

Comment Report for 1st Draft of SAR to Revise FAC-011-2: Credible Multiple Element Contingencies (Project 2008-05)

The SAR Drafting Team thanks all commenters who submitted comments on the 1st draft of the SAR to revise FAC-011-2 for “credible multiple contingencies.” This SAR was posted for a 30-day public comment period from January 25 through February 22, 2008. The SAR Drafting Team asked stakeholders to provide feedback on the SAR through a special SAR Comment Form. There were 28 sets of comments, including comments from more than 130 different people from more than 50 companies representing 9 of the 10 Industry Segments as shown in the table on the following pages.

Most commenters from outside the NPCC Region indicated that there is not a reliability-related need for the proposed standard revisions and most commenters from outside the NPCC Region disagreed with the scope and applicability of the proposed SAR. In response, the requester has made the following major revisions to better clarify the intent of the SAR:

- The intent of the SAR is NOT to require study of ALL multiple contingencies in real-time operations and has been revised for clarity in this regard.
- Contingencies that may result in the loss of multiple elements, which could impact the Interconnection Reliability Operating Limits (IROLs) and could pose a threat to the reliability of the Bulk Electric System in North America. While the current FAC-011-1 2 standard does not preclude the consideration of such Contingencies, it is not a requirement and as such may not be appropriately addressed. This could result in inadequate preparation, resulting in IROL violations and Adverse Reliability Impacts.
- Additionally, the Reliability Coordinator receives information from the Planning Authority related to SOL/IROL conditions that may be considered, but is not required to be used, in the development of their its SOL methodology. This could result in a methodology that does not properly consider available information leading to inadequate analysis and a less reliable System.
- The CMEC SAR DT has revised the SAR and included proposed changes to FAC-011-2 to address the above mention concerns.
 - The proposed new requirement R3.2.1 will explicitly require a RC to document its criteria for selecting common mode Contingencies that result in loss of two or more (multiple) elements that are associated with potential IROL conditions.
 - The proposed addition of requirement R1.4 would require the RC to describe how the list of SOLs received from the Planning Authority (in accordance with FAC-014-1 Requirement R5.3) is utilized in creating its SOL methodology

Based on the comments received, the drafting team is recommending that the revised SAR be re-posted for comment.

In this ‘Consideration of Comments’ document stakeholder comments have been organized so that it is easier to see the responses associated with each question. All comments received on the SAR can be viewed in their original format at:

http://www.nerc.com/~filez/standards/Facility_Ratings_Project_2008-05.html

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If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Gerry Adamski at 609-452-8060 or at gerry.adamski@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

¹ The appeals process is in the Reliability Standards Process Manual: <http://www.nerc.com/standards/newstandardsprocess.html>.

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The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

	Commenter	Organization	Industry Segment											
			1	2	3	4	5	6	7	8	9	10		
1.	Ken Goldsmith (G6)	ALTW				x								
2.	Kirit Shah (G5)	Ameren	x											
3.	Thad K. Ness	American Electric Power			x		x	x						
4.	Scott Lockwood	American Electric Power	x		x		x							
5.	Jason Shaver	American Transm. Company	x											
6.	Dave Rudolph (G6)	BEPC	x		x		x	x						
7.	Mike Viles	Bonneville Power Administration	x		x		x	x						
8.	Phil Park	British Columbia Transm. Corp.		x										
9.	Dale Bodden (G2)	CenterPoint Energy	x											
10.	James Armke (G2)	City of Austin d/b/a Austin Energy	x											
11.	Garry Lange (G2)	City of College Station	x											
12.	Alan Gale	City of Tallahassee						x						
13.	Rusty Foster (G4)	City of Tallahassee			x									
14.	Peter Yost (G7)	ConEd Company of New York, Inc.	x			x	x	x						
15.	Ronald Hart (G7)	Dominion Resources, Inc.						x						
16.	Jack Kerr	Dominion Virginia Power	x											
17.	Greg Rowland	Duke Energy	x		x									
18.	Brian Berkstresser	Empire District Electric	x		x		x							
19.	D.W. Dickerson	ERCOT (1)		x										
20.	H. Steven Myers	ERCOT (2)		x										
21.	Doug Hohlbaugh (G3)	FirstEnergy Corp.	x		x		x	x						
22.	Dave Folk (G3)	FirstEnergy Corp.	x		x		x	x						
23.	Sam Ciccone (G3)	FirstEnergy Corp.	x		x		x	x						
24.	John Stephens (G3)	FirstEnergy Corp.	x		x		x	x						
25.	John Reed (G3)	FirstEnergy Corp.	x		x		x	x						
26.	Eugene Blick (G3)	FirstEnergy Corp.	x		x		x	x						
27.	Eric Senkowicz (G4)	Florida Reliability Coord. Council												x
28.	Mark L. Bennett (G4)	Gainesville Regional Utility						x						
29.	Wayne Pourciau	Georgia Systems Operations Corp.			x	x								

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30.	Joseph Knight (G6)	GRE	x		x		x	x						
31.	David Kiguel	Hydro One Networks, Inc.	x											
32.	Sylvain Clermont (G7)	Hydro-Québec/TransÉnergie	x	x										
33.	Roger Champagne (I) (G7)	Hydro-Québec/TransÉnergie (HQT)	x											
34.	Ron Falsetti	Independent Electricity SO		x										
35.	Biju Gopi (G7)	Independent Electricity SO		x										
36.	Kathleen Goodman (I) (G7)	ISO New England		x										
37.	Jim Cyrulewski (G5)	JDRJC Associates									x			
38.	Jim Useldinger	Kansas City Power & Light	x		x		x							
39.	Bill Hatfield (G2)	LCRA Transmission Services Corp.	x											
40.	Clark Hawkins (G4)	Lee County Electric Cooperative	x											
41.	Eric Ruskamp (G6)	Lincoln Electric System	x		x		x	x						
42.	Thomas Burke	Luminant					x	x						
43.	Donald Nelson (G7)	MA Dept. of Public Utilities											x	
44.	Maria Neufeld	Manitoba Hydro	x		x		x	x						
45.	Robert Coish (G6)	Manitoba Hydro	x		x		x	x						
46.	Tom Mielnik (G6)	MEC	x		x		x	x						
47.	Marie Knox (G5)	Midwest ISO		x										
48.	Dede Subakti (G5)	Midwest ISO		x										
49.	Terry Bilke (G6)	Midwest ISO		x										
50.	Carol Gerou (G6)	Minnesota Power	x		x		x	x						
51.	Larry Brusseau (G6)	MRO												x
52.	Michael Brytowski (G6)	MRO												x
53.	Michael Ranalli (G7)	National Grid	x			x								
54.	Randy MacDonald (G7)	New Brunswick System Operator		x										
55.	Gregory Campoli (I) (G7)	New York ISO		x										
56.	Ralph Rufrano (G7)	New York Power Authority												
57.	Joe O'Brien (G5)	NIPSCO	x											
58.	Guy V. Zito (G7)	Northeast Power Coord. Council												x
59.	Lee Pedowicz (G7)	Northeast Power Coord. Council												x
60.	Murale Gopinathan (G7)	Northeast Utilities	x			x								
61.	Diane Barney	NY State Department of PS											x	
62.	Don Hargrove	Oklahoma Gas & Electric Company	x		x		x							
63.	Pete Kuebeck	Oklahoma Gas & Electric Company	x		x		x							
64.	Stan Southers/Ellis Rankin (G7)	Oncor Electric Delivery Company LLC	x											
65.	Brian Gooder (G7)	Ontario Power Generation Inc.					x							
66.	Patrick Brown (G7)	PJM Interconnection		x										

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Commenter		Organization	Industry Segment											
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67.	Roman Carter (G1)	Southern Company Transmission	x											
68.	Jim Busbin (G1)	Southern Company Transmission	x											
69.	Marc Butts (G1)	Southern Company Transmission	x											
70.	Doug McLaughlin (G1)	Southern Company Transmission	x											
71.	J.T. Wood (G1)	Southern Company Transmission	x											
72.	Jim Griffith (G1)	Southern Company Transmission	x											
73.	Mike Oatts (G1)	Southern Company Transmission	x											
74.	Jim Viikinsalo (G1)	Southern Company Transmission	x											
75.	Robert Rhodes (G8)	Southwest Power Pool												x
76.	Brian Evans-Mongeon (G7)	Utility Services, LLC							x					
77.	Jim Haigh (G6)	WAPA	x						x					
78.	Allan Klassen	Westar Energy	x		x									
79.	Bryan Taggart	Westar Energy				x	x							
80.	Neal Balu (G6)	WPS			x	x	x	x						
81.	Pam Oreschnick (G6)	Xcel	x		x		x	x						

- I – Individual
- G1 – Southern Company Transmission
- G2 – ERCOT Transmission Owners
- G3 – FirstEnergy Corp.
- G4 – Florida Reliability Coordinating Council
- G5 – Midwest ISO Stakeholders Standards Collaborators
- G6 – Midwest Reliability Organization NSRS
- G7 – NPCC Regional Standards Committee
- G8 – SPP Operating Reliability Working Group

Index to Questions, Comments, and Responses

1. Do you agree that there is a reliability-related need for the proposed standard action? If not, please explain in the comment area. 7
2. Do you agree with the scope of the proposed standard action? If not, please explain in the comment area. 18
3. Do you agree with the applicability of the proposed standard action? If not, please explain in the comment area. 24
4. If you have other comments that you haven't provided in response to the questions above, please provide them here. 29

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1. Do you agree that there is a reliability-related need for the proposed standard action? If not, please explain in the comment area.

Summary Consideration: Most commenters expressed an opinion that planning and operations are distinctly different and that a 1:1 correspondence is neither accurate nor needed. Additionally, the majority of the industry voiced concern with accounting for all Category ‘C’ Contingencies in real-time operations.

Many commenters pointed to Requirement R3.3 on Stability limits as already handling multiple Contingencies aspects related to the SOL methodology. While multiple Contingencies are explicitly mentioned for Stability limits, the feeling of the SAR DT was that this issue was not clear for instances other than Stability limits. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revision to develop the FAC-011-2 standard. With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.

In operational planning, it is widely understood that most entities presently study selected Contingencies involving multiple elements, which could result in IROLs. The intent of the SAR is to require the Reliability Coordinator to document the decisions made as to what to study related to SOLs/IROLs and more explicitly require the Reliability Coordinator to document its criteria for selecting common mode Contingencies that result in loss of two or more (multiple) elements that are associated with potential IROL conditions. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.

The SAR DT has re-written the SAR and included proposed changes in the standard itself in an attempt to alleviate the concerns raised in question1 comments.

#1 – Commenter	Yes	No	Comment
American Electric Power		x	<p>The SAR is based on a false premise that there is a one-to-one correspondence between the Planning Assumptions and Real-Time Conditions. In Planning, the starting point is all facilities in service. In real-time operations the starting point, is exactly what conditions are present, and rarely – if ever – is that real time conditions is with “all facilities in service”.</p> <p>In addition, multiple contingencies are already addressed in FAC-011, and the requirements of this Standard must be read as a whole. R2.1 addresses the pre-contingency state (which is most probably already with existing outages), R2.2 and 2.3 deal with performance following the next single contingency, R2.4 addresses acceptable actions to prepare for the next contingency. Therefore this set of requirements addresses the current real time state plus two contingencies. In addition, Requirement 3.3 stability limits resulting from multiple contingencies from the real-time state. FAC-011 currently is adequate to address multiple contingencies beyond the real-time state of the system.</p>

Response: The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the

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#1 – Commenter	Yes	No	Comment
			<p>SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area.</p> <p>While multiple Contingencies are explicitly mentioned for Stability, the feeling of the SAR DT was that this issue was not clear for instances other than Stability. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revision to the FAC-011-2 standard. With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>
American Transm. Company		x	<p>It is our position that FAC-011-1 adequately covers the inclusion of multiple contingencies.</p> <p>See: FAC-011-1 Requirement 3, 3.3 and FAC-014-1 Requirement 6.</p> <p>Requirement 3:</p> <p>"The Reliability Coordinator's methodology for determining SOLs, shall include, as a minimum, a description of the following, along with any reliability margins applied for each:"</p> <p>Requirement 3.3</p> <p>"A process for determining which of the stability limits associated with the list of multiple contingencies (provided by the Planning Authority in accordance with FAC-014 Requirement 6) are applicable for use in the operating horizon given the actual or expected system conditions."</p> <p>FAC-014 Requirement 6:</p> <p>"The Planning Authority shall identify the subset of multiple contingencies (if any), from the Reliability Standard TPL-003 which result in stability limits."</p> <p>Based on our position ATC feels that this effort is unnecessary and should be abandoned.</p>
Duke Energy			<p>Requirement R3.3 of FAC-011-1 already requires the RC's methodology for determining SOLs to include a process for determining which stability limits arising from multiple contingencies (provided by the Planning Authority) will be applied in the operating horizon, given actual or expected conditions. R4 requires the RC to communicate that information to appropriate other RC's, Planning Authorities, Transmission Planners and Transmission Operators. R5 provides an opportunity for any recipient to challenge the</p>

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#1 – Commenter	Yes	No	Comment
			methodology and a response is mandated. This provides a reasonable avenue to address any specific areas of reliability concern.
Southern Transmission		x	<p>Requirements 3.3 and R4 of FAC-011-1 already require the reliability coordinator to determine which stability limits arising from multiple contingencies it will apply in real time and requires the reliability coordinator to convey that information to other reliability coordinators, planning authorities and transmission operators. The list of multiple contingencies is supplied by the planning authority and is applicable for use in the operating horizon given the actual or expected system conditions. This is consistent with the Commission's directives in Order 693.</p> <p>The Commission states that the FAC-011-1 methodology already requires the reliability coordinator to determine SOLs by considering both the multiple contingencies provided by the planning authority that could result in instability of the Bulk Power System and the facility outages and minimum set of single contingencies that were previously considered.</p>
<p>Response: While multiple Contingencies are explicitly mentioned for Stability, the feeling of the SAR DT was that this issue was not clear for instances other than stability. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revision to the FAC-011-2 standard. With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>			
Bonneville Power Admin.		x	The transmission system is planned with all equipment in service and heavy load conditions. The transmission system is often operated with equipment out of service and less than peak load conditions. Using the same outage criteria for the planning horizon and operating horizon will significantly reduce transfer capability with little reduction in reliability risk.
<p>Response: The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area.</p>			
City of Tallahassee		x	The use of the statistical average of 18 "multiple element" events per year does not adequately address a need. What is the ratio of multiples element events to single element events? Is it a very small percentage? Or is it a large percentage? What caused the multiple element events? Did they result in cascading outages, separation, or blackout? The use of a single statistical data point is misleading to the industry. This effort was tried once before (I believe by the same folks) and it was not approved. Why are we doing this again? What has changed between then and now?

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#1 – Commenter	Yes	No	Comment
			<p>If the NYSRC desires to operate to a more stringent operating standard, they can do that and not force the rest of the interconnections to limit themselves as described below.</p>
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p> <p>An entity can always go beyond the requirements of a standard but the standard should lay out the basic requirements for a reliable System for everyone. The SAR DT believes that the suggested changes would ensure that the action/inaction of one entity will not have an Adverse Reliability Impact on another entity.</p>			
<p>Dominion VA Power</p>		<p>x</p>	<p>While we agree that simultaneous failure of some specific multiple elements that are physically or electrically related may be likely and plausible (credible) and should be considered as single contingencies in determining SOLs, it appears the SAR is also proposing that unlikely and unrelated double contingencies be considered (and operated to) as well. For example, the Industry Need statement in the SAR says that "the system must be postured for meeting Category C contingencies". This implies a requirement for pre-contingency pre-emptive control action to mitigate the potential consequences of non-simultaneous failures of unrelated elements such as a Category B contingency followed by manual system adjustments followed by another Category B contingency (this sequence is one type of Category C contingency). To operate this way would be too conservative and would restrict system operations unnecessarily thereby causing transmission capacity to become severely under-utilized thereby creating an impediment to energy markets. This will increase the cost to the end users. The SAR fails to address the market interface impacts of implementing the standard action.</p> <p>The SAR does not provide any assessment of the reliability impacts of implementing the standard action. In making the case for the need for the standard action, the SAR refers to a presentation made to the NERC Planning Committee in 2006. This presentation summarizes a high-level analysis of historical multiple facility trips (MFT) in PJM over an eight year period but does not go deep enough to identify the root causes of why the failure rates are what they are. Further analysis of MFT events over time and in other systems may lead to a better insight into the reasons and the causes of such events. For example, breaker failure rates might correlate to a particular type of breaker from a specific manufacturer; therefore, it would not be prudent to assume all circuit breakers have the same failure rate and must all be operated to as Category C contingencies in the operating horizon. Further analysis could identify where corrective</p>

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#1 – Commenter	Yes	No	Comment
			actions can be taken to solve the problems and reduce the failure rate significantly and hence reduce the risk. Having to consider the huge population of facilities such as buses and breakers in performing contingency analyses in the operating horizon shifts the focus from the few unreliable facilities and spreads it out over 100% of all devices (both reliable and unreliable) - not a very efficient way to reduce risk. There needs to be more analysis of historical MFTs and an assessment of their impact on reliability so that guidelines for identifying credible multiple element contingencies can be developed prior to requiring that they be considered in determining SOLs in the operating horizon.
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time. We appreciate your concern related to market operations and believe the changes in SAR scope alleviate this concern.</p>			
ERCOT (1)		x	<p>The existing standards requirements for contingencies used in operations result in an adequate level of reliability. In addition, the recently approved revision of FAC-011-1 adds the requirement to consider, in the operating horizon, credible multiple contingencies that result in a stability limit.</p> <p>The proposed change increases the number of contingencies which must be considered without defining the new level of reliability which must be attained. ERCOT understands that it is appropriate to evaluate a more robust list of contingencies in system planning than in system operations. The more conservative approach defined for Planning drives the design and construction of a Bulk Electric System (BES) which may be reliably operated under a wide array of actual conditions. It is impractical and inappropriate to mandate that same conservative approach to the operating horizon without first defining the new level of reliability that must be obtained.</p>
ERCOT (2)		x	<p>The existing standards requirements for analyzing single contingencies as required in FAC-011-1 Requirements R2.2 through R2.2.3 and any multiple contingencies required by FAC-011-1 Requirements R3.3 and R3.3.1 as identified in accordance with FAC-014-1 Requirement R6 establish an adequate level of reliability. The multiple contingencies to be considered are those identified by the Planning Authority as the subset of multiple contingencies (if any), from Reliability Standard TPL-003 which result in stability limits.</p> <p>The proposed standard action unnecessarily increases the number of contingencies which must be considered. The industry understands that it is appropriate to evaluate a more robust list of contingencies in system planning than in operations planning. This</p>

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#1 – Commenter	Yes	No	Comment
			<p>allows for the Bulk Electric System (BES) to be operated under a wide array of actual conditions and within operating limits. System Planning processes consistently assume all facilities are available and either in service or capable of being placed into service as needed to address study concerns. Operations Planning must deal with the real-time status of the BES as its starting point, including any forced outages or planned outages which have occurred or are in progress.</p> <p>System planning personnel have more time to evaluate, assess and plan than do operators. It is appropriate for system planners to plan for Category C contingencies. As appropriate, the existing standards allow for the entity calculating SOL in the operations horizon methodology to consider additional contingencies; however, it is impractical and inappropriate to mandate that an operating horizon, which applies to and is determined from actual operating conditions, to be based upon multiple contingency events. The numbers of contingencies can easily be orders of magnitude greater and real-time operating tools may not consider such numbers of contingencies within the time permitted during real-time operations. Therefore, to require such would require unnecessarily constrained operations within limits which were developed offline; typically such limits are significantly reduced values.</p>
Midwest ISO		x	<p>This SAR appears to be an attempt to require all entities to operate their transmission system to Type C contingencies. There has been no rationale given to support this SAR other than a reference to a study presented to the NERC OC several years ago with data that is at least five years old. Further, the SAR does not provide a copy of the study or means to get a copy or conclusions drawn by the NERC OC about the validity of the results. It obviously does not give an interested reviewer an opportunity to analyze the study to come his own conclusions. Furthermore, this appears to be an attempt by the NPCC region to reintroduce a SAR that was soundly defeated over a year ago. If this NPCC feels this is a needed standard, they should introduce a regional standard or variance. Since there is significant support with NPCC companies, it will be easily passed. However, this NPCC should not attempt to pursue an application of what is really an existing NPCC regional requirement on the rest of the industry especially when the industry previously defeated a very similar SAR. The NPCC region is certainly an expert on the operation of the NPCC BES but cannot be considered an expert on the rest of the BES.</p> <p>FAC-011 R3.3 already requires the basics of what is needed for monitoring multiple contingencies. The Planning Authority must provide a list of multiple contingencies that</p>

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#1 – Commenter	Yes	No	Comment
			<p>should be considered for use in the operataing horizon. The RC must have a process to determine which from this candidate list are then applied. Thus, if the RC is already required to operate to certain multiple contingencies that are most likely to cause stability limitations, what will adding additional multiple contingencie do? It will degrade reliability by causing the operator and support personnel to focus on contingencies that are neither credible nor likely to cause stability issues.</p>
PJM Interconnection		x	<p>The existing standard's requirements for analyzing single contingencies as required in FAC-011-1, requirements R2.2 through R2.2.3, and any multiple contingencies required by FAC-011-1, requirements R3.3 and R3.3.1, as identified in accordance with FAC-014-1 requirement R6, establish an adequate level of reliability.</p> <p>The Planning Authority studies and plans for multiple contingencies (N-2), but normally operates to single contingencies (N-1). Under pre-determined, documented abnormal conditions, the Registered Entity may declare a state of 'Conservative Operations', directing the use of specific multiple or maximum credible contingencies, consistent with established, documented procedures.</p> <p>To operate to ALL category C contingencies would be an unnecessary burden on both the Planning Authority and the Transmission Operator. Operating to pre-determined and credible multiple contingencies will allow for the reliable operation of the system without creating undo burden.</p>
<p>Response: While multiple Contingencies are explicitly mentioned for Stability, the feeling of the SAR DT was that this issue was not clear for instances other than Stability. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revisions to the FAC-011-2 standard. With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p> <p>The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p>			
FirstEnergy		x	<p>The SAR is somewhat confusing in that on one hand the author seems to make a case to operate to all NERC Category C contingencies, but later describes credible multiple contingencies as only those multiple contingencies that could lead to potential IROL conditions. Either way, FE does not believe there is a reliability-related need for the proposed standard revision.</p>

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#1 – Commenter	Yes	No	Comment
			<p>If the SAR proposing to require all entities to operate their system real-time to all NERC Category C, in otherwords identify AND manage all SOL violations, it is is FE's opinion that this is an overly conservative operating approach for many low probability multiple contingencies. In market areas using LMP and generation control to operate to next-contingency performance, this would lead to inflated congestion management costs to market participants.</p> <p>Additionally, many market areas already operate to potential single contingency events and redispatch or reconfigure the transmission systems pre-contingency to stay within system limits. If an actual contingency occurs, the system continues to be operated pre-contingency for the next contingency. Therefore, at a minimum Category C3 events are already being managed in real-time in many areas of the bulk electric system.</p> <p>If the intent is to identify SOLs to all Category C and only manage those which could be potential IROLs we believe the latter (IROL aspect) is already covered per requirement R3.3 of FAC-011. To require the identification of all SOLs for all NERC Category C events in real-time would overwhelm the transmission operator and potentially mask more probable contingency events that require the operators' attention.</p>
FRCC		x	<p>Although the concept, in principle, appears worthy, the equitable application of such a revision would be, at best, extremely difficult, at worst it would constrain markets and force operating entities into potentially inefficient and out of economic modes of operation for no appreciable increase in Reliability.</p> <p>System operations is inherently dynamic. To try to equitably define, and have interpreted, "credible multiple contingencies" across the ERO, would be a very difficult task. As an example, if a hurricane approaches an area of the grid, should operators proactively shed load to protect for the potential loss of a 4 line corridor for fear of being found "non-compliant" during a post-event analysis? Whatever the interpretation is, would it be same in California, or New York? If a multiple element contingency does occur and results in an SOL or even IROL violation (e.g. Tornado), should an operating entity be penalized for not posturing or designing its system to withstand the event? There are a tremendous number of variables and threats involved with system operations, from maintenance activities to equipment failures. The current suite of reliability standards provide the reliability protections necessary to require the operators to respond to whatever variables they are presented with and to efficiently posture their systems to withstand the next contingency element loss. To try to hard-wire the</p>

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#1 – Commenter	Yes	No	Comment
			<p>"credible multiple contingencies" would create a myriad of administrative analyses which would inevitably be second guessed during a post-event analysis.</p> <p>For the low-probability contingency events postulated for individual systems, operators rely on the planners to ensure acceptable system responses to losses of multiple elements either through automatic special protection systems or to allow enough time for emergency operator intervention.</p>
<p>Response: While multiple Contingencies are explicitly mentioned for Stability, the feeling of the SAR DT was that this issue was not clear for instances other than Stability. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revision to the FAC-011-2 standard. With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p> <p>The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time. We appreciate your concern related to market operations and believe the changes in SAR scope alleviate this concern.</p>			
GSOC		x	<p>NERC did not consider cost vs. benefit in the definition of Adequate Level Of Reliability. The claim made was that cost vs. benefit is considered in the standard development process. GSOC agrees that this proposed change would have some benefit. Without knowing the value of the benefit of this change, GSOC cannot say that we agree with the need for the change. This SAR should address cost vs. benefit.</p>
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple contingencies in real-time.</p>			
ERCOT Transm. Owners		x	Please see response to Q4.
Luminant		x	Please see response to Q4.
Oncor		x	Please see response to Q4.
<p>Response: Please see response to Q4.</p>			
SPP ORWG	x		<p>While we see some merit in the addition of credible multiple contingencies to analysis in the operating horizon we also have concerns about how broad the definition of credible becomes and the timeframe in which such additions would become effective.</p>
<p>Response: With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their</p>			

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#1 – Commenter	Yes	No	Comment
SOL methodology.			
British Columbia Transm. Corp.	x		
Hydro One Networks Hydro Quebec TransEnergie	x		It is important for reliability to achieve consistency between the planning and operating contingency criteria. We believe that the contingencies considered in determining SOLs and IROLs for the operation horizon, must be consistent with those considered TPL standards for the planning horizon. The lack of consistency implies that the system would be planned with a more stringent contingency criteria than those applied to operations.
IESO	x		Reviewing the contingency list to be considered in determining SOLs and IROLs for the operation horizon, with an aim to achieve consistency with the list provided in the TPL standards for the planning horizon, is necessary to ensure reliability in all time frame. If the difference were to continue to exist, one would question why would the system be planned with a more stringent contingency criteria than those applied to operations.
ISO New England	x		
Manitoba Hydro	x		The fact that PJM suffered 18 multiple contingencies in a 6 year period does not mean to me that there is a reliability need for this standard. If the system had not performed according to specific standards as a result of the multiple contingencies, then a need would have been demonstrated. That being said, planning standards stipulate that the system must be planned to withstand Category C contingencies for reliability. If we build to withstand Category C contingencies, we should operate to the same stipulation.
Midwest Reliability Organization	x		
New York ISO	x		
NYS Dept. of Public Utilities	x		
NPCC Regional Standards Cmte.	x		

Response: The SAR DT thanks you for your support to the original posting of the SAR. Based on comments from other industry stakeholders, the SAR author with assistance from the SAR Drafting Team felt scope revisions were needed to further clarify the intent of this standards project action. The intent of this project is NOT to require that ALL multiple Contingency events be evaluated in real-time operations. However, in the operational planning window, we believe there is a need for improvement related to the selection of these events by the Reliability Coordinator within its SOL methodology and in how the Reliability Coordinator utilizes information made available by the Planning Authority related to SOLs. We believe the SAR changes are appropriate and responsive to stakeholder feedback and we would

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#1 – Commenter	Yes	No	Comment
			greatly appreciate your continued support.

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2. Do you agree with the scope of the proposed standard action? If not, please explain in the comment area.

Summary Consideration: Most commenters expressed an opinion that planning and operations are distinctly different and that a 1:1 correspondence is not needed. Additionally, the majority of the industry voiced concern with accounting for all Category ‘C’ Contingencies in real-time operations. The SAR DT has re-written the SAR and included proposed changes in the standard itself in an attempt to alleviate the concerns raised in question2 comments.

#2 – Commenter	Yes	No	Comment
American Electric Power		x	No, this SAR is based on a false premise, that the given state of a planned system (all facilities in service) is analogous to the existing state of the system in real time (there could be and likely is multiple facilities out of service). This issue was extensively debated within the industry during the development of the latest revision of FAC 011, and consensus was reached as stated in approved version of this standard.
ERCOT (1)		x	The proposed scope assumes that the remedies used by planning to resolve reliability violations that result from the more inclusive contingency list are also available in operations. In fact, many of the BES physical modifications used by planning cannot be applied in operations. In addition, operations takes the condition of the BES at any given time as its starting point for reliability analysis. This fact alone differentiates operational analysis from planning, and should be considered when defining what contingencies are considered for each horizon. Once again, the level of reliability to be attained in operations needs to be defined before the standards needed to reach that level can be considered.
Response: The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area.			
American Transm. Company		x	Please see our comments to question 1. ATC believes that this effort should be abandoned.
Response: Please see our response to Q1. The SAR DT has revised the SAR to fill what is seen as a reliability need and is submitting it for your consideration.			
Bonneville Power Admin.		x	This proposed change will significantly reduce the transfer capability during planned and unplanned outages that occur during the operating horizon without significantly increasing reliability. This will result in maintenance outages being moved to periods that typically have less desirable weather conditions which can reduce maintenance efficiency.

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#2 – Commenter	Yes	No	Comment
ERCOT (2)		x	The scope equates operational challenges with those which must be identified within the planning horizon. The planning horizon must consider many more contingencies because often the solution must be provided through physical BES modifications through construction projects. The scope proposed will likely result in the requirement for many entities to modify the transmission systems and will unnecessarily be very expensive to implement.
Midwest ISO		x	<p>The project should consider subcategorizing those contingency listed under category C that may be deemed credible during certain time.</p> <p>For example, HVDC Bipole block may be treated similar to common tower contingency but may be differently than single line to ground fault with breaker failure realizing that not all Category C contingency has the same probability.</p> <p>In addition, the project should also consider the risk of the Category C event. For example, some category C event may lead to Cascading outages, while other only cause local system impact.</p> <p>Actions in securing the transmission system may be different depending on the risk of the multiple element contingency.</p>
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p>			
City of Tallahassee		x	<p>IF THIS CONTINUES:</p> <p>EOP-008-1, although in development, should be listed as a Related Standard. The Applicability of EOP-008-1 will include TOP's with facilities with defined IROL's. If FAC-011-1 goes as presented, it will be most, if not all, of the registered TOP's.</p>
<p>Response: EOP-008-1 applicability is being changed by a different SDT in the next revision to eliminate this concern.</p>			
Dominion VA Power		x	The Detailed Description section of the SAR does not provide sufficient details or clarity in order to adequately describe the proposed scope. For example, it states that, "Credible multiple element contingencies are those identified through study which can lead to IROL violations." This implies that credibility is a function of potential adverse impacts. This is not correct, and does not comport with the discussion of credible multiple element contingencies in the Reliability Concepts document approved by the NERC OC and PC. Perhaps the author meant that only multiple element contingencies

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#2 – Commenter	Yes	No	Comment
			<p>identified through study that could lead to IROL violations need to be operated to in real-time. If a system is planned correctly, there would not be any. The intent of the statement is not clear.</p> <p>Adding requirements to FAC-011 (covering the operating horizon) to be consistent with requirements 2.4 and 2.5 in FAC-010 (covering the planning horizon) is not appropriate for several reasons. First of all, requirements 2.4 and 2.5 are based on "Starting with all facilities in service . . .". Is it the intent of the SAR that the RCs only have to operate to Category C contingencies in real-time when they are "Starting with all facilities in service . . ."?" This seldom is the real-time condition in the operating horizon. At any given time in the operating horizon, a system could be operating in an n-1,2,3 or more condition.</p> <p>Secondly, the requirements for the planning horizon allow for certain actions to be taken in response to any of the multiple contingencies, whereas (as noted in the comment provided for question 1), having to operate to multiple contingencies means having to take pre-contingency pre-emptive control actions so that the system can be "postured for meeting Category C contingencies". This would require operating the system to more stringent requirements than those under which it was planned.</p> <p>Thirdly, the Detailed Description states, "Following a single or double contingency, the system will no longer be required to be operated to Category C contingencies." As pointed out previously, in the operating horizon there is usually always one or more elements out of service -- not only in an RC's footprint but also in neighboring systems. Therefore, the proposed SAR does not clearly specify how to identify a contingency whose occurrence would be used to determine whether or not to consider Category C contingencies. Also, it is not clear how an RC would set up its contingency analysis tools to consider Category C contingencies part of the time and not the rest of the time.</p>
<p>Response: The SAR DT agrees with the comment and has made changes to the SAR in an attempt to clarify this position. The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area. The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p>			

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#2 – Commenter	Yes	No	Comment
<p>With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>			
Duke Energy		X	R2 of FAC-011-1 should not be revised to require the Reliability Coordinator to operate in real time to credible multiple element contingencies. This would unnecessarily restrict the RC's flexibility in determining stability limits appropriate for actual or expected system conditions.
SPP ORWG		X	We would be concerned if a SDT tried to establish a one size fits all definition of credible multiple contingency. We feel that each Reliability Coordinator should have the flexibility to define credible multiple contingency within his own reliability footprint.
<p>Response: With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>			
ERCOT Transm. Owners		X	Please see response to Q4.
Luminant		X	Please see response to Q4.
Oncor		X	Please see response to Q4.
<p>Response: Please see our response to Q4.</p>			
FirstEnergy		X	See Comment 1.
FRCC		X	Based on the answer to question 1.
GSOC		X	See comment above regarding the inclusion of cost vs. benefit aspects.
<p>Response: Please see our response to Q1.</p>			
PJM Interconnection		X	Although it is good practice to study all potential category C contingencies as part of the planning process, it would not be practical nor desirable to operate to the same set of contingencies in real-time. Planning and Operations are two distinct, albeit related, processes, and should be treated as such.
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p> <p>The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area.</p>			

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#2 – Commenter	Yes	No	Comment
Southern Transmission		x	Requirement 2 of FAC-011-1 should not be revised to require the reliability coordinator to operate in real time to credible multiple element contingencies. Requirements 3.3 and R4 already require the reliability coordinator to determine which stability limits arising from multiple contingencies it will apply and requires the reliability coordinator to convey that information to other reliability coordinators, planning authorities and transmission operators.
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p> <p>While multiple contingencies are explicitly mentioned for stability, the feeling of the SAR DT was that this issue was not clear for instances other than stability. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revision to the FAC-011-2 standard. With the proposed changes, the RC's still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>			
Manitoba Hydro	x	x	<p>Credibility must first be addressed. What is a credible multiple contingency? History and probability should be included in the definition of a credible multiple contingency. Especially for the third description of Category C "Category B contingency followed by another Category B contingency", the likelihood of two unrelated lines faulting within a very short time span must be considered before requiring entities to protect for it.</p> <p>Secondly, what is the acceptable level of multiple contingencies? In the way this standard has been proposed, there has been a judgment that 3 multiple contingencies a year (or 18 in a 6 year period) is unacceptable. Which part of it is unacceptable? Multiple contingencies will happen, and for category C disturbances, planned or controlled loss of demand is acceptable. Did the system perform according to standards for those 18 multiple contingencies?</p>
<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p> <p>With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>			
British Columbia Transm. Corp.	x		The proposed change in FAC-011 is already addressed for the Western Interconnection

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#2 – Commenter	Yes	No	Comment
			in Section E. Regional Differences.
Hydro One Networks	x		
Hydro Québec TransÉnergie	x		
IESO	x		
ISO New England	x		
Midwest Reliability Organization	x		
New York ISO	x		
NYS Dept. of Public Utilities	x		
NPCC Regional Standards Cmte.	x		
<p>Response: The SAR DT thanks you for your support to the original posting of the SAR. Based on comments from other industry stakeholders, the SAR author with assistance from the SAR Drafting Team felt scope revisions were needed to further clarify the intent of this standards project action. The intent of this SAR is NOT to require that ALL multiple Contingency events be evaluated in real-time operations. However, in the operational planning window, we believe there is a need for improvement related to the selection of these events by the Reliability Coordinator within its SOL methodology and in how the Reliability Coordinator utilizes information made available by the Planning Authority related to SOLs. We believe the SAR changes are appropriate and responsive to stakeholder feedback and we would greatly appreciate your continued support.</p>			

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3. Do you agree with the applicability of the proposed standard action? If not, please explain in the comment area.

Summary Consideration: Applicability should only address those entities that would have requirements in the standard. The SDT has changed applicability so that the SAR and subsequent changes to FAC-011-2 would only apply to the RC.

#3 – Commenter	Yes	No	Comment
American Electric Power			Unknown, since the logic supporting this SAR is based on a false premise, and its logic is circular. But, one would need to explain how an 'operating standard' relates to the planning functions.
Response: The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR for applicability.			
American Transm. Company			Please see our comments above.
Response: Please see our responses above.			
Bonneville Power Admin.		x	The probability of "credible single contingency" multiple events are much lower than single transmission contingency events. The major system disturbances in August 1996 and August 2003 were both results of sequential single contingencies not multiple element forced outages. We cannot eliminate all risks and we are willing to live with this risk.
Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.			
British Columbia Transm. Corp.		x	Although not stated in the description of the SAR, the SAR form appears to be proposing to add Planning Coordinator, Transmission Planner, and Transmission Operator as applicable entities. BCTC agrees that FAC-011 should be applicable to Planning Coordinators. However, we disagree with applicability to Transmission Planners and Transmission Operators. This can potentially result in multiple conflicting SOL Methodologies. The need for TPs and TOPs to have an SOL Methodology for the Operating Horizon is not supported by the Functional Model.
City of Tallahassee		x	IF THIS CONTINUES: Operating to a tighter limit will not "fix" the BES. The ultimate remedy to comply with the presented standard is to put wire in the air, and a lot of it, or generation on the ground. This burden will be borne by the Transmission Owners and Generator Owners. They should be listed in the "The Standard will Apply to the Following Functions" section. Since both these items require long lead times to complete, the Resource

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#3 – Commenter	Yes	No	Comment
			Planer should be included. Since this will also significantly affect the amount of power transmitted over the BES, the Balancing Authority should also be addressed. We should also include the Market Operator since this will have such a large impact on ATC's and parrallel path flows.
Dominion VA Power		x	FAC-011 is an operating standard that currently applies only to Reliability Coordinators. It should also apply to Transmission Operators and any other entity with a responsibility for monitoring SOLs in the operating horizon. It should not apply to Transmission Planners or Planning Coordinators.
Duke Energy		x	We don't agree with the applicability of this SAR because we believe the SAR is unnecessary.
ERCOT (2)		x	The applicability must be one that will properly provide for each of the many organizational arrangements to address the requirements. While the NERC Reliability Standards make it the responsibility of the Reliability Coordinator to operate within limits, not all organizational arrangements provide for the Reliability Coordinator to actually calculate the limits. In some cases, other entities actually calculate the limits on behalf of the Reliability Coordinator and provide the results to the Reliability Coordinator to use in operations activities.
ERCOT Transm. Owners		x	Should the proposed SAR continue through the standards process, there should be no expansion of the applicability to additional functional entities. The applicability should remain solely with the Reliability Coordinator, the entity with the Wide Area view and the responsibility for the reliable operation of the Bulk Electric System. Specifically, the Transmission Planner develops a long term plan (generally one year and beyond) for the reliability of the BES within its portion of the Planning Coordinator Area, and does not have responsibility for operating the system on a real-time basis. Similarly, the Planning Coordinator integrates and coordinates the plans of the individual Transmission Planners and does not have responsibility for real-time operation of the BES. While the Transmission Operator function operates and directs operations of transmission facilities, it does so on a limited geographic basis and does not necessarily have authority over a Wide Area as would be necessary for an entity to be able to fulfill the requirements of this standard. As such, the applicability of this standard should not be expanded and should remain solely with the Reliability Coordinator.
Oncor		x	If the proposed SAR continues through the standards process, there should not be any expansion of the applicability to additional functional entities - the applicability should remain solely with the Reliability Coordinator. As a case in point, the Transmission Planner develops a long term plan (generally one year and beyond) for the reliability of

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#3 – Commenter	Yes	No	Comment
			the BES within its portion of the Planning Coordinator Area, but does not have responsibility for operating the system on a real-time basis. In similar manner, the Transmission Operator function operates and directs operations of transmission facilities on a limited geographic basis, but does not necessarily have authority over a wide area as would be necessary for an entity to be able to fulfill the requirements of this standard.
FirstEnergy		X	FE believes the appropriate level of coverage for multiple contingency events within the operating environment is presently accomplished by FAC-011 R3.3.
SPP ORWG		X	FAC-011 currently applies only to Reliability Coordinators. Any changes to FAC-011 should continue to apply only to the Reliability Coordinator. Applicability to Planning Coordinator, Transmission Planner and Transmission Operator should be deleted.
Luminant		X	This Reliability Standard should be a Regional Standard only. Some regions already have different Regional Standards to cover these circumstances. If the proposed SAR continue through the standards process, there should be no expansion of the applicability to additional functional entities. The applicability should remain solely with the Reliability Coordinator, the entity with the Wide Area view and the responsibility for the reliable operation of the Bulk Electric System. Specifically, the Transmission Planner develops a long term plan (generally one year and beyond) for the reliability of the BES within its portion of the Planning Coordinator Area, and does not have responsibility for operating the system on a real-time basis. Similarly, the Planning Coordinator integrates and coordinates the plans of the individual Transmission Planners and does not have responsibility for real-time operation of the BES. While the Transmission Operator function operates and directs operations of transmission facilities, it does so on a limited geographic basis and does not necessarily have authority over a Wide Area as would be necessary for an entity to be able to fulfill the requirements of this standard. As such, the applicability of this standard should not be expanded and should remain solely with the Reliability Coordinator.
Southern Transmission		X	We do not agree with the applicability of the SAR action because existing standards already adequately address the concern. Also, the issue has been vetted in previous standards development proceedings.
Response: Applicability should only address those entities that would have requirements in the standard. The SDT has changed applicability so that the SAR and subsequent changes to FAC-011-2 would only apply to the RC.			
FRCC		X	Based on the answer to question 1.
Response: Please see our response to Q1.			

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#3 – Commenter	Yes	No	Comment
GSOC		X	As written, it is not clear what will be the applicability other than to the Reliability Coordinator's methodology for determining SOLs in the operating horizon. It seems that this change will only apply to the RC.
Response: The SAR DT agrees and has made this change.			
Midwest ISO		X	The project should consider the fact that the current transmission system was built and planned based on the current TPL standard. If FAC Standard for operation is going to be put in place to enforce operating limitation to honor N-2, then the project needs to address the current TPL standard such that Transmission System needs to be built and planned based on the more stringent requirement, otherwise no planned maintenance outage can be performed while meeting the new FAC standard with N-2.
Response: The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area. Applicability should only address those entities that would have requirements in the standard. The SDT has changed applicability so that the SAR and subsequent changes to FAC-011-2 would only apply to the Reliability Coordinator.			
PJM Interconnection		X	In its current form, the SAR's suggested changes would have a serious negative impact on economic dispatch in all regions. The suggested requirements would greatly increase the number of off-cost operations and the overall cost of serving load within the region, without significantly improving the reliability of the system.
Response: The intent of the SAR was to clarify what most entities are already studying with respect to contingencies involving multiple elements and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple contingencies in real-time. We appreciate your concern related to market operations and believe the changes in SAR scope alleviate this concern.			
ERCOT (1)	X		
Hydro One Networks	X		
Hydro Québec TransÉnergie	X		
IESO	X		
ISO New England	X		
Manitoba Hydro	X		
Midwest Reliability Organization	X		

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#3 – Commenter	Yes	No	Comment
New York ISO	x		
NYS Dept. of Public Utilities	x		
NPCC Regional Standards Cmte.	x		
<p>Response: The SAR DT thanks you for your support to the original posting of the SAR. We have revised the applicability of this standard action project to appropriately reflect impacts to the Reliability Coordinator (RC) based on proposed changes to only the FAC-011-2 standard. We would greatly appreciate your continued support.</p>			

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4. If you have other comments that you haven't provided in response to the questions above, please provide them here.

Summary Consideration: Many commenters repeated opinions stated above in questions 1 through 3. The SAR DT has re-written the SAR and included proposed changes in the standard itself in an attempt to alleviate the concerns raised in question4 comments.

#4 – Commenter	Comment
American Electric Power	<p>The sponsor of this SAR supports the need for this revision by a summary of study statistics presented to the industry nearly 2 years ago of PPL outage conditions. However, the study did not examine the interrelationship between concurrent outages, or if so, were these outages during peak or off-peak conditions. Just because there are concurrent outages, it is incorrect to conclude that the impact of multiple events must be additive.</p> <p>The SAR is internally inconsistent and circular in logic. The SAR states, "Following a single or double contingency, the system will no longer be required to be operated to Category C contingencies." Since real-time conditions are virtually in a contingency state (i.e. at least one facility is out of service somewhere) the system would only be required to operate to Category B – which is only one facility out of service.</p>
Bonneville Power Admin.	Special protection schemes are likely to be used more to regain lost transfer capacity. The complexity of the SPS could create other problems.
FRCC	Again, we can appreciate the concept and the perceived benefits to reliability it presents, but introduction of such a concept into the current state of the standards (some lacking clarity), coupled with the fear of enforcement penalties, would lead to extremely conservative modes of operations which may in the near term constrain commerce, reduce the reliability benefits of interconnected operations and would eventually lead to high economic cost for little or no appreciable reliability benefit to routine system operations.
Luminant	There is no NERC-wide reliability reason for this SAR to move forward. Each Region should consider if their standards already address this issue. It is understood within ERCOT that the evaluation of contingencies in transmission planning must be more robust than in operations planning so that the Bulk Electric System can be operated under a wide array of actual conditions and within operating limits. Transmission planners have more time to evaluate, assess and plan than do operators. It is appropriate for transmission planners to plan for Category C contingencies. The existing standard allows each Reliability Coordinator to consider additional contingencies. The standards already delineated in the ERCOT Operating Guides are more restrictive than the NERC standards and are tailored to the types of events which occur in the ERCOT region. The operating guide language will be incorporated into the ERCOT Regional Standards in the future.

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#4 – Commenter	Comment
	<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to Contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple Contingencies in real-time.</p>
British Columbia Transm. Corp.	<p>The SDT will also need to consider revisions to FAC-014-1, Establish and Communicate SOLs. FAC-014 will need to be clear on which SOL Methodology for the Operating Horizon, the Reliability Coordinator's or the Planning Coordinator's, shall be used to determine operating SOLs should there be a discrepancy. If necessary, we would support making FAC-011 applicable to only Planning Authorities. FAC-014 will also need to clearly define for each requirement which SOL Methodology is reference. For example, R4 should indicate the Planning Coordinator's SOL Methodology for the Planning Horizon.</p>
	<p>Response: Applicability should only address those entities that would have requirements in the standard. The SDT has changed applicability so that the SAR and subsequent changes to FAC-011-2 would only apply to the RC. Therefore, FAC-014 does not need to be changed.</p>
City of Tallahassee	<p>The implementation plan must be long to allow construction of the necessary facilities to remediate the problems that are identified via the TPL standards.</p> <p>Operating to Category C events will reduce ATC's significantly and have a SIGNIFICANT NEGATIVE impact on the markets ability to move power over the BES.</p>
ERCOT (1)	<p>The requirements proposed by this draft will have an adverse impact upon many established electric markets due to a decrease in the ability to transport power across the BES. In addition to the adverse impact upon market operations, there will likely be very expensive system modifications required in order to lessen this impact. The expense of these modifications and the risk assumed in incorporating the construction outages needed to make these improvements should all be considered when evaluating this SAR draft. ERCOT maintains that before such reliability standards are changed, the expected level of reliability performance should be clearly defined.</p>
ERCOT (2)	<p>The requirements proposed by this draft of the SAR will likely result in a significant and undue adverse impact upon the functioning of many established markets. This will occur due to reduced limits until system modifications can be effected, sometimes through several years of construction requirements. In addition to the adverse impact upon market operations, there will likely be very expensive system modifications required in order to construct a system that will not restrict the market operations to such magnitude.</p>
	<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple contingencies in real-time. We appreciate your concern related to market operations and believe the changes in SAR scope alleviate</p>

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#4 – Commenter	Comment
this concern.	
ERCOT Transm. Owners	<p>There is no reliability-based need for this SAR to move forward. It is generally understood that the evaluation of contingencies in transmission planning must be more robust than in operations planning so that the Bulk Electric System can be operated under a wide array of actual conditions and within operating limits. Transmission planners have more time to evaluate, assess and plan than do operators. It is appropriate for transmission planners to plan for Category C contingencies. The existing standard allows each Reliability Coordinator to consider additional contingencies in its operations horizon SOL methodology. However, it is impractical and inappropriate to mandate that an operating horizon SOL, which applies to and is determined from actual operating conditions, be based on multiple contingency events.</p>
<p>Response: The SAR DT agrees that there is not a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area. With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>	
GSOC	<p>There is some degree of inconsistency in terminology. The SAR refers to "credible" multiple element contingencies identified in TPL-003-0, Table 1 and making requirements consistent with FAC-010-1 R2.4 & 2.5. Neither FAC-010 nor TPL-003-0 (and Table 1) covers "credibility." They just cover specific listed cases, credible or not.</p>
<p>Response: The SAR DT has removed that terminology from the revised SAR.</p>	
Hydro One Networks	<p>Work in this project must be coordinated with the current projects on the TPL and other standards.</p>
<p>Response: The SAR DT agrees that coordination among the various standards projects is necessary but there is no direct relationship between the proposed changes in this SAR and the TPL standards.</p>	
IESO	<p>The IESO strongly supports the notion of developing consistent set of contingency criteria between the planning and operating horizons in the determination of SOLs and IROLs. While FAC-011 has a provision for the Reliability Coordinators to consider the contingency requirements stipulated in the TPL standards, leaving that to the discretion of individual RCs would expose the interconnection to unreliable operations given the RC areas are so tightly interconnected.</p> <p>This SAR also addresses FERC's concerns, raised through Order 705, on consistency between the FAC, TPL, and MOD standards. Differences in contingency sets tremendously increase the probability of the system entering an "unknown" operating state in real time operations. Differences in contingency sets also open up the potential for undue discrimination. Consistency in treatment ensures that we meet the objectives laid out by FERC and other reliability entities in their various directives – consistency,</p>

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#4 – Commenter	Comment
	transparency, and coordination.
	<p>Response: With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p> <p>While multiple contingencies are explicitly mentioned for stability, the feeling of the SAR DT was that this issue was not clear for instances other than stability. The proposed SAR changes attempt to make this point clear and are supplemented with proposed revision to the FAC-011-2 standard.</p> <p>The intent of the SAR was to clarify what most entities are already studying with respect to contingencies involving multiple elements, which could result in IROs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple contingencies in real-time.</p> <p>The SAR DT does not believe there is a 1 to 1 correspondence between planning and operations and it was not the intent of the SAR to try to align them. Changes have been made to the SAR to try to clear up this problem area.</p>
Midwest ISO	These standards should be added to the SAR related standards- "FAC-010-1 R2.4 & R2.5" and "TPL-003-0, Table 1".
	Response: The SAR DT believes that the changes made in the revised SAR allow it to stand alone.
Midwest Reliability Organization	<p>In the DETAILED DESCRIPTION on page SAR-2, the last sentence should be revised as follows: "Following a single or double contingency, the system will no longer be required to be operated to Category C contingencies in the event of another single or double contingency event.</p> <p>In the RELATED STANDARDS section on page SAR-5, add FAC-010-1, Requirements 2.4 and 2.5; and TPL-003-0, Table 1.</p>
	<p>Response: The SAR has been re-written and this phrase is no longer in the text.</p> <p>The SAR DT believes that the changes made in the revised SAR allow it to stand alone.</p>
NPCC Regional Standards Cmte.	<p>The title should be revised to read "SAR To Revise System Operating Limit Methodolgy If FAC-011-1 To Require Consideration Of Credible Single Contingencies Consisting Of Multiple Elements."</p> <p>Drafting Team must coordinate the development of the standard with the MOD and TPL standards.</p>
	<p>Response: The SAR DT reviewed the title and feels that it is appropriate.</p> <p>The SAR DT believes that the changes made in the revised SAR allow it to stand alone.</p>
Oncor	There is no reliability-based need for this SAR to move forward. It is understood that the evaluation of contingencies in transmission planning must be more robust than in operations planning so that the Bulk Electric System can be operated under a wide array of actual conditions and within operating

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#4 – Commenter	Comment
	<p>limits. Transmission planners have more time to evaluate, assess and plan than do operators. It is appropriate for transmission planners to plan for Category C contingencies. The existing standard allows each Reliability Coordinator to consider additional contingencies in its operations horizon SOL methodology. However, it is impractical and inappropriate to mandate that an operating horizon SOL, which applies to and is determined from actual operating conditions, be based on multiple contingency events.</p>
	<p>Response: The SAR DT believes that the SAR, as modified, would address your concerns. The intent of the SAR is to clarify what most entities are already studying with respect to contingencies involving multiple elements, which could result in IROLs, and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple contingencies in real-time.</p> <p>With the proposed changes, the Reliability Coordinators still have the flexibility to study what they deem necessary but now they must address their criteria for selection of applicable Contingencies including those that may result in the loss of multiple elements in their SOL methodology.</p>
<p>PJM Interconnection</p>	<p>PJM is curious as to why it's data was used as justification for the SAR. The implication is that PJM has many credible multiple contingencies that are not considered in operations. This is not correct. Those credible multiple contingencies that have been identified as having the potential to threaten system reliability are monitored on a continuous basis.</p>
	<p>Response: The SAR DT has re-written the SAR and it no longer relies on the data mentioned here.</p>
<p>Southern Transmission</p>	<p>This same issue was assessed through the standards process less than a year ago. The industry correctly determined that the concerns raised can be addressed through the standards as currently adopted.</p> <p>It is understandable for a region to have more strenuous regional standards if their particular circumstances require it. However, it is not necessary for the entire Eastern Interconnection to operate under those same regional standards when the circumstances for the remaining Interconnection do not warrant it.</p>
	<p>Response: The intent of the SAR was to clarify what most entities are already studying with respect to contingencies involving multiple elements and to document the decisions made as to what to study and make them available for peer review. Changes have been made to the SAR in an attempt to clarify this position. It is not the intent of the revised SAR to force studies of all multiple contingencies in real-time. An entity can always go beyond the requirements of a standard but the standard should lay out the basic requirements for a reliable system for everyone. The SAR DT believes that the suggested changes would ensure that the action/inaction of one entity will not have an Adverse Reliability Impact on another entity.</p>
<p>American Transm. Company</p>	<p>None.</p>
<p>Dominion VA Power</p>	<p>None.</p>

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#4 – Commenter	Comment
Duke Energy	None.
FirstEnergy	No comment.
Hydro Québec TransÉnergie	No comment.
ISO New England	No comment.
Manitoba Hydro	No comment.
New York ISO	No comment.
NYS Dept. of Public Utilities	No comment.
SPP ORWG	No comment.
Response: The SAR DT thanks you for your response.	