP-001 to TOP-003 standards rationalizes that between the definitions of OPA, RTA and some FAC standard requirements, the potential reliability gap due to the absence of valid SOLs for unknown or unstudied conditions is duly addressed, we do not believe that's the case especially for those situations where the SOLs or IROLs are restricted by system stability limitations.

While today's technology can be relied upon to calculate facility rating restricted and voltage restricted SOLs/IROLs in real-time, it has not yet advanced to the point where stability-restricted SOLs/IROLs can be calculated real-time or within the 30-minute time frame to allow for (a) comparing system conditions with the re-established SOLs/IROLs, and (b) applying control actions to return the BES conditions to within the re-established SOLs/IROLs.

That said, we propose to simplify R8 by revising it to:

R8. Each Reliability Coordinator shall include in its SOL Methodology the method to address a Real-time operating state which falls outside of the scope of established SOLs where it is uncertain if any existing SOLs are valid. The method shall address:

1.
    i. **Thresholds for initiating evaluation or validity of existing SOLs;**
    ii. **A review of whether a new set of SOLs or IROLs should be established;**
    iii. **A process for deriving any required SOLs or IROLs such that exceedances are resolved within 30 minutes.**

Likes 0	
Dislikes 0	

Response

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	No
Document Name	
Comment	

The condition in this requirement " but was not identified one or more days prior to the current day " is unnecessary as when the next contingency has the potential to cause System instability, Cascading outages or uncontrolled separation the condition should become an IROL if it meets the IROL criterion specified in R6. It is not clear that what difference in operating actions or evaluations will be whether the condition was identified in prior studies or not. If a condition was identified in prior studies other standard requirements require RC/TOP to have an operating plan to mitigate such conditions. If the conditions shows up in RTA the RC/TOP will still need to evaluate and take actions. Whether operating condition constitute and IROL exceedance or not should be determined using criterion specified in R6. If the operating condition is indicating an IROL issue than it should be treated as IROL which in turn will require system operator to act with urgency.

This requirement can possible be combined with R6 by requiring RC to specify in SOL methodology criterion when an SOL can become temporary IROL.

Likes 0	
Dislikes 0	
Response	

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	

AZPS agrees with Requirements 8.1 and 8.2, but does not agree with Requirement 8.3. The criteria for declaring an IROL is clear and does not require a review of a real-time event to make the determination.

Likes 0	
Dislikes 0	
Response	

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	
Comment	

We agree with having a requirement to address real-time situations where the need for a new or revised re-conformed set of SOLs needs to be established, and how it can be developed. This was the intent of Requirement R4 of the retired TOP-004-2. While the IRO/TOP SDT for the

TOP-001 to TOP-003 standards rationale that between the definitions of OPA, RTA and some FAC standard requirements, the potential reliability gap due to the absence of valid SOLs for unknown or unstudied conditions is duly addressed, we do not believe that's the case. The proposed Requirement R8, despite it's mixing operations with methodology, appears to fill this potential gap nicely.

That said, we propose to simplify R8 by revising it to:

R8. Each Reliability Coordinator shall include in its SOL Methodology the method to address a Real-time operating state which falls outside of the scope of established SOLs or where it is uncertain if any existing SOLs are valid. The method shall address:

Please consider replacing references to SOL in R8 with stability limitations.

8.1 Thresholds for initiating evaluation of validity of existing SOLs;

8.2 A review of the operating state experience for the purpose of determining whether a new set of SOLs or IROLs should be established.

Note: ERCOT does not support the above comment.

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	

Comment

We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC

Answer	No
Document Name	

Comment

R8 is outside the scope of FAC-011 and any gap regarding this topic should be included in the TOP/IRO standards. In 8.2, the mention of “pre-Contingency Load shedding” is the only occurrence within the proposed standard and explanations. We think that an unknown operating state should be treated differently from an IROL violation.

A gap was introduced with the removal of TOP-004-2 R4 (If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and

shall restore operations to respect proven reliable power system limits within 30 minutes). The situation where, for a specific IROL interface, the System conditions in real-time were not studied to calculate a IROL value is an unknown state for which no specific action is required under the new TOP/IRO standards. Unless real-time stability tools are available, the RTA is not useful to evaluate the stability risk for the unknown state.

The language is sloppy too. ‘shall address’, the last point has a different time frame and is actually an obligation to review…

Given the argument we make, is only the last point relevant then? The methodology should include a description to review irself following insecure states that occur?

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	Yes
Document Name	

Comment

1. We agree with the approach to distinguish actual IROLs from these other types of unexpected events; the language doesn’t establish a limit, but allows the operator to react quickly and then review the occurrence to learn how to deal with something similar in the future.

Likes 0	

Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	Yes
Document Name	
Comment	
R8 language could be refined by replacing "one or more days prior to the current day" with "prior to the operating day". This is for situations not identified prior to the operating day. R8.3 should include the proposed timeline for the review with a suggestion that it take place within 10 business days of the event.	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	Yes
Document Name	
Comment	
I like the approach, though I am open to more discussion on the specific wording.	
Likes 0	

Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	

21. Do you believe there should be a timing requirement for implementing actions to address the risk (*e.g.*, 30 min)? If yes, when should the time start? End?

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
No timing requirement for risk mitigation actions is necessary - this reliability objective would be better addressed by having a reciprocal TOP or IRO requirement that requires implementation of the mitigation action in accordance with Q23.	
Likes 0	
Dislikes 0	
Response	

Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	No
Document Name	
Comment	
The Real-time event may not have a clear initiation or clear resolution. Applying time limits may push TOPs to take more severe actions than necessary to meet an arbitrary time limit.	
Likes 0	
Dislikes 0	
Response	

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No
Document Name	
Comment	
We think there should be a requirement to have an Operating plan to mitigate this risk rather than a specific time. An Operating plan should be required to address unforeseen System conditions and topology for which an IROL cannot be calculated because it was not studied for this condition. The exact timing would depend on system conditions and specific issues encountered.	
Likes 0	

Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	No
Document Name	
Comment	
While Peak understands the value of mitigating an unanticipated N-1 insecure state within 30 minutes, there can be unintended negative consequences for having a 30 minute requirement. When such conditions arise, there is a certain amount of validation that needs to take place before actions are taken, especially when drastic mitigating measures are considered such as load shedding. Unlike pre-determined IROLs which are monitored in real-time operations, it is unclear exactly when the “clock starts” for such conditions. When faced with ambiguous operating conditions while being under the pressure of a fuzzy-at-best 30-minute compliance clock, operators might be inclined to take drastic and unwarranted measures to mitigate the perceived condition, such as load shedding, to avoid a compliance violation – even when the complete operating picture is unclear. Given the potential for such a negative unintended consequences, Peak is not supportive of adding timing requirements for mitigating such conditions.	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Timing will vary based on the event. BPA Believes it is up to the TOP to develop an Operating Plan that meets the needs for its system for all conditions.	
Likes 0	
Dislikes 0	
Response	
Terry Bllke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	
Comment	

We agree with the comments of the MISO TOP-IRO Task team.	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
But more time (greater than 30 minutes) should be given to the operators to properly analyze the situation and decide what actions to take. A 30 minute time limit could be too restrictive and cause the operators to potentially shed load for non-cascading situations. The time should start at the “time of discovery” and end when the situation has been mitigated or the potential for cascading outages removed.	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes

Document Name	
Comment	
While AZPS agrees that this requirement should have a time-based aspect, it does not agree that the requirement should be completely time-based or that the measure of compliance should be based on pass/fail criteria. More specifically, each system event that occurs is associated with and subject to the unique system characteristics and constraints in effect during that time. As such, operators should be given flexibility and a range of actions that can be taken to reduce the potential impact and likelihood of the next contingency. In particular, where operators are able to take action to significantly reduce the potential for or impact of next contingency, such actions should be considered acceptable for the purposes of compliance under this requirement. The Relative to the time-based aspect of this requirement, such time period should start at the end of the expiration of the time period for the Tv and, further, an additional time period of 30 minutes should be allowed to evaluate the impact of actions taken.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Yes, a 30 minute timeframe is appropriate. It should begin when the risk is identified.	
Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
The time to implement actions should be aligned with the time frame associated with the ratings. For example, a line has normal, emergency and short term emergency (STE) ratings where emergency rating is a 4 hour rating and a 30 minute short term emergency. If the flows on this line exceed emergency rating but are below STE the Operating Plan to bring flows below or at emergency rating should be implementable within 30 minutes. The time should start when the real-time or post contingent flows exceed a specified SOL and end when the flows are reduced below the SOL. The criterion should also allow for some time to validate the issue to ensure that the exceedance is valid before the timer starts.	
Likes 0	
Dislikes 0	

Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	Yes
Document Name	
Comment	
Consistent with R7, less than or equal to 30m. Timing would start from the identification of the Real-time operating state. If, by "End", you are refrencing the Tv, it would end 30m after the start, unless the RC's methodology elected to reduce that timeframe.	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] Providing a time would give clarity to when situations cross over into 'violation' territory instead of just being an exceedance.	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
The timing should be 30 minutes such that the evaluation of the prevailing situation, establishment of a validated or revised/new set of SOLs/IROLs, and implementation of appropriate actions to mitigate SOL exceedances are all completed within the general Tv (or 30 minutes) time frame.	
Likes 0	
Dislikes 0	

Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	
Providing a time would give clarity to when situations cross over into ‘violation’ territory instead of just being an exceedance.	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
1. Providing a time would give clarity to when situations cross over into ‘violation’ territory instead of just being an exceedance. 2. With SOL being elevated to a “temporary IROL;” the timing for action should be similar to those of an established IROL for the RC Area. The only exception would be that the Tv may not be readily known from the available real-time studies. In this case the 30 minutes maximum time would be more appropriate.	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
We believe that a timing requirement for implementing actions to address the risk should be part of operating protocols.	
Likes 0	
Dislikes 0	

Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	
Document Name	
Comment	
Yes!	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Actions should be taken immediately after the operating state is identified. A maximum of 30 minutes may be acceptable, as it aligns with the IROL-Tv.	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	

Answer	
Document Name	
Comment	
Assuming this question is specific to the real time operating state issue: I do not think an arbitrary timing requirement is wise. In some cases, taking an action based on incomplete analysis could result in worse condition then taking no action. Alternately, a requirement could be added that the RC does an internal investigation if they take more than 30 minutes to complete their analysis and take action to shorten the time in the future?	
Likes 0	
Dislikes 0	
Response	

22. Do you believe that this issue is already addressed in other Reliability Standards (*i.e.*, IRO-009 and EOP-011)? If not, should it be?

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	No
Document Name	

Comment

1. We appreciate the clarification, and believe the other standards are loosely related to this situation but do not fully address this.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

It is good to clarify it here. Those other standards are probably loosely related to this situation.

Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	No
Document Name	

Comment

No, we do not believe this issue is already addressed elsewhere. Please see our comments under Q20, above.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS] It is good to clarify it here. Those other standards are only loosely related to this situation	
Likes 0	
Dislikes 0	
Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	No
Document Name	
Comment	
Residing within FAC-011-4 is sufficient.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	
Comment	
No, but addressing in the FAC standard should be sufficient.	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	No

Document Name	
Comment	
The IRO-009 and EOP-011 standards address what action the RC or TOP shall take to prevent an IROL Exceedance. This requirement addresses how to find if an RC has an IROL. It should be address in this standard as this standard is about methodology to determine SOLs and IROLs. The other standards are about actions that should be taken.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	No
Document Name	
Comment	
Yes, it should be.	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	No
Document Name	
Comment	
The RC's Methodology is the most appropriate place to address this issue.	
Likes 0	
Dislikes 0	
Response	
Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	No
Document Name	

Comment
No, we do not believe this issue is already addressed elsewhere. Please see our comments under Q20, above. Further, we believe this issue should be addressed here in FAC-0011 since the TOP standards are not going to change given the SDT's response to our comments and FERC's position in its Order 817. **Note: ERCOT does not support the above comment.**

Likes 0	
Dislikes 0	

Response

Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	

Comment
We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	No
Document Name	

Comment
Peak believes it is not adequately addressed and it should be addressed directly outside the IROL concept.

Likes 0	
Dislikes 0	

Response

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	No

Document Name	
Comment	
The IROL exceedance and emergencies are addressed in other standards, but not the unknown or insecure operating state. EOP-011 is general enough to already address this issue. However IRO-009 could include another requirement to address this issue.	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
The revised TOP/IRO standards have requirements that require RC/TOP to implement operating plan for actual/potential SOL/IROL exceedances. Future effective TOP-001-3 R14 requires “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”, thus if an SOL condition indicates IROL like issues the operating plan shall address those and treat those as IROL per RC SOL/IROL methodology.	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	

Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	
Document Name	
Comment	
Yes!	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	
Document Name	
Comment	
This standard is the correct place to address the current issue involving real time emerging constraints.	
Likes 0	
Dislikes 0	
Response	

23. If the proposed requirement is added, should a reciprocal requirement be added to require implementation of the method (*e.g.*, possibly a new TOP or IRO requirement)?

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF

Answer	No
Document Name	

Comment

The revised TOP/IRO standards have requirements that require RC/TOP to have implement operating plan for actual/potential SOL/IROL exceedances.

Likes 0	
Dislikes 0	

Response

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE

Answer	No
Document Name	

Comment

[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]

Likes 0	
Dislikes 0	

Response

Terry Bllke - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	

Comment

We agree with the comments of the MISO TOP-IRO Task team.

Likes 0	
Dislikes 0	

Response

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Mark Holman - PJM Interconnection, L.L.C. - 2	
Answer	No
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	

Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
See response to Q21.	

Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
The method does no good if it is not implemented.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	Yes
Document Name	
Comment	
Yes, implementation should be required, but could be added to existing TOP and IRO standards.	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
We believe that a reciprocal requirement added to TOP-001 will close the reliability gap.	
Likes 0	
Dislikes 0	

Response
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators
Answer	Yes
Document Name	
Comment
No additional comments.
Likes 0	
Dislikes 0	
Response
Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC
Answer	Yes
Document Name	
Comment
As mentioned in Q22, IRO-009 could be revised to include this issue.
Likes 0	
Dislikes 0	
Response
Jared Shakespeare - Peak Reliability - 1 - WECC
Answer	Yes
Document Name	
Comment
It might be a good idea to have a corresponding requirement somewhere to implement this. The FAC standards don’t seem to be the best fit.
Likes 0	
Dislikes 0	
Response

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
We believe that a reciprocal requirement added to TOP-001 will close the reliability gap.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	
Document Name	
Comment	
No!	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	

Comment	
Texas RE has no comments on this question.	
Likes 0	
Dislikes 0	
Response	

24. Do you agree with the proposed revisions? If not, please explain why and provide any changes that you propose to the language.

Chris Scanlon - Exelon - 1,3,5,6

Answer	No
Document Name	

Comment

On page 9 of the Summary of Proposed Revisions there are two bullets that seem to conflict with one another. Our concern is third and fourth bullets from the top of page 9 under the Proposed New Definition. The third bullet indicates an issue if the calculated post-contingency voltage calculated is outside emergency limits, however the fourth states the exact same thing except adding for which there is not sufficient time to relieve the condition.

It seems these are inconsistent with one another; we propose the SDT should delete either the third or the fourth bullet depending on whether they intend to allow operators time to relive the condition. As it's written we believe it's vague and could be interpreted differently by different engineers and operatiing organizations.

Likes 0	
Dislikes 0	

Response

Diana McMahon - Salt River Project - 1,3,5,6 - WECC

Answer	No
Document Name	

Comment

In general 30 days to review this breadth of changes was not sufficient.

Likes 0	
Dislikes 0	

Response

Mark Holman - PJM Interconnection, L.L.C. - 2

Answer	No
Document Name	

Comment

PJM believes R9.2 should be consistent with language of 9.1. The proposed requirement places an undo burden on the RC to track each PC or TP modeling "any portion" of its area. Suggested language below:
(9.2) Each adjacent Planning Coordinator and adjacent Transmission Planner within an Interconnection, and each Planning Coordinator and

Transmission Planner that indicated it has a reliability-related need for the SOL Methodology; and,	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6	
Answer	No
Document Name	
Comment	
No, see previous comments on specific language suggestions.	
Likes 0	
Dislikes 0	
Response	
Terry BIlke - Midcontinent ISO, Inc. - 2	
Answer	No
Document Name	
Comment	
We agree with the comments of the MISO TOP-IRO Task team. We fail to see the inncremental value of these changes. It is just more complexity and administrative overhead for no increase in reliability.	
Likes 0	
Dislikes 0	
Response	
Aaron Staley - Orlando Utilities Commission - 1 - FRCC	
Answer	No
Document Name	
Comment	
R9.1 the measure or requirement should be specific that it is a formal written request from the reliability coordinator, and the reliability coordinator	

should not have to provide a reliability-related need.

R9.2: This requirement should be revised. Every Planning Coordinator in the Eastern Interconnection potentially models every RC in the eastern interconnection, yet there is no practical reason that every eastern interconnection RC should send it to every Planning Coordinator. This requirement should be every PC and TP that is within the RC footprint OR that makes a formal request for the methodology. The TP or PC should not have to prove a reliability related need.

A 9.4 should be added allowing transmission owners and generator owners to request a copy.

Should R9 also allow for placing a confidentiality requirement on the parties receiving the document?

Should R9 also include TSP's who are within the RC area or an adjacent RC Area? They are effected by how SOL's are defined.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,10 - NPCC, Group Name RSC no Con Edison and ISO-NE

Answer	No
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer	
Document Name	

Comment

Texas RE has no comments on this question.

Likes 0	
Dislikes 0	

Response

Katherine Prewitt - Southern Company - Southern Company Services, Inc. - 1, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	
Answer	Yes
Document Name	
Comment	
No additional comments.	
Likes 0	
Dislikes 0	
Response	
Sarah Gasienica - NiSource - Northern Indiana Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
sean erickson - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
[THESE COMMENTS REPRESENT SPP STAFF COMMENTS]	
Likes 0	
Dislikes 0	
Response	

Stephanie Burns - International Transmission Company Holdings Corporation - 1 - MRO,SPP RE,RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Pusztai - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nick Vtyurin - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC, Group Name Seattle City Light Ballot Body	
Answer	Yes
Document Name	
Comment	
No Comment	
Likes 0	
Dislikes 0	
Response	

Ben Li - Independent Electricity System Operator - 2 - NPCC, Group Name ISO/RTO Council Standards Review Committee	
Answer	Yes
Document Name	
Comment	
We believe that a reciprocal requirement added to TOP-001 will close the reliability gap.	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
A question to the SDT. Should there be a minimum time period for how long a SOL Methodology should be in place prior to being effective?	
Likes 0	
Dislikes 0	
Response	
Jared Shakespeare - Peak Reliability - 1 - WECC	
Answer	Yes
Document Name	
Comment	
The overall concept is fine; however, the SDT might consider modifying the language in proposed R9.2. Just because a PC or TP “models” a portion of the RC Area might not necessitate that they receive the SOL Methodology. Also, the RC cannot know what the various PCs and TPs include in their models.	
Likes 0	
Dislikes 0	
Response	

Michael Godbout - Hydro-Qu?bec TransEnergie - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tammy Porter - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1,3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Unofficial Comment Form for FAC-011-4

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 **Project 2015-09 Establish and Communicate System Operating Limits**. The electronic form must be submitted by **8 p.m. Eastern, Friday, August 12, 2016.**

Additional information is available on the project page. If you have questions, contact Lacey Ourso, Standards Developer by email or phone at 404.446.2581.

Background Information regarding Project 2015-09 Establish and Communicate System Operating Limits

The Facilities Design, Connections, and Maintenance (FAC) Reliability Standards fulfill an important reliability objective for determining and communicating System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs) used in the reliable operation of the Bulk Electric System (BES). The purpose of Project 2015-09 – Establish and Communicate System Operating Limits is to revise these requirements. Revisions are necessary to eliminate overlap with approved Transmission Planning (TPL) requirements,[1] enhance consistency with Transmission Operations (TOP)[2] and Interconnection Reliability Operations (IRO)[3] standards, and address other concerns in the existing FAC standards regarding the determination and communication of SOLs and IROLs. As outlined in the Standards Authorization Request (SAR), the scope of the standards development project includes development of new or revised requirements and/or NERC Glossary definitions to provide clarity and consistency for establishing SOLs and IROLs, and to address potential reliability issues resulting from application of the current NERC Glossary definitions for SOL and IROL.[4]

High-level Overview of Proposed Revisions to FAC Reliability Standards

In developing revisions to the FAC Reliability Standards and definitions related to SOL and IROL, the standard drafting team (SDT) has focused on alignment with how SOLs and IROLs are treated in the approved TOP and IRO Reliability Standards (enforceable beginning April 1, 2017). The SDT believes this shift is critical to align the approach for how the System is actually operated as a result of the wholesale

[1] *See*, TPL-001-4
[2] *See*, TOP-001-3, TOP-002-4, TOP-003-3
[3] See, IRO-001-4, IRO-002-4, IRO-008-2, IRO-010-2, IRO-014-3, IRO-017-1
[4] The SAR was sponsored and submitted by the Project 2015-03 -Periodic Review of System Operating Limit Standards periodic review team (PRT).

revisions to the TOP and IRO Reliability Standards and reflects the manner in which operations are currently conducted. Below is a detailed explanation of how the proposed revisions complement the TOP/IRO revisions. The proposed changes to the FAC standards support a more reliable, dynamic approach to operating within actual limits that exist on the system, as opposed to reliance on "operating limits" that were set well in advance.

Overview of How Proposed Revisions Align with Revised TOP and IRO Reliability Standards

The revisions proposed to the FAC standards were designed to work together with the approved TOP and IRO Reliability Standards. The combination of the proposed revisions to the FAC standards and the TOP and IRO Reliability Standards, including the defined terms contained in those standards (Operational Planning Analysis (OPA)[5], Real-time Assessment (RTA)[6], and Operating Plans) when executed together will result in maintaining reliable BES performance. Thus, it is imperative that your review of the proposed revisions to the FAC standards is conducted with a full understanding of how these standards will work together with the approved TOP and IRO Reliability Standards. The proposed FAC revisions standing alone will not provide a complete picture of how different functional entities will work together to establish the appropriate operational limits, and then actually operate to them.

Under the approved TOP and IRO Reliability Standards:

- TOP-002-4 Requirement R1 requires the TOP to have an OPA that will allow it to assess whether its planned operations for the next day will exceed any of its SOLs.
- TOP-002-4 Requirement R2 requires that the TOP have an Operating Plan to address potential "SOL exceedances" identified as a result of its OPA.
- TOP-001-3 Requirement R13 requires that the TOP perform a RTA at least once every 30 minutes.

[5] NERC Glossary defines Operational Planning Analysis (OPA) as, "An evaluation of projected system conditions to assess anticipated (pre-Contingency) and potential (post-Contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to, load forecasts; generation output levels; Interchange; known Protection System and Special Protection System status or degradation; Transmission outages; generator outages; Facility Ratings; and identified phase angle and equipment limitations. (Operational Planning Analysis may be provided through internal systems or through third-party services.)" [NERC Glossary as of June 24, 2016]

[6] NERC Glossary defines Real-time Assessment (RTA) as, "An evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post-Contingency) operating conditions. The assessment shall reflect applicable inputs including, but not limited to: load, generation output levels, known Protection System and Special Protection System status or degradation, Transmission outages, generator outages, Interchange, Facility Ratings, and identified phase angle and equipment limitations. (Real-time Assessment may be provided through internal systems or through third-party services.) [NERC Glossary as of June 24, 2016]

- TOP-001-3 Requirement R14 requires that the TOP initiate its Operating Plan to mitigate an "SOL exceedance" identified as part of its Real-time monitoring or RTA.

For more information on the TOP/IRO revisions, please visit the Project 2014-03 Revisions to TOP/IRO Reliability Standards project page.

Overview of Proposed Revisions to FAC-011-3, FAC-014-2 and Defined Terms SOL and SOL Exceedance

As outlined in greater detail below, the SDT is proposing to revise the existing definition of SOL and create a new NERC Glossary definition for "SOL Exceedance." The new definitions support the conceptual distinction between operating practices and the SOL itself. The SOL is the actual set of Facility Ratings, System voltage limits, or stability limitations that are to be monitored for the pre- and post-Contingency state. How an entity operates to those SOLs can vary depending on the planning strategies, operating practices, and mechanisms employed by the entity. The revised definition of SOL and new definition of "SOL Exceedance" will work together with the future-enforceable TOP and IRO Reliability Standards, including the definitions of OPA, RTA and Operating Practices as follows:

- The TOP is required to have an OPA to assess whether its planned operations for the next day will exceed any of its SOLs (*see*, TOP-002-4, Requirement R1). If the OPA identifies potential SOL exceedances, the TOP is required to have an Operating Plan to address those potential SOL exceedances (*see*, TOP-002-4, Requirement R2).
- Additionally, the TOP is required to perform a RTA at least once every 30 minutes (*see*, TOP-001-3 Requirement R13). If the TOP identifies that an SOL is being exceeded in Real-time operations, the TOP will implement the mitigating strategies identified in its Operating Plan (*see*, TOP-001-3 Requirement R14).
- In other words, an "SOL Exceedance" is simply unacceptable system performance that must be mitigated in accordance with the action plan the TOP has laid out in its Operating Plan.
- A potential SOL Exceedance may be identified by an OPA, or an actual SOL Exceedance may be identified by an RTA.
- The Operating Plan can include specific Operating Procedures or more general Operating Processes. The TOP Operating Plans include both pre- and post- Contingency mitigation plans and strategies. The pre-Contingency strategies are implemented before the Contingency occurs to prevent the potential negative impacts on reliability of the Contingency. Post-Contingency mitigation plans and strategies are actions that the TOP will implement after the Contingency occurs to bring the system back within limits.
- The Operating Plans contain adequate details regarding the appropriate timelines to escalate the level of mitigation to ensure BES performance is maintained as required by the RC SOL Methodology.

The proposed definition of SOL Exceedance (described in further detail below) provides clarity regarding what is deemed to be "unacceptable system performance." When the conditions identified in the definition of SOL Exceedance occur, the TOP must be prepared to implement its action plan outlined in its Operating Plan to mitigate that particular condition and return the system back within acceptable limits.

The SDT believes that the proposed definitions and revisions to the FAC standards will eliminate confusion between the operating practices used by the TOP and the actual limits themselves. The revisions provide clarity regarding (1) what the limits are, (2) what it means to exceed them, and (3) how an "SOL Exceedance" should be addressed by the TOP in operations planning (TOP-002-4 Requirement R2) and Real-time operations (TOP-001-3 Requirement R14).

Purpose of 30-day Informal Comment Period

As outlined above, the scope of Project 2015-09 includes revision of the requirements for determining and communicating SOLs and IROLs used in the reliable planning and operation of the BES. This informal 30-day posting does not encompass the entire scope of work that the SDT will undertake for the project. Rather, this is only a piece of the complete work. However, the SDT believes it to be the most critical area. The direction taken with regard to these standards set the foundation for building a proper SOL methodology to ensure that SOLs are established and communicated in a manner that will later ensure reliable BES operation when carried out in operations.

Reliability Standards and definitions that **are included** (as part of this limited, informal posting):

- FAC-011-3 – System Operating Limits Methodology for the Operations Horizon
- FAC-014-2 – Establish and Communicate System Operating Limits
- Revisions to definition of System Operating Limit (SOL)
- New definition of SOL Exceedance

Reliability Standards and definitions that **are NOT included** (as part of this limited, informal posting):

- FAC-010-3 – System Operating Limits Methodology for the Planning Horizon
- Revisions to definition of Interconnection Reliability Operating Limit (IROL)
- Necessary revisions to existing Reliability Standards to incorporate concepts included in new defined term "SOL Exceedance" (*i.e.,* TOP-002-4 – capitalize SOL Exceedance to incorporate usage of defined term).

Although this is only an informal posting, the SDT underscores the importance of this posting. The SDT believes that the revisions proposed represent a significant improvement in how the industry works together to ensure reliability by establishing SOLs and operating to them in a manner that is reflective of the changing technology, and dynamic manner where entities have the ability to assess pre- and post-Contingency performance in Real-time based on actual operating conditions. For these reasons, the SDT requests that commenters please take the time to review the background materials from the Project 2015-09 SOL Technical Conference which outline all of the various issues that were considered by the team, and discussed in an open forum with industry members. The SDT believes that we have captured the essence of the direction that the industry would like to take, but this is the opportunity for the team to continue to improve on proposed revisions by obtaining early feedback. The SDT looks forward to hearing and understanding your perspective for each of the very specific issues and associated questions raised below. In order for the SDT to thoroughly understand and incorporate your feedback into the future standard development, please do not simply provide yes or no responses. Please provide us with your perspective. Give us as much detail as you can. If you disagree with the SDT's direction, please provide an alternative approach that you believe will be superior to the one that the SDT proposed.

Proposed Revisions, Background Information and Questions

Proposed Revisions to Definition of System Operating Limits (SOL)		
Proposed Revised Definition	**Explanation of Proposed Revision**	**Relevant Definition(s) or Standards Impacted By Proposed Revision**
System Operating Limits: Reliability limits used for operations, to include Facility Ratings, System voltage limits, and stability limitations.	The current definition of SOL (and the related FAC standards) presume an operating paradigm whereby a study or analysis is performed ahead of time to establish an SOL; the SOL is then communicated to operators; and the operators are given an operating plan to operate below the SOL with the presumption that doing so will result in acceptable pre- and post-Contingency system performance in Real-time operations. However, due to changes in the TOP and IRO Reliability Standards, along with advancements	Existing definition of SOL: "The value (such as MW, Mvar, amperes, frequency or volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain

Proposed Revisions to Definition of System Operating Limits (SOL)		
Proposed Revised Definition	**Explanation of Proposed Revision**	**Relevant Definition(s) or Standards Impacted By Proposed Revision**
	in technology from the time that the FAC standards were originally drafted, this is not reflective of how the system is actually operated. Today, entities continuously assess system performance and identify potential events in Real-time, based on *actual* operating conditions. The proposed revisions to the SOL definition, coupled with the proposed new definition of SOL Exceedance (see below) and the revisions to the FAC standards will support the concept that the SOL is the actual operating parameter; and eliminate confusion between "what the limits are" verses "how the system should be operated given the limits." Given this shift, there is no need for the existing SOL definition language that includes concepts of "the most limiting criteria," "specified system configuration," "operation within acceptable reliability criteria," and "pre- and post-Contingency." These concepts are covered in the future-enforceable TOP and IRO Reliability Standards (including the defined terms contained therein: OPA, RTA, and Operating Plans), along with the proposed revisions to the FAC standards. As a result of the proposed revisions, the Facility Ratings, System voltage limits, and stability limitations are SOLs, all of the time, regardless of which one is "the most limiting." Also, as detailed below, the definition	operating criteria. These include, but are not limited to: • Facility Ratings (applicable pre- and post-Contingency Equipment Ratings or Facility Ratings) • transient stability ratings (applicable pre- and post-Contingency stability limits) • voltage stability ratings (applicable pre- and post-Contingency voltage stability) • system voltage limits (applicable pre- and post-Contingency voltage limits)"

Proposed Revisions to Definition of System Operating Limits (SOL)		
Proposed Revised Definition	**Explanation of Proposed Revision**	**Relevant Definition(s) or Standards Impacted By Proposed Revision**
	of "SOL Exceedance" will complement the revised definition of SOL by specifically identifying operating conditions that are deemed unacceptable, and require action by the TOP to mitigate. The proposed revisions use the term "stability limitation" rather than "transient stability limit," "voltage stability limit" or the Glossary term "Stability Limit." The intent of the SDT is that "stability limitation" is intentionally broad and can be used to encompass a number of different types of stability-related limitations or phenomenon, including, but not limited to, weighted short-circuit ratio (WSCR), sub-synchronous resonance (SSR), phase angle limitations, fault-interrupting capability of breakers, transient voltage limitations on equipment, and geomagnetic-induced currents on equipment. The Glossary term "Stability Limits" is not appropriate because it is limited to the maximum power flow value; this is too restrictive and not technology-neutral, as tools allow entities to monitor and control parameters other than maximum power flow values in order to demonstrate reliable stability performance. For more information regarding the proposed revisions to the SOL definition (and the definition of SOL Exceedance), please reference the Project 2014-03 – TOP and IRO	

Proposed Revisions to Definition of System Operating Limits (SOL)		
Proposed Revised Definition	**Explanation of Proposed Revision**	**Relevant Definition(s) or Standards Impacted By Proposed Revision**
	Reliability Standards white paper entitled, "System Operating Limit Definition and Exceedance Clarification."	

Proposed New Definition of SOL Exceedance		
Proposed New Definition	**Explanation of Proposed New Definition**	**Relevant Definition(s) or Standards Impacted By Proposed New Definition**
SOL Exceedance: An operating condition characterized by any of the following: • Actual or pre-Contingency flow on a Facility is above the Normal Rating; • Calculated post-Contingency flow on a Facility is above the highest Emergency Rating; • Calculated post-Contingency flow on a Facility is above a Facility Rating for which there is not sufficient time to reduce the flow to acceptable levels should the Contingency occurs; • Actual or pre-Contingency bus voltage is outside normal System voltage limits;	As explained above, under the proposed revisions, the SOL is the actual set of Facility Ratings, System voltage limits, or stability limitations that are to be monitored for the pre- and post-Contingency state. How an entity remains within those SOLs will vary depending upon the particular Operating Plan of the entity. When the operating conditions listed in the definition of SOL Exceedance are identified – through an OPA or RTA – the TOP will take the actions outlined in its Operating Plan to mitigate the condition. The SDT did not include specific timing requirements for each condition listed in the definition, because the appropriate timing for operator response can vary depending upon the particular facts and circumstances. However, it is expected (and required) that the TOP Operating Plan specifically identify the allowable response time, along with the specific actions to be taken by the operator, in mitigating the condition.	**Mapping to existing FAC standards or definitions under revision:** • FAC-011-3 Requirement R2 (Parts 2.1 and 2.2)- Identifies performance requirements that RC SOL Methodology shall include. If the definition of SOL Exceedance is pursued by the SDT, the definition would be incorporated into existing standards that currently rely on the concept of an "SOL exceedance." The intent is not to change the meaning of the existing standards, rather the SDT believes that the proposed definition captures the existing meaning, but simply provides greater clarity through listing the specific

Proposed New Definition of SOL Exceedance		
Proposed New Definition	**Explanation of Proposed New Definition**	**Relevant Definition(s) or Standards Impacted By Proposed New Definition**
• Calculated post-Contingency bus voltage is outside the emergency system voltage limits; • Calculated post-Contingency bus voltage is outside emergency system voltage limits for which there is not sufficient time to relieve the condition should the Contingency occurs; or, • Operating parameters indicate the next Contingency could result in instability.	The bulleted items carry forward the types of limitations that are identified in the current definition of SOL, and incorporate the concepts of acceptable/unacceptable system performance, as currently contained in FAC-011-3 Requirement R2. For bullet item 3: This operating condition exists when the calculated post-Contingency flow falls below the highest Emergency Rating; however, the flow remains at a level where there is not sufficient time to reduce the flow to an acceptable level after the Contingency occurs. In this operating condition, the operator would be required to take pre-Contingency action, and could not rely on a post-Contingency mitigation plan. Because pre-Contingency action is required, the condition is deemed to be an "SOL Exceedance." For bullet items 4 and 5: Normal and emergency System voltage limits must respect the voltage limitations specified in the TO or GO Facility Ratings methodology (pursuant to FAC-008-3). Normal voltage limits are typically applicable for the pre-Contingency state, while emergency voltage limits are applicable for the post-Contingency state. "SOL Exceedance" with respect to	types of conditions in the "SOL Exceedance" definition. In concert with proposing the new "SOL Exceedance" definition, the SDT would propose revisions (only as necessary) to existing standards to incorporate the newly defined Glossary term. Below are a few examples, but are not intended to represent a comprehensive or complete listing: • TOP-002-4 Requirement R1 - Each Transmission Operator shall have an Operational Planning Analysis that will allow it to assess whether its planned operations for the next day within its Transmission Operator Area will result in an SOL Exceedance of its System Operating Limits (SOLs). • TOP-002-4 Requirement R2 - Each Transmission Operator shall have an Operating Plan(s) for next-day operations to address potential System Operating Limit (SOL)

Proposed New Definition of SOL Exceedance		
Proposed New Definition	**Explanation of Proposed New Definition**	**Relevant Definition(s) or Standards Impacted By Proposed New Definition**
	these voltage limits occurs when either actual bus voltage is outside acceptable pre-Contingency (normal) bus voltage limits, or when Real-time Assessments indicate that bus voltages are expected to fall outside acceptable emergency limits in response to a Contingency event. Real-time Assessments recognize whether auto-reactive devices are sufficient for maintaining voltage within acceptable limits pre- or post-Contingency.	Exceedance(s) identified as a result of its Operational Planning Analysis as required in Requirement R1. • TOP-001-3 Requirement R14 - 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.

Question 1: Given how the revisions are intended to work together with the revised TOP and IRO Reliability Standards (including the definitions of OPA, RTA and Operating Plan), do you agree with the proposed revisions to the definition of SOL and new definition of "SOL Exceedance"? If not, please explain why you do not support the revisions, and what revisions you propose to align the definition(s) with the revised TOP and IRO Reliability Standards.

☒ Yes
☐ No

Comments: While ERCOT understands and can support the direction of the SDT, ERCOT expresses concern with the use of the word "limitations" in the term "stability limitations." This broad terminology, while offering the flexibility to consider various types of limitations, could be misinterpreted to refer to equipment-level limitations (e.g. low stability limit on a generator) rather than limitations at the system level. This should be clarified, perhaps by changing "stability limitations" to "system stability limitations." Additionally, the proposed change to the definition of SOL would render the reference to the term "facility ratings" in the definitions of Operational Planning Analysis and Real Time Assessment redundant. Removal of these types of redundancies should be addressed either in this project or a subsequent project, similar to guidance provided in paragraph 81 efforts.

Question 2: The suggested revisions would mean that the Facility Ratings, System voltage limits, and stability limitations are the actual SOLs. OPAs and RTAs are performed to determine whether these SOLs may potentially be exceeded (through an OPA) or are actually being exceeded (through a RTA). Operating Plans are developed to address "'SOL Exceedances." Do you believe the proposed revisions to the definition of SOL (and companion definition of "SOL Exceedance") allow for a clear distinction between "what the limits are" and "how the system should be operated"?

☒ Yes
☐ No
Comments:

Question 3: Do you agree with removing "the most limiting criteria," "specified system configuration," "operation within acceptable reliability criteria," and "pre- and post- Contingency" concepts from the definition of SOL? If no, please explain your concerns.

☒ Yes
☐ No
Comments: There is still some confusion around assessing stability limits pre and post contingency in an OPA and RTA. These stability limits may be developed to provide acceptable post contingency performance (n-1). The SDT should clarify the definition language to ensure that it is not inferred that the OPA and RTA must be performed to assess if post contingent flows will go beyond a (N-1 determined) stability limit, (understanding you can consider multiple contingencies) or you will be evaluating for N-2.

Proposed Reliability Standard: FAC-011-4, Requirement R1		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R1. Each Reliability Coordinator shall have a methodology for establishing SOLs ("SOL Methodology") within its Reliability Coordinator Area.	As outlined above, the SDT has incorporated the concepts contained in the existing FAC-011-3 Requirement R1 into the proposed revisions to the definitions of SOL and SOL Exceedance, along with the proposed revisions to FAC-011 and FAC-14. The existing	**Mapping to existing FAC standards under revision:** • FAC-011-3 Requirement R1 – Sentence 1.

Proposed Reliability Standard: FAC-011-4, Requirement R1		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
	Parts 1.1 through 1.3 are incorporated into the proposed new requirements, as detailed below.	

Question: None. All related questions have been incorporated below (*see*, questions regarding proposed Requirements R2, R6 and Part 3.1).

Proposed Reliability Standard: FAC-011-4, Requirement R2		
Proposed New/Revised Requirement	**Explanation / Rationale for Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R2. Each Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to determine the applicable Facility Ratings to be used in operations. The method shall address the use of common Facility Ratings between the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator Area.	Under FAC-008-3, Facility Ratings are established by Facility owners (TOs and GOs) consistent with the owner's methodology. These Facility Ratings are communicated to the RCs and TOPs. RCs and TOPs incorporate these ratings into their tools and processes and use the ratings in establishing their SOLs. Because TOs and GOs are not required to use any sort of continent-wide methodology for establishing the Facility Ratings, it is possible for owners to use varying/different methodologies. This can create problems in establishing the appropriate SOL because the variations in Facility Rating methodologies may result in different or inconsistent types of Facility Ratings used in operations.	**Background regarding existing standards *not* under revision by SDT:** • FAC-008-3 Requirements R1, R2 and R3– GOs and TOs are required to have a methodology for developing Facility Ratings. • FAC-008-3 Requirement R6– GOs and TOs shall establish Facility Ratings consistent with its methodology. • FAC-008-3 Requirements R7 and R8– must provide their Facility Ratings to the RC, TOP and other functional entities.

Proposed Reliability Standard: FAC-011-4, Requirement R2		
Proposed New/Revised Requirement	**Explanation / Rationale for Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
	If the RCs and TOPs are using different sets of Facility Ratings in conducting their respective outage coordination studies, OPAs, and RTAs, this may create a potential risk to reliability. The intent of Requirement R2 is for the RC SOL Methodology to identify the method that its TOPs will use in determining which of the Facility Ratings provided by the owner (under FAC-008-3) are appropriate for use in establishing SOLs for use in operations. As outlined above, under the revised definition of SOL, the Facility Ratings will be the SOL. The second sentence of Requirement R2 is intended to ensure that the RC and the TOP are using the same Facility Ratings, which will eliminate the risk identified above.	**Mapping to existing FAC standards under revision:** • FAC-011-3 Requirement R1- RC SOL Methodology must state that SOLs shall not exceed associated Facility Ratings. • FAC-011-3 Requirement R2 (Parts 2.1 and 2.2)- RC SOL Methodology shall include requirement that SOLs provide BES performance, and following certain prescribed conditions/states, remain within their Facility Ratings.

Question 4: Do you agree that the TOP should determine the appropriate Facility Ratings for use in operations, in accordance with the requirements set in the RC SOL Methodology? Note: This assumes the Facility owner will continue to provide the Facility Ratings to the RC and TOP as currently required under FAC-008. The RC Methodology will simply describe the manner in which the TOP determines which of those owner-provided Facility Ratings are appropriate for use in operations.

☒ Yes
☐ No
Comments:

Proposed Reliability Standard: FAC-011-4, Requirement R3		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R3. Each Reliability Coordinator shall include in its SOL Methodology the method for Transmission Operators to determine the applicable steady-state System voltage limits to be used in operations. The method shall: **3.1.** Require that System voltage limits are not outside of the Facility voltage ratings; **3.2.** Require that System voltage limits are not outside of voltage limits identified in Nuclear Plant Interface Requirements; **3.3.** Require that System voltage limits are above UVLS relay settings;	There is no Reliability Standard that specifically requires establishment and communication of System voltage limits; however, System voltage limits are used in the definition of SOL and are an important aspect of reliable operations. The SDT believes it is important for the Reliability Standards to assign responsibility for the establishment and communication of System voltage limits. Like Facility Ratings, System voltage limits should be consistent between TOPs and RCs throughout all operations processes. The proposed Requirement R3 will result in the RC SOL Methodology requiring the TOP to determine System voltage limits for use in operations, consistent with the RC methodology.	**Background regarding existing standards *not* under revision by SDT:** • FAC-008-3 – Requires Facility Owner to establish Facility Ratings, which includes voltage ratings.[7] • VAR-001-4 Requirement R1 – The TOP specifies the system voltage schedule (which is either a range or a target value associated with a tolerance band) as part of its plan to operate within SOLs (and IROLs). **Mapping to existing FAC standards under revision:** • FAC-011-3 Requirement R2 (Parts 2.1 and 2.2) - RC SOL Methodology shall include requirement that SOLs provide BES

[7] Definition of Facility Ratings: The maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that does not violate the applicable equipment rating of any equipment comprising the facility.

Proposed Reliability Standard: FAC-011-4, Requirement R3		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
3.4. Identify the lowest allowable System voltage limit; **3.5.** Address the use of common System voltage limits between the Reliability Coordinator and the Transmission Operators in its Reliability Coordinator Area; and, **3.6.** Address coordination of System voltage limits between adjacent Transmission Operators in its Reliability Coordinator Area.		performance with regard to certain prescribed conditions (pre-Contingency state, following certain identified single-Contingencies) and remain within their thermal and voltage limits. [Proposed definitions of SOL and SOL Exceedance and Requirement R3 carry this forward.] • FAC-011-3 Requirement R1- RC SOL Methodology must state that SOLs shall not exceed associated Facility Ratings. [Proposed Part 3.1 carries this forward.] • Parts 3.2-3.6 were not clearly identified in the previous FAC standards; these are "new" requirements added by the SDT to provide clarity regarding steady-state system voltage limits.

Question 5: Do you agree that the TOP should establish the System voltage limits pursuant to the RC SOL Methodology, and that the proposed Requirement R3 provides sufficient clarity for what the RC SOL Methodology must include?

☒ Yes
☐ No
Comments:

Question 6: Is it clear what System voltage limits are? Does a definition for "System Voltage Limits" need to be created? A draft definition under consideration by the SDT is "System Voltage Limits: The maximum and minimum steady-state voltages (both Normal and Emergency) that provide for reliable system operations." Please provide your perspective on whether, currently, it is clear what is meant by System voltage limits, and if not, what you believe to be the appropriate definition.

☒ Yes
☐ No
Comments: ERCOT is in favor of a definition to provide clarity and distinction between System Voltage Limits and Voltage Schedules. However, ERCOT recommends the SDT make additional clarifications to the draft definition that not all Facilities will have System Voltage Limits since they are typically applied to station busses to represent those devices connected to that electrical bus.

Proposed Reliability Standard: FAC-011-4, Requirement R4		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R4. Each Reliability Coordinator shall include in its SOL Methodology the method for determining the stability limitations to be used in operations. The method shall: **4.1.** Specify stability performance criteria for single Contingencies and for multiple Contingencies (as identified in Requirement R5), including any margins applied. The criteria shall consider the following:	As detailed above, the existing definition of SOL provides that the SOL is "based upon" certain criteria, including transient stability ratings. The proposed revisions to the SOL definition make clear that the SOLs "are" the reliability limits, which include stability limitations. Additionally, under the current standards, there are no set continent-wide stability limitations criteria for use in determining SOLs. Under existing FAC-011-3	**Background regarding existing standards *not* under revision by SDT:** • IRO-005-3.1a, Requirement R1 (Parts 1.2 and 1.3) – Each RC should monitor its RC Area parameters, including pre and post contingent element stability conditions. • IRO-008-2, Requirement R1 – Each RC shall perform an OPA that will assess whether next day planned operations

Proposed Reliability Standard: FAC-011-4, Requirement R4		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
4.1.1. steady-state voltage stability; **4.1.2.** transient voltage response; **4.1.3.** angular stability; and, **4.1.4.** System damping. **4.2.** Require that stability limitations are established to meet the BES performance criteria specified in Part 4.1 for the following Contingencies: **4.2.1.** Loss of one of the following either by single phase or three phase Fault to ground with normal clearing, or without a Fault: • generator; • Transmission circuit; • transformer; • shunt device; • single pole of a direct current line. **4.2.2.** Loss of any multiple Contingencies identified in Requirement R5.	Requirement R2, the RC has flexibility with regard to establishing stability limitations; provided the system performance requirements in the standard are met. While the existing language in Requirement R2 (and portions of Requirement R3) do provide some "continent-wide" uniformity, the requirements do not provide sufficient clarity regarding the distinction between establishing stability limitations and acceptable system performance requirements/response. The proposed revisions continue to allow the RC to have flexibility in its SOL Methodology for developing stability limitations. This ensures the RC is able to appropriately tailor the methodology to meet the particular needs of its system, since a "one size fits all" approach is not appropriate for stability limitations. However, the proposed requirement does set a number of minimum required attributes (specific to stability limitations) that must be contained within the RC SOL Methodology. The proposed approach by the SDT is for the RC SOL Methodology to continue to set the method for how stability limitations for its RC Area must be established. Under proposed Requirement R4, the RC SOL Methodology must:	will exceed SOLs or IROLs within its Wide-area. • MOD-001-2, Requirement R1 (Part 1.1) – Each TOP that calculates TFC or TTC shall have a written methodology that describes how those values are calculated, including the pre- and post-Contingency limitations for transient and voltage stability limits and other SOLs. **Mapping to existing FAC standards under revision:** • FAC-014-2, Requirement R6 (Parts 6.1 and 6.2) – Planning Authority shall provide multiple contingencies causing stability limits, and the limits, to the Reliability Coordinator, or note to the RC if there are none. *[Maps to proposed Part 4.4]* • FAC-011-3 Requirement R2 (Part 2.1) - *[Maps to proposed Part 4.1, with new requirement providing specific types of criteria that must be considered.]*

Proposed Reliability Standard: FAC-011-4, Requirement R4		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
4.3. Describe how instability risks are identified, considering realistic levels of transfers, Load and generation dispatch; **4.4.** Consider the stability limitations (and corresponding multiple Contingencies) provided by the Planning Coordinator in accordance with FAC-014-3 Requirement R8; **4.5.** Include a description of the study models, including the level of detail that is required and allowed uses of Remedial Action Schemes (RAS); and, **4.6.** Specify how stability limitations will be established when there is an impact to more than one TOP in its Reliability Coordinator Area.	Part 4.1 - Specify the stability performance criteria for single Contingencies and multiple Contingencies, including any margins applied. Part 4.2 - Meet the performance criteria for certain identified Contingencies (listed in the standard). Part 4.3 - Describe how instability risks are identified. The SDT changed the existing language of "anticipated" to "realistic." (See, FAC-011-3 Part 3.6) The SDT believes "anticipated" could be broadly interpreted to mean anticipated by the planners (in planning horizon), instead of what is realistically anticipated by the operators in the operations time horizon. Part 4.4 – Incorporates concepts from the existing FAC-011-3 Part 3.3, and requires the RC to consider the stability limitations provided by the Planning Coordinator. Part 4.5 – This language combines some components of existing FAC-011-3 Parts 3.1, 4.3, and 3.5, but removes the blanket requirement for the study to include the entire RC Area. The revised language allows the RC to	• FAC-011-3 Requirement R2 (Part 2.2) - *[Maps to proposed Part 4.2]* • FAC-011-3 Requirement R2 (Part 3.6) - *[Maps to proposed Part 4.3]* • FAC-011-3 Requirement R3 (Parts 3.1 and 3.5) – *[Maps to proposed Part 4.5]*

Proposed Reliability Standard: FAC-011-4, Requirement R4		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
	have flexibility to determine the appropriate study model, and required supporting details. Part 4.6 – The SDT believes that this Part will improve reliability by requiring the RC SOL Methodology to specify the appropriate manner to develop stability limitations, when those limitations impact more than one TOP in its RC Area. A companion requirement is FAC-014-3 Requirement R3, which requires the RC to determine the stability limitations when there is an impact to more than one TOP in its RC Area. (*See*, the proposed FAC-014-3 Requirement R3 for further explanation).	

Question 7: Do you agree that the proposed use of the word stability "limitations" is a better choice than "limit" to capture the full breadth of all phenomena and determination methods/time frames for stability concerns?

☒ Yes

☐ No

Comments: ERCOT agrees with the use of either "limits" or "limitations" since either term can be read to encompasses additional "phenomena and determination methods/time frames for stability concerns." However, the SDT should clarify that the limits/limitations the definition identifies are those at the "system" level and does not include all limitations that may exist at the "equipment" level.

Question 8: With regard to proposed Part 4.1: Do you agree that the RC SOL Methodology should have criteria that consider *all* items in Parts 4.1.1 – 4.1.4? Are there additional criteria that should be included? If yes, please list and explain. Are there criteria that are included, that you believe should *not* be included?

☒ Yes
☐ No

Comments: The SDT should consider adding interconnection/area specific items to the SOL Methodology such as transient frequency response criteria. The current list should be the minimum criteria considered. This could be clarified by inclusion of the phrase "The criteria shall consider the following, at a minimum" to Part 4.1. The SDT should also clarify through guidance that inclusion of any additional criteria in the SOL methodology requires implementation of that criteria in FAC-014.

Question 9: With regard to proposed Part 4.2: Do you agree that the RC SOL Methodology should consider the contingencies listed in Parts 4.2.1 and 4.2.2? Are there additional Contingencies that should be included? If yes, please list and explain. Are there Contingencies that are included, but you believe should *not* be included?

☒ Yes
☐ No

Comments: Additional comments in response to Question 16.

Question 10: With regard to proposed Part 4.3: When instability risks are identified, there are various studies or assessments that analyze different transfer levels, load levels and generation dispatch combinations. The intent of Part 4.3 is to ensure that the RC SOL Methodology adequately describes how these various factors are considered in the identification of instability risks. In the identification of stability risks, the RC SOL Methodology should consider the levels of transfers, load and generation dispatch. Should the RC SOL Methodology include a description of any additional types of information?

a. Should proposed Part 4.3 specifically include "offline analyses"?
b. Should proposed Part 4.3 include forced Transmission and generation outages (*i.e.*, N-1-1)?
c. Should proposed Part 4.3 include planned outages (*i.e.*, all planned outages in the base case)?

☐ Yes
☒ No

Comments: Different levels of transfers, load, and generation dispatch are necessary to identify system conditions where calculation of an additional SOL may be warranted to prevent instability. Some representation of planned outages should be made in the base case, however this representation varies more the further out from Real time the study occurs (e.g. seasonal studies).

Since all planned outages do not overlap, it is common to implement some level of outages into the basecase for a particular interface to stress to more "realistic" operational levels, rather than all planned outages.

Question 11: With regard to proposed Part 4.3: The SDT used the term "realistic" as opposed to "expected" in order to perform sufficient assessment to identify potential stability risks. The SDT takes that position that "unrealistic" stressing scenarios may be more of an academic exercise to "break the system" and may not translate to actual operations preparedness. Is "realistic" transfer, Load and generation dispatch levels an adequate description or should more clarifying language be added, such as a reference to firm and non-firm transfers?

☐ Yes
☒ No
Comments: Realistic is too vague and clearer language may be necessary. ERCOT prefers the term "expected," instead of "realistic," however, the terms "firm" and "non-firm" may also introduce confusion. Using the term "expected" would cover "that which is reasonably expected to occur within the operations time horizon (< 1yr)."

Question 12: With regard to proposed Part 4.5: Current FAC-011-3 Part 3.1 requires that the study models include the entire RC Area. However, the SDT believes that it is not necessary for reliability that the entire RC Area is studied; instead, the area modeled may vary depending upon the facts and circumstances of the particular footprint or electrical area. Should Part 4.5 require the anything different for description of the study model used? If so, what should else be included and why?

☐ Yes
☐ No
Comments:

Question 13: With regard to proposed Part 4.5: The requirement specifically identifies Remedial Action Schemes (RAS), however other protective schemes (such as UVLS and UFLS) and their impact on stability performance were not included. Should the requirement specifically identify other types of protective schemes? If yes, please describe why.

☐ Yes
☒ No
Comments: UVLS and UFLS design are separate studies and have separate criteria addressed in other Reliability Standards. UVLS and UFLS schemes are safety nets for extreme contingencies and as such, the FAC standards are not an appropriate place to address them.

Question 14: With regard to proposed Part 4.6: Do you agree that the RC SOL Methodology should specifically address this issue?
☐ Yes
☐ No
Comments:

Proposed Reliability Standard: FAC-011-4, Requirement R5		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R5. Each Reliability Coordinator shall include in its SOL Methodology the method for determining the multiple Contingencies used in the evaluation for potential System instability, Cascading outages or uncontrolled separation.	Currently effective Reliability Standard TOP-004-2 Requirement R3 requires the TOP operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its RC. This requirement was retired by the TOP/IRO project because it was addressed by the new TOP-001-3 Requirements R12 and R14 (which are not limited by single or multiple contingencies) in combination with existing FAC-011-3 Part 3.3 and FAC-014-2 Requirement R6 (which work collectively to establish how multiple Contingencies are considered in IROLs and SOLs).	**Background regarding existing standards *not* under revision by SDT:** • TOP-001-3 Requirements R12 and R14 **Mapping to existing FAC standards under revision:** • FAC-011-3 Part 3.3 • FAC-014-2 Requirement R6

Proposed Reliability Standard: FAC-011-4, Requirement R5		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
	The proposed Requirement R5 maintains the existing approach that the RC SOL Methodology shall specify the multiple Contingencies for use in establishing stability limitations and IROLs. Further, it improves upon the existing requirement by allowing the RC SOL Methodology to identify multiple Contingencies beyond those identified by the planners.	

Question 15: Do you agree that the RC should continue to have a process to specify the multiple contingencies used in the evaluation for potential System instability, Cascading outages or uncontrolled separation?

☒ Yes
☐ No
Comments:

Question 16: The multiple contingencies referenced in Requirement R5 relate to those stability limitations established under Requirement R4, some of which may be IROLs, while others may not. The intent of SDT was to allow the RC flexibility in developing its RC SOL Methodology so that it can use the list of multiple Contingencies in a manner that is broader than solely for use in establishing IROLs. For example, the multiple Contingencies can be used by the RC in identifying the conditions referenced in Requirement R8. Additionally, the RC could use the multiple Contingencies in its OPA to identify potential instability and Cascading outages. Do you believe an additional requirement is necessary to specifically identify how an entity would implement the multiple Contingencies? If yes, please provide the specific language you propose for the requirement.

☒ Yes
☐ No

Comments: ERCOT supports the creation of a requirement to utilize the required concepts identified in the ERCOT SOL methodology. ERCOT questions whether there is a need for any of the requirements identified in the SOL methodology that entities are not otherwise required to actually implement. The SOL methodology in of itself is not a NERC Reliability Standard requirement. The requirements to implement what is in the SOL methodology must reside in a NERC Reliability Standard requirement. ERCOT recommends creation of a requirement similar to existing TOP-004-2 R3 and recommends limiting the requirement to stability limitations or the situations identified in proposed FAC-011-4, Requirement R8. This will limit the potential incorrect interpretation that the OPA and RTA should assess multiple contingencies for all SOLs.

This could also be addressed by modifying the SOL definition to clarify that the requirement to assess SOL exceedances for multiple contingencies only applies specifically to stability limitations.

Proposed Reliability Standard: FAC-011-4, Requirement R6		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R6. Each Reliability Coordinator shall include in its SOL Methodology the method and criteria for establishing Interconnection Reliability Operating Limits (IROLs). The criteria shall describe the severity and extent of reliability impact that warrants establishment of an IROL, including: **6.1.** Unacceptable quantity of load loss due to System instability, Cascading outages or uncontrolled separation;	Regional differences exist in the criteria for determining which subset of SOLs are IROLs. The SDT discussed the regional differences among the various RC Areas, and several similarities emerged, including: (1) loss of load criteria, (2) loss of generation criteria, (3) non-localized or uncontained instability, and (4) impact on neighboring RC Area. The SDT evaluated the potential positive and negative impacts of creating continent-wide requirements, and determined that establishing minimum criteria that must be considered as part of the RC Methodology would benefit reliability; while continuing to allow necessary flexibility. The proposed	**Mapping to existing FAC standards under revision:** • FAC-011-3 Requirement R1 – RC SOL Methodology must include a description of how to identify the subset of SOLs that qualify as IROLs. • FAC-011-3 Requirement R3.7- RC SOL Methodology must include a description of the criteria for

Proposed Reliability Standard: FAC-011-4, Requirement R6		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
6.2. Unacceptable quantity of supply loss due to System instability, Cascading outages or uncontrolled separation; **6.3.** Unacceptable thresholds for inter-area oscillations (including acceptable damping criteria and criteria for inter-area oscillations versus intra-area oscillations); and, **6.4.** Unacceptable impacts on neighboring Reliability Coordinator Areas within an Interconnection.	language provides greater uniformity by identifying the criteria to be considered by the RC in establishing IROLs. The criteria must describe, at a minimum, the severity and extent of what is/not allowable with regarding to: (1) loss of load, (2) quality of supply loss, (3) thresholds for inter-area oscillations, and (4) impacts on neighboring RC Areas within its Interconnection. This minimum IROL criteria will provide for greater continent-wide consistency as it ensures all RCs consider and identify what is allowable for each criteria. The SDT believes while this does change the current state – where no mandatory minimum criteria exist- it still allows for the RC to have the necessary flexibility to design its IROL methodology so that it can meet the reliability issues present in, and possibly unique to, its RC Area.	determining when violating an SOL qualifies as an IROL

Question 17: Do you agree that the RC SOL Methodology should be required to include *all* of the criteria included in proposed Parts 6.1 through 6.4? Do you believe there are additional criteria that are not currently included, but should be?

☒ Yes

☐ No

Comments: ERCOT requests that the SDT retain the phrase "within an Interconnection" portion of 6.4. There is currently a lack of universal direction and clarity in what the terms "neighboring" and "adjacent" mean for ERCOT and entities in the ERCOT interconnection when dealing with functional entities in two different Interconnections. Retaining the phrase "within an Interconnection," language helps mitigate this confusion.

Question 18: Should the criteria identified in proposed Parts 6.1 through 6.4 also include a minimum or maximum threshold? If so, what should the thresholds be, and why?

☐ Yes
☒ No

Comments: ERCOT believes that each RC has the technical understanding and rationale for determining the appropriate thresholds for mitigating risk for its RC area and subsequently setting the appropriate thresholds.

Proposed Reliability Standard: FAC-011-4, Requirement R7		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R7. Each Reliability Coordinator shall include in its SOL Methodology the criteria for developing the IROL T_V for any IROLs in its Reliability Coordinator Area. Each IROL T_V shall be less than or equal to 30 minutes.	For the most part, the substance of this requirement is not changed from the existing standard; it was previously contained in a part (*i.e.,* FAC-011-3 Part 3.7) and is now a stand-alone requirement. The only change is that the 30 minute time-period is specifically identified, whereas in the previous requirement only stated T_v.	**Mapping to existing FAC standards under revision:** • FAC-011-3 Requirement R3.7- RC SOL Methodology must include a description of the criteria for determining when violating an SOL qualifies as an IROL and criteria for developing any associated IROL T_v.

Question 19: Do you believe the IROL T_v definition should be modified to remove the 30 minute not-to-exceed time limit, and instead the specific time limit should be identified in the specific Reliability Standard requirement, as appropriate?

☒ Yes
☐ No

Comments: Yes, the IROL Tv definition should be modified to remove the 30 minute not-to-exceed time limit. Requirements should reside in a NERC Standard and not within a definition.

Proposed Reliability Standard: FAC-011-4, Requirement R8		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R8. Each Reliability Coordinator shall include in its SOL Methodology the method to address a Real-time operating state, where the next Contingency has the potential to cause System instability, Cascading outages or uncontrolled separation, but was not identified one or more days prior to the current day. The method shall address: **8.1.** Thresholds for initiating evaluation of potential impacts; **8.2.** A description of when pre-Contingency Load shedding is warranted to mitigate the condition; and, **8.3.** A review of the operating state experience for the purpose of determining whether an IROL should be established.	In Order No. 817, FERC noted that, "operators do not always foresee the consequences of exceeding such SOLs and thus cannot be sure of preventing harm to reliability." The SDT believes that in certain circumstances, such as in response to forced outages or similar unforeseen events, Real-time operating conditions can occur such that a RTA identifies an operating state where the next Contingency could result in instability, uncontrolled separation or Cascading outages. When this operating condition occurs in Real-time, it is clear that System Operator(s) are expected to take urgent action to mitigate the N-1 insecure operating state. What is unclear, however, is whether this operating condition constitutes some sort of an "IROL exceedance" or mandates that other IROL-related Reliability Standards should be applied. The proposed requirement requires the RC SOL Methodology to prescribe a method for how to address the above-described Real-time operating state. This will allow for consistency by System Operators within an RC Area in responding to the Real-time operating state when tools or analysis indicate abnormal post-Contingency conditions (*e.g.*, unsolved Contingencies, high post-Contingency overloads). While the requirement treats the operating state similar to, and equally important to, what prepared response must be	**Mapping to existing FAC standards under revision:** • FAC-011-3 Requirement R3.7- RC SOL Methodology must include a description of the criteria for determining when violating an SOL qualifies as an IROL and criteria for developing any associated IROL T_V.

Proposed Reliability Standard: FAC-011-4, Requirement R8		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
	in place for resolving an IROL-type issue, the requirement does not focus on formally establishing the limit, but instead allowing the System Operator to act with urgency to address the temporary operating state at hand. Also Part 8.3 requires the RC Methodology prescribe an after-the-fact review of the operating state experience for the purpose of determining whether an IROL should be established in accordance with the RC SOL Methodology.	

Question 20: Do you agree with the proposed approach for addressing this Real-time operating state issue?

☐ Yes
☒ No

Comments: ERCOT believes that there should be corresponding IRO/TOP/EOP requirements to implement the "method" referenced in R8 as part of this project. Failure to create accompanying requirements simply imposes an administrative requirement with no performance obligation.

Question 21: Do you believe there should be a timing requirement for implementing actions to address the risk (*e.g.*, 30 min)? If yes, when should the time start? End?

☒ Yes
☐ No

Comments: ERCOT believes a timing requirement is unnecessary, but, the requirement to implement actions should have very clear expectations so that pre-contingency load shedding does not occur unnecessarily. If the SDT chooses to add a timing requirement, the time period should start when the condition's effects are identified (e.g. when it is verified that post contingency cascading,

instability, or uncontrolled separation exists) and end at the time that the risk of post contingency cascading, instability, and uncontrolled separation is no longer present. This timing requirement should not cover actual alleviation of the SOL exceedance, but rather a post contingency flow where there is still an SOL exceedance, yet the magnitude of the SOL exceedance has been reduced to a point at which the risk of cascading has been mitigated.

Question 22: Do you believe that this issue is already addressed in other Reliability Standards (*i.e.*, IRO-009 and EOP-011)? If not, should it be?

☐ Yes
☒ No

Comments: The Real-time operating state identified in R8 is not addressed in IRO-009 or EOP-011. It has been somewhat addressed in TOP-004-2 R2, however this requirement is going to be retired 4/1/17. ERCOT believes the relevant standards (TOP-001, IRO-009, and EOP-011) should be revised to address 1.) screening for instances where "the next Contingency has the potential to cause System instability, Cascading outages or uncontrolled separation" and 2.) taking actions upon identification of these instances.

Question 23: If the proposed requirement is added, should a reciprocal requirement be added to require implementation of the method (*e.g.*, possibly a new TOP or IRO requirement)?

☒ Yes
☐ No

Comments: ERCOT believes that there should be corresponding IRO/TOP/EOP requirements to implement this "method" in R8 as part of this project. Failure to do so creates simply an administrative requirement with no performance obligation.

Proposed Reliability Standard: FAC-011-4, Requirement R9		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
R9. Each Reliability Coordinator shall issue its SOL Methodology and any changes to the	For the most part, the substance of this requirement is not changed from the existing standard. A clarification was	**Mapping to existing FAC standards under revision:**

Proposed Reliability Standard: FAC-011-4, Requirement R9		
Proposed New/Revised Requirement	**Explanation of Proposed Revision**	**Relevant Requirements in Existing Reliability Standard(s)**
SOL Methodology, prior to the effective date, to: **9.1.** Each adjacent Reliability Coordinator within an Interconnection, and each Reliability Coordinator that requested and indicated it has a reliability-related need for the SOL Methodology; **9.2.** Each Planning Coordinator and Transmission Planner that models any portion of the Reliability Coordinator Area; and, **9.3.** Each Transmission Operator that operates in the Reliability Coordinator Area.	added to Part 9.1 that RCs should issue its SOL Methodology, and any associated changes, to the other RCs *within* its Interconnection.	• FAC-011-3 Requirement R4 – Requires the RC to issue its SOL Methodology, and any changes to the methodology, to its adjacent RCs and any RCs indicating a reliability-related need; to each PC and TP that models portions of its RC Area; and, each TOP that operates in its RC Area.

Question 24: Do you agree with the proposed revisions? If not, please explain why and provide any changes that you propose to the language.

☒ Yes
☐ No
Comments: