

## Consideration of Comments on 3rd Draft of Underfrequency Load Shedding Program Requirements — Project 2007-01

The Underfrequency Load Shedding Standard Drafting Team thanks all commenters who submitted comments on the proposed 3rd draft of the PRC-006-1— Automatic Underfrequency Load Shedding Standard, EOP-003-1 — Load Shedding Plans, and the associated Implementation Plan. The standards and implementation plan were posted for a 35-day public comment period from June 11, 2010 through July 16, 2010. Stakeholders were asked to provide feedback through a special electronic comment form. There were 41 sets of comments, including comments from more than 100 different people from over 55 companies representing 8 of the 10 Industry Segments as shown in the table on the following pages.

### Summary of Changes

During the third posting of PRC-006-1 and EOP-003-2 the standard drafting team made several conforming changes as a result of the industry comments received.

- The fourth version of the proposed standard addresses the coordination issue many commenters expressed. Many commenters suggested that the Reliability Assurer be assigned responsibility for coordinating UFLS activities and for reaching concurrence. In the third version of the standard Requirement R5 and R13 require concurrence between Planning Coordinators if an island encompassed more than one Planning Coordinator area. Instead of assigning responsibility to the Reliability Assurer the standard drafting team revised Requirements R5 and R13 to define a set of actions that are measurable that will demonstrate that Planning Coordinators worked together should an island span more than one Planning Coordinator area. The standard drafting team confirms that the Planning Coordinator is the appropriate entity to design UFLS and conduct the other UFLS related activities based on the definition of the Planning Coordinator in the Functional Model Version 5. Requirement R14 was added to provide peer pressure in responding to concerns about UFLS programs.
- Commenters expressed confusion over having Transmission Owners as possible UFLS Entities but separated out as Transmission Owners in Requirement R10 and suggested merging Requirements R9 and R10. Requirement R9 focuses on automatic tripping of load and may be performed by either the Distribution Provider or the Transmission Operator; Requirement R10 focuses on switching of devices to control over-voltage as a result of under frequency load shedding. Therefore, the team decided not to merge the two requirements.
- Commenters expressed that the wording in Requirement R10 “switching of elements” is confusing. The team modified Requirement R10 to clarify that it means: “switching of capacitor banks, Transmission Lines, and reactors” to control over voltage as a result of under frequency load shedding.
- Commenters suggested that R13 was unclear, and the team revised the requirement by deleting the phrase, “. . . of UFLS actuated loss of load occurs. . . ”
- Many commenters indicated that Generator Owners should be included in the applicability of the standard. Some suggested including a data requirement in PRC-006-1 that requires the Generator Owners to submit the necessary data to accomplish Requirement R4; however, the team felt that because such a data requirement already exists in PRC-024 and because the team has clarified in the effective date of the standard that the Parts of the requirement related to generators will not be effective until PRC-024 is approved and effective, that adding such a data requirement to PRC-006 would be redundant and possibly cause double jeopardy concerns.
- The phrase, “Planning Coordinator footprint” was changed to “Planning Coordinator area” throughout the standard for improved clarity.

- The team also made modifications to clarify the performance characteristics in Requirement R3.
- The team modified Requirements R6 and R7 to clarify the limit the scope of the UFLS database.

The standard drafting team received several comments on EOP-003 that expressed concern that the removal of under-frequency load shedding in the standard was not clear enough. The standard drafting team made modifications to the EOP-003 requirements that clarify that the load shedding referred to in the requirements excludes automatic under-frequency load shedding.

[http://www.nerc.com/filez/standards/Underfrequency\\_Load\\_Shedding.html](http://www.nerc.com/filez/standards/Underfrequency_Load_Shedding.html)

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, Herbert Schrayshuen, at 609-452-8060 or at [herb.schrayshuen@nerc.net](mailto:herb.schrayshuen@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>1</sup>

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

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4. In the second posting, many of the requirements were assigned to groups of Planning Coordinators. These groups were to consist of all the Planning Coordinators within each of the Regional Entity footprints. The SDT has now revised these assignments to replace the groups with individual Planning Coordinators due to difficulties involved in assigning responsibilities to groups that do not currently exist. Do you agree with this revision?36
5. Several commenters indicated in the second posting potential conflicts and redundancies between PRC-006-1 and EOP-003-1 requirements. The SDT agrees that EOP-003-1 contains requirements that are redundant and/or conflict with the proposed requirements in PRC-006-1. The SDT sought approval to post a supplemental SAR to include EOP-003-1 Underfrequency Load Shedding related requirements in the scope of the UFLS SDT. The SC agreed to post the SAR with a proposal to revise the original scope of the UFLS SAR and the SDT revised the EOP-003-1 requirements to remove the conflicts..... 46
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9. The SDT has modified the performance characteristics in Requirements R6.1 through R6.3 (now parts 3.1, 3.2 and 3.3 of Requirement R3) and the modeling requirements for generator underfrequency and overfrequency protection in Requirement R7.1 and R7.2 (now parts 4.1 through 4.6 of Requirement R4). The modifications replace the discrete points in these requirements with frequency-time curves that achieve the same reliability objective. The SDT agrees with several commenters in the second posting that this approach is easier to understand and better demonstrates the coordination the SDT has achieved with the requirements proposed by the Generator Verification SDT in proposed standard PRC-024. Do you agree with these changes?..... 74
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- generator size and connection thresholds in part 3.3.1 of Requirement R3. Do you agree with this clarification? ..... 88
11. The SDT has replaced Requirement R4 appearing in the previous (second) draft of the standard. Requirement R4 required each group of Planning Coordinators to develop a procedure for coordinating with groups of Planning Coordinators in neighboring regions within an interconnection to identify and reach agreement on islands between its region and neighboring regions within the interconnection. Requirement R4 was removed because procedures for coordination do not directly support reliability. In version 3 of the draft standard, any Planning Coordinator may now select islands including interconnected portions of the BES in adjacent Planning Coordinator footprints and Regional Entity footprints, without the need for coordinating this selection with neighboring regions (Requirement R1). The SDT has added a requirement for the Planning Coordinators to reach concurrence on the UFLS assessments for any islands identified by any one Planning Coordinator that encompasses more than one Planning Coordinator footprint (Requirement R5). Do you agree with this revision?..... 97
12. The SDT added a Requirement R10 that requires each Transmission Owner to provide automatic switching of Elements in accordance with the UFLS program design. The SDT added this requirement in response to comments submitted in the second posting of the standard that indicated that automatic switching of Elements may be important as part of the UFLS program design. Do you agree with this requirement? ..... 105
13. The SDT added new Requirements, R11 through R13. Requirement R11 requires each Planning Coordinator, in whose footprint a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, to conduct and document an assessment of the performance of UFLS equipment and the UFLS program effectiveness within one year of event actuation. Requirement R12 requires Planning Coordinators, in whose islanding event assessments (per R11) UFLS program deficiencies are identified, to conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. Lastly, Requirement R13 requires Planning Coordinators, in whose footprint a BES islanding event affecting multiple Planning Coordinator footprints and resulting in system frequency excursions below the initializing set points of the UFLS program, to reach concurrence with the other affected Planning Coordinators on the event assessment results before event assessment is complete. These requirements were added to provide continuity on the requirement to assess UFLS program effectiveness for events since there is a similar requirement (with different applicable entities) currently in PRC-009-0, but PRC-009-0 is to be retired on approval of this standard. Do you agree with the addition of these requirements? ..... 113
14. The industry identified a need for a variance for the Québec Interconnection within NPCC to address the physical characteristics of the Québec system. This variance allows frequency decline to be arrested at a lower threshold and higher frequency overshoot without jeopardizing reliability because the installed generation in the Québec Interconnection is 98 percent hydraulic. The variance also establishes a different capacity threshold for the generating units for which underfrequency and overfrequency trip settings must be modeled to address concerns that by 2020, 10 percent of the installed capacity in Québec may be located at plants less than 75 MVA. The SDT has proposed the variance that meets the needs of the Québec interconnection in the third draft of the standard. In particular SDT developed the variance to Requirement R3 parts 3.1 and 3.2 and Requirement R4 parts 4.1 through 4.6. The variance to these requirements reference separate under and overfrequency curves included as attachments 1A and 2A to the standard. Do you agree with this Variance? ..... 122

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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.	Group	Guy Zito	Northeast Power Coordinating Council												X
Additional Member		Additional Organization		Region		Segment Selection									
1.	Alan Adamson	New York State Reliability Council, LLC	NPCC	10											
2.	Gregory Campoli	New York Independent System Operator	NPCC	2											
3.	Kurtis Chong	Independent Electricity System Operator	NPCC	2											
4.	Sylvain Clermont	Hydro-Quebec TransEnergie	NPCC	1											
5.	Chris de Graffenried	Consolidated Edison Co. of New York, Inc.	NPCC	1											
6.	Gerry Dunbar	Northeast Power Coordinating Council	NPCC	10											
7.	Ben Eng	New York Power Authority	NPCC	4											
8.	Brian Evans-Mongeon	Utility Services	NPCC	8											
9.	Dean Ellis	Dynegy Generation	NPCC	5											
10.	Brian L. Gooder	Ontario Power Generation Incorporated	NPCC	5											
11.	Kathleen Goodman	ISO - New England	NPCC	2											
12.	David Kiguel	Hydro One Networks Inc.	NPCC	1											
13.	Michael R. Lombardi	Northeast Utilities	NPCC	1											
14.	Randy MacDonald	New Brunswick System Operator	NPCC	2											
15.	Bruce Metruck	New York Power Authority	NPCC	6											

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	Commenter	Organization	Industry Segment																	
			1	2	3	4	5	6	7	8	9	10								
16.	Lee Pedowicz	Northeast Power Coordinating Council	NPCC	10																
17.	Robert Pellegrini	The United Illuminating Company	NPCC	1																
18.	Saurabh Saksena	National Grid	NPCC	1																
19.	Michael Schiavone	National Grid	NPCC	1, 3																
20.	Peter Yost	Consolidated Edison Co. of New York, Inc.	NPCC	3																
21.	Chantel Haswell	FPL Group	NPCC	5																
22.	Si Truc Phan	Hydro-Quebec TransEnergie	NPCC	1																
2.	Group	Philip R. Kleckley	SERC Planning Standards Subcommittee		X			X		X										
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	John Sullivan	Ameren Services Company	SERC	1																
2.	Charles Long	Entergy	SERC	1																
3.	James Manning	North Carolina Electric Membership Corporation	SERC	3																
4.	Jim Kelley	PowerSouth Energy Cooperative	SERC	1																
5.	Pat Huntley	SERC Reliability Corporation	SERC	10																
6.	Bob Jones	Southern Company Services, Inc. - Transmission	SERC	1																
7.	David Marler	Tennessee Valley Authority	SERC	1																
3.	Group	Bob Jones, Chairman	SERC SC UFLS Standard Drafting Team		X															
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	Rick Foster	Ameren Services Company	SERC	1																
2.	Venkat Kolluri	Entergy	SERC	1																
3.	Greg Davis	Georgia Transmission Corporation	SERC	1																
4.	Ernesto Paon	Municipal Electric Authority of Georgia	SERC	1																
5.	Andrew Fusco	North Carolina Municipal Power Agency Number 1	SERC	4																
6.	John O'Connor	Progress Energy Carolinas	SERC	1																
7.	Pat Huntley	SERC Reliability Corporation	SERC	NA																
8.	Jonathan Glidewell	Southern Company Services, Inc.	SERC	1																
9.	Tom Cain	Tennessee Valley Authority	SERC	1																
4.	Group	Mallory Huggins	NERC Staff																	

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<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Phil Tatro	NERC	NA - Not Applicable	NA										
2.	Bob Cummings	NERC	NA - Not Applicable	NA										
3.	David Taylor	NERC	NA - Not Applicable	NA										
4.	Stephanie Monzon	NERC	NA - Not Applicable	NA										
5.	Al McMeekin	NERC	NA - Not Applicable	NA										
5.	Group	Denise Koehn	Bonneville Power Administration		X		X		X	X				
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Greg Vasallo	BPA, Tx Customer Service Engineering	WECC	1										
2.	Rebecca Berdahl	BPA, Long Term Sales and Purchases	WECC	3										
6.	Group	Sam Ciccone	FirstEnergy		X		X	X	X	X				
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Doug Hohlbaugh	FE	RFC	1, 3, 4, 5, 6										
2.	Jim Detweiler	FE	RFC	1										
7.	Group	Joseph DePoorter	MRO's NERC Standards Review Subcommittee (NSRS)											X
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Mahmood Safi	OPPD	MRO	1, 3, 5, 6										
2.	Chuck Lawrence	ATC	MRO	1										
3.	Tom Webb	WPSC	MRO	3, 4, 5, 6										
4.	Jason Marshall	MISO	MRO	2										
5.	Jodi Jenson	WAPA	MRO	1, 6										
6.	Ken Goldsmith	ALTW	MRO	4										
7.	Dave Rudolph	BEPC	MRO	1, 3, 5, 6										
8.	Eric Ruskamp	LES	MRO	1, 3, 5, 6										
9.	Joseph Knight	GRE	MRO	1, 3, 5, 6										
10.	Joe DePoorter	MGE	MRO	3, 4, 5, 6										
11.	Scott Nickels	RPU	MRO	4										
12.	Terry Harbour	MEC	MRO	6, 1, 3, 5										

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		Commenter	Organization	Industry Segment																
				1	2	3	4	5	6	7	8	9	10							
13.		Carol Gerou	MRO	MRO	10															
8.	Group	Art Buanno	ReliabilityFirst Engineering Staff																	X
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.		Ray Mason	ReliabilityFirst Corp.	RFC	10															
9.	Group	Richard kafka	Pepco Holdings, Inc. - Affiliates			X		X		X	X									
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.		Dave Thorne	Potomac Electric Power Company	RFC	1															
2.		Vic Davis	Delmarva Power & Light	RFC	1															
10.	Individual	Shawn Jacobs	SPP System Protection and Control Working Group				X													X
11.	Individual	Steve Rueckert	Western Electricity Coordinating Council																	X
12.	Individual	Dennis Chastain	Tennessee Valley Authority (TVA)			X		X		X	X									
13.	Individual	Brandy A. Dunn	Western Area Power Administration			X														
14.	Individual	JT Wood	Southern Company Transmission			X		X												
15.	Individual	James Sharpe	South Carolina Electric and Gas			X		X		X	X									
16.	Individual	John Bee	Exelon			X		X		X										
17.	Individual	Ernesto Paon	MEAG Power			X		X		X										
18.	Individual	Kirit Shah	Ameren			X		X		X	X									
19.	Individual	Michael R. Lombardi	Northeast Utilities			X		X		X										
20.	Individual	Robert Ganley	Long Island Power Authority			X														
21.	Individual	John Bussman	AECI			X		X		X	X									
22.	Individual	Darryl Curtis	Oncor Electric Delivery			X														
23.	Individual	James A. Ziebarth	Y-W Electric Association, Inc.						X											
24.	Individual	Jonathan Appelbaum	United Illuminating Company			X														
25.	Individual	Kasia Mihalchuk	Manitoba Hydro			X		X		X	X									



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		Commenter	Organization	Industry Segment										
				1	2	3	4	5	6	7	8	9	10	
26.	Individual	Edward Davis	Entergy Services	X		X		X	X					
27.	Individual	Bob Thomas	Illinois Municipal Electric Agency				X							
28.	Individual	Jon Kapitz	Xcel Energy	X		X		X	X					
29.	Individual	Jeff Nelson	Springfield Utility Board			X								
30.	Individual	Charles Lawrence	American Transmission Co.	X										
31.	Individual	Scott Berry	Indiana Municipal Power Agency				X							
32.	Individual	Claudiu Cadar	GDS Associates	X										
33.	Individual	Joe Springhetti	Wisconsin Electric Power Company (dba We Energies)			X	X	X						
34.	Individual	John O'Connor	Progress Energy - Carolinas	X		X		X	X					
35.	Individual	Greg Rowland	Duke Energy	X		X		X	X					
36.	Individual	Dan Rochester	IESO		X									
37.	Group	Ben Li	IRC Standards Review Committee		X									
<b>Additional Member Additional Organization Region Segment Selection</b> 1. Bill Phillips MISO 2 2. Patrick Brown PJM RFC 2 3. Charles Yeung SPP SPP 2 4. Steve Myers ERCOT ERCOT 2 5. Matt Goldberg ISO-NE NPCC 2 6. Mark Thompson AESO WECC 2 7. James Castle NYISO NPCC 2														
38.	Individual	Bill Middaugh	Tri-State Generation & Transmission Assoc.	X										
39.	Individual	Darcy O'Connell	The California ISO		X									
40.	Individual	Terry Harbour	MidAmerican Energy	X										
41.	Individual	Patrick Farrell	Southern California Edison Company	X		X		X						

**1. The SDT drafted Violation Risk Factors, for the requirements. Do you agree with the proposed Violation Risk Factors?**

**Summary Consideration:**

The standard drafting team made conforming modifications to the VRF for Requirement R1 as a result of industry comments received that indicated that the VRF should be higher (changed from Lower to Medium) since the output of this requirement is used in higher VRF requirements. Several commenters did not agree that the VRFs assigned a medium or higher are appropriate for a planning standard; however, the VRF assignments by definition apply both to operations and planning standards. In the planning timeframe the standard drafting team thinks it has appropriately assigned VRFs.

Organization	Yes or No	Question 1 Comment
Xcel Energy		No comments
The California ISO	No	Cannot support approval until the requirements are closer to being finalized.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Tri-State Generation & Transmission Assoc.	No	<p>Comments: Generally, our primary concern is that the requirements should not apply to individual Planning Coordinators, so it is difficult to agree with any proposed Violation Risk Factors (VRF).The reliability basis for R1 and R2 is not clear and we would recommend eliminating those requirements along with their VRFs.We believe the use of Transmission Owner in R10 is redundant with R9 and “switching of elements” should be merged into R9 and R10 can be eliminated.The five-year assessment in requirement R4 seems like a higher VRF than necessary and Medium would be adequate.</p>
<p><b>Response: The SDT notes that Order 672 establishes that requirements apply to users, owners, and operators of the Bulk Electric System. The SDT thinks that the Planning Coordinator (a user, owner, operator of the Bulk Electric System) is the next most appropriate entity to fulfill the responsibilities in the proposed standard. The SDT believes the Planning Coordinator is the most appropriate applicable entity because design of a UFLS program should consider the widest possible geographic area. Since the Planning Coordinator must work closely with the Transmission Planners in performance of its role, the SDT anticipates that the Transmission Planners’ expertise will be utilized.</b></p> <p><b>The SDT thinks that Requirement R1 and Requirement R2 are important parts of establishing a UFLS program and are a necessary part of the proposed standard.</b></p> <p><b>Requirement R9 focuses on automatic tripping of load and may be performed by either the Distribution Provider or the Transmission Operator;</b></p>		

Organization	Yes or No	Question 1 Comment
<p>Requirement R10 focuses on switching of devices to control over-voltage as a result of under frequency load shedding. Therefore, the team decided not to merge the two requirements.</p> <p>This requirement is assigned a High VRF because the reliability objective of this requirement is to perform an assessment of the UFLS program every five years. Violation of this requirement, by failing to validate the UFLS program through dynamic simulations, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</p>		
American Transmission Co.	No	<p>The VRFs for R3, R4, R9, and R10 should be reduced from “High” to “Medium” for several reasons. System events that would activate automatic underfrequency load shedding have been very rare and automatic UFLS is a system preservation measure of last resort, not primary system preservation measure. For R4 in particular, the performance of the UFLS program and the associated islands do not change rapidly or dramatically to warrant a “High” VRF for delayed conducting or documentation of a UFLS design assessment.</p>
<p><b>Response:</b> These requirements are assigned a High VRF because the reliability objective of these requirements is to perform an assessment of the UFLS program every five years, provide load shedding, and switching of Elements in accordance with the UFLS program. Violation of these requirements could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</p>		
IESO	No	<p>If the Planning Coordinator does not develop and document criteria, how will other Requirements be satisfied? For this reason, the VRF for R1 should be higher.</p>
<p><b>Response:</b> The SDT agrees with the commenter and made conforming changes to the VRF for Requirement R1.</p>		
IRC Standards Review Committee	No	<p>No VRF for UFLS should be High. UFLS is only actuated because several other things did not work properly. For a VRF to be High, there must be a direct causal link to bad things happening (i.e. cascading, instability, blackout) as result of the requirement. If UFLS has to be actuated, we have already reached the bad things happening stage and this represents a last ditch effort to save the system.</p>
<p><b>Response:</b> These requirements are assigned a High VRF because the reliability objective of these requirements is to perform an assessment of the UFLS program every five years, provide load shedding, and switching of Elements in accordance with the UFLS program. Violation of these requirements could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</p>		

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Organization	Yes or No	Question 1 Comment
Southern California Edison Company	No	SCE does not agree with the proposed reliability standard and, therefore, we cannot agree with the proposed Violation Risk Factors.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Pepco Holdings, Inc. - Affiliates	No	See response to question 7. PHI does not concur with the requirements as written.
<p><b>Response: Please see our response to your comments on Question 7. The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Long Island Power Authority	No	The VRF for R1 for the development and documentation of UFLS program criteria is stated as a "Low" VRF. Such a requirement to develop overall UFLS program criteria was more than a "Low" or Administrative requirement and that the VRF for this requirement should be listed as Medium VRF. The requirement to develop a program criteria in Requirement R1 is as important as those requirements stated in Requirement R2 which was assigned a Medium VRF by the DT.
<p><b>Response: The SDT agrees with the commenter and made conforming changes to the VRF for Requirement R1.</b></p>		
Northeast Power Coordinating Council	No	The VRF for R1 for the development and documentation of UFLS program criteria is stated as a Low VRF. Such a requirement to develop overall UFLS program criteria was more than a 'Low' or Administrative requirement, and the VRF for this requirement should be listed as a Medium VRF. The requirement to develop program criteria in Requirement R1 is as important as those requirements stated in Requirement R2 which was assigned a Medium VRF by the DT.
<p><b>Response: The SDT agrees with the commenter and made conforming changes to the VRF for Requirement R1.</b></p>		
Northeast Utilities	No	The VRF for Requirement R1 is stated as a Lower. The requirement to develop program criteria in Requirement R1 is as important as those requirements stated in Requirement R2 which is assigned a Medium VRF. Suggest the Requirement R1 VRF be revised to Medium.
<p><b>Response: The SDT agrees with the commenter and made conforming changes to the VRF for Requirement R1.</b></p>		
Manitoba Hydro	No	The VRFs for R3, R4, R9, and R10 should be reduced from "High" to "Medium" for several reasons. System events that would activate automatic underfrequency load shedding have been very rare and automatic UFLS

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Organization	Yes or No	Question 1 Comment
		is a system preservation measure of last resort, not primary system preservation measure. For R4 in particular, the performance of the UFLS program and the associated islands do not change rapidly or dramatically to warrant a “High” VRF for delayed conducting or documentation of a UFLS design assessment.
<p><b>Response: These requirements are assigned a High VRF because the reliability objective of these requirements is to perform an assessment of the UFLS program every five years, provide load shedding, and switching of Elements in accordance with the UFLS program. Violation of these requirements could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</b></p>		
MidAmerican Energy	No	The VRFs for R3, R4, R9, and R10 should be reduced from “High” to “Medium” for several reasons. System events that would activate automatic underfrequency load shedding have been very rare and automatic UFLS is a system preservation measure of last resort, not primary system preservation measure. For R4 in particular, the performance of the UFLS program and the associated islands do not change rapidly or dramatically to warrant a “High” VRF for delayed conducting or documentation of a UFLS design assessment
<p><b>Response: These requirements are assigned a High VRF because the reliability objective of these requirements is to perform an assessment of the UFLS program every five years, provide load shedding, and switching of Elements in accordance with the UFLS program. Violation of these requirements could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</b></p>		
MRO’s NERC Standards Review Subcommittee (NSRS)	No	<p>The VRFs for R3, R4, R9, and R10 should be reduced from “High” to “Medium” for several reasons.</p> <p>[1] Automatic UFLS programs are system preservation measures of last resort that may help the BES recovery if the primary system preservation measures are insufficient. So, the risk to the system reliability is low because primary measures will normally restore the system even if some UFLS requirements are not completely fulfilled.</p> <p>[2] System events that would activate automatic underfrequency load shedding have been very rare. So, the risk to system reliability is low because events of unacceptable underfrequency rarely occur even if the sum of the UFLS requirements not completely fulfilled.</p> <p>[3] Automatic UFLS programs can only be designed to help preserve the system for a wide range of, but not all, possible system conditions. So, the risk to system reliability is low because UFLS programs may help for many system conditions, even if some of the UFLS requirements are not completely fulfilled.</p> <p>[4] For R4, the performance of the UFLS program and the characteristics of the associated islands change only slightly and gradually over many years. So, the risk to system reliability would not change dramatically if</p>

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Organization	Yes or No	Question 1 Comment
		conducting or documenting of a UFLS design assessment was delayed by several years.
<p><b>Response:</b> These requirements are assigned a High VRF because the reliability objective of these requirements is to perform an assessment of the UFLS program every five years, provide load shedding, and switching of Elements in accordance with the UFLS program. Violation of these requirements could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</p>		
Tennessee Valley Authority (TVA)	No	<p>TVA believes the following VRF changes should be considered:</p> <p>R4 - change from High to Medium. Justification: The selection of a 5-year interval for assessments seems subjective in nature. Failure to perform an assessment within a 5-year interval would not directly cause or contribute to bulk electric system instability.</p> <p>R11 - change from Medium to Low. Justification: documenting a post event assessment seems more administrative in nature, relative to R12.</p>
<p><b>Response:</b> These requirements are assigned a High VRF because the reliability objective of these requirements is to perform an assessment of the UFLS program every five years, provide load shedding, and switching of Elements in accordance with the UFLS program. Violation of these requirements could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure (blackout), and could hinder restoration to a normal condition.</p> <p><b>R11-</b> A similar requirement exists in PRC-009-0 Requirement R1 and is assigned a Medium VRF. This requirement is assigned a Medium VRF because it requires assessment of UFLS equipment performance and UFLS program effectiveness during specified events involving UFLS activation that could identify deficiencies in either, and if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state of the bulk electric system, or the ability to effectively control or restore the bulk electric system.</p>		
Western Electricity Coordinating Council	No	We agree that the proposed VRFs are appropriate for the subject of the requirements, but we do not agree with many of the requirements as drafted, so we are opposed for that reason
<p><b>Response:</b> The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</p>		
AECI	Yes	
Bonneville Power Administration	Yes	

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Organization	Yes or No	Question 1 Comment
Exelon	Yes	
FirstEnergy	Yes	
Indiana Municipal Power Agency	Yes	
MEAG Power	Yes	
Oncor Electric Delivery	Yes	
ReliabilityFirst Engineering Staff	Yes	
SERC Planning Standards Subcommittee	Yes	
SERC SC UFLS Standard Drafting Team	Yes	
South Carolina Electric and Gas	Yes	
SPP System Protection and Control Working Group	Yes	
Springfield Utility Board	Yes	
United Illuminating Company	Yes	
Wisconsin Electric Power Company (dba We Energies)	Yes	
Y-W Electric Association, Inc.	Yes	
Ameren	Yes	Did the SDT utilize the VRF Tool recently developed by the Process Subcommittee of the NERC SC to develop the VRFs? If not, the VRFs should be revisited using this tool.

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Organization	Yes or No	Question 1 Comment
<b>Response: The SDT did not use the VRF Tool. The use of the tool is not authorized at this time.</b>		
Illinois Municipal Electric Agency	Yes	For R8, R9, R10 applicable to UFLS entity/TO.
<b>Response: Thank you for your support.</b>		
Duke Energy	Yes	However we have identified an issue with R5 and R13 requiring that Planning Coordinators “reach concurrence” which brings their VRFs into question. This is discussed further in our comments below.
<b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT’s proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas.</b>		
Progress Energy - Carolinas	Yes	We agree with proposed VRFs. However, we would recommend the VRF Tool be used to validate these.
<b>Response: The SDT did not use the VRF Tool. The use of the tool is not authorized at this time.</b>		
Entergy Services	Yes	We recommend that the VRF Tool be used to validate the proposed VRFs.
<b>Response: The SDT did not use the VRF Tool. The use of the tool is not authorized at this time.</b>		
Southern Company Transmission	Yes	We recommend that the VRF Tool be used to validate the proposed VRFs.
<b>Response: The SDT did not use the VRF Tool. The use of the tool is not authorized at this time.</b>		



**2. The SDT drafted Measures for the requirements. Do you agree with the proposed Measures?**

**Summary Consideration:**

The standard drafting team received comments to improve the clarity of the Measures and made some conforming changes to the Measures for this purpose, including the following:

- M2 and M3 - Removed the phrase, “including the criteria itself”.
- M5 and M13 – Expanded the description of possible types of acceptable evidence.
- M10 – Replaced the phrase, “switching of Facilities” with a specific list of Elements.

Organization	Yes or No	Question 2 Comment
Xcel Energy		No comments
AECI	No	For M1, how can we consider historical events if we have never had a UFLS event on our system? How would a system study tell us how to select an island? This is unclear.
<p><b>Response: Requirement R1 requires that the Planning Coordinator consider historical events and system studies in selecting island criteria but the deliverable for Requirement R1 is a criteria for selecting islands and it doesn't require the entity to have island criteria based on historical events only to consider historical events. The Measure M1 indicates that the entity must have some evidence that it considered historical events.</b></p>		
The California ISO	No	Cannot support approval until the requirements are closer to being finalized.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Tri-State Generation & Transmission Assoc.	No	Comments: The measures are vague and not performance based leaving much up to interpretation. Measures should contain specific targets or specifications that clarify how an entity will be audited and measured for compliance. These measures merely repeat the requirements and do not provide any useful guidance beyond what is specified in the requirement itself.
<p><b>Response: The SDT thinks that the Measures identify the evidence or types of evidence needed to demonstrate compliance with the associated requirement. The SDT thinks that the commenter is proposing that the SDT propose the RSAW not the Measures.</b></p>		
MidAmerican Energy	No	Ensure that measures correctly reflect modified requirement changes. In addition there are concerns with the

Organization	Yes or No	Question 2 Comment
		<p>addition of requirements and measurements to reach concurrence. This potentially subjects an entity to non-compliance based on events beyond that entity’s control such as a problematic neighbor that refuses to reach concurrence. This concept should be removed and replaced with a requirement to distribute the results. Examples include M5 - As noted in the comments below for R5, replace the words “reached concurrence with” with “provided a UFLS design assessment report to”. Fulfillment of a compliance measure that involves reaching concurrence with another entity is dependent on the other entity and can be outside of the control of the Planning Coordinator. In addition, replace the words “other affected Planning Coordinators” with “other Planning Coordinators that have design assessment responsibilities for islands covered in the design assessment report. The qualification of “other affected Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.</p> <p>M7 - As noted in the comments below for R7, replace “within their Interconnection”, with “that have design assessment responsibilities within the islands covered by the UFLS database”. Planning Coordinators that are within the same Interconnection, but are not within any islands covered by another Planning Coordinators UFLS database, would not need to receive the UFLS information</p> <p>.M10 - Replace “automatic switching of Facilities” with “automatic switching of Elements” to be consistent with the associated Requirement R10</p>
<p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT’s proposal eliminates the need to reach concurrence and replaces this with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas.</b></p> <p><b>The SDT thinks that database information should be shared beyond that which is being proposed by the commenter. This is the reason why the SDT specified that the PC’s share the database with the other PC’s within their interconnection. This is a measure to ensure information sharing is happening within the interconnection.</b></p> <p><b>The SDT made the suggested conforming change to Measure M10.</b></p>		
Exelon	No	<p>Exelon does not agree with the concept of allowing neighboring Planning Coordinators to define or modify islanding criteria. There should be a single criteria for the determination of an island which is consistent across the interconnection, unless a specific geographic or regional exception is identified. Even if differing islanding criteria are allowed for each PC, the Planning Coordinator with responsibility for the footprint should have sole authority for determining and modifying the criteria within that footprint.</p>
<p><b>Response: The SDT is unsure if the commenter is referring to a specific requirement; however, like many other commenters that were concerned with the Planning Coordinators reaching concurrence, the SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT’s proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators</b></p>		

Organization	Yes or No	Question 2 Comment
<b>coordinated should an island cross Planning Coordinator areas.</b>		
Progress Energy - Carolinas	No	<p>For M3, it is unclear what is meant by the phrase “including the criteria itself.” Since the criteria is specified in R3, we recommend this phrase be deleted from the measure.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p> <p>For M5, this measure should only apply to Planning Coordinators (PCs) who are part of a joint island, but it is written such that it appears to apply to all PCs. We recommend rewording M5 to “Each Planning Coordinator shall have dated evidence...that it reached concurrence with the other affected PCs on design assessment results for any islands in accordance with Requirement R5 and identifies the affected PCs.” We also recommend that R5 be reworded to “Each PC shall reach concurrence with all other affected PCs on UFLS design assessment results before design assessment completion for any islands identified by that PC which include a portion of that PC's footprint along with another PCs footprint.”</p> <p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas. The SDT also made associated changes to the corresponding measures.</b></p>
Ameren	No	<p>In M3, it isn't clear what is meant by “including the criteria itself.” The criteria is already specified in Requirement R3, so this phrase does not appear to be needed.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p> <p>M5 should only apply to PCs who would be part of a particular joint island. The present wording seems to suggest that M5 and Requirement R5 would apply to every PC. The wording for M5, and corresponding Requirement R5, should be modified to apply only to the PC's which would be involved with a particular island.</p> <p><b>Response: The SDT made conforming changes to Requirement R5 to clarify the coordination between Planning Coordinators.</b></p>
Duke Energy	No	<p>M3 - it is unclear what is meant by the phrase “including the criteria itself”. Suggest deleting the phrase.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p> <p>Also, requirements R5 and R13 (and hence their Measures and VSLs) are problematic, since they require that Planning Coordinators shall “reach concurrence” with all other affected Planning Coordinators, which may</p>

Organization	Yes or No	Question 2 Comment
		<p>not always be possible. The requirements need to provide for that situation.</p> <p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas.</b></p>
Entergy Services	No	<p>M3: It is unclear what action is intended by the phrase "including the criteria itself." Since the criteria is specified in R3, it is recommend that the phrase be deleted.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p> <p>M5 and R5: This should only apply to PCs who are a part of the joint island, while the way it is currently worded it appears to apply to every PC. Recommend that the wording in M5 be changed to: "Each Planning Coordinator shall have dated evidence such as memorandums, letters, or other dated documentation that it reached concurrence with the other affected Planning Coordinators on design assessment results for any identified islands in accordance with Requirement R5 and identifies the affected Planning Coordinators." Recommend that the wording in R5 be changed to: "Each Planning Coordinator shall reach concurrence with all other affected Planning Coordinators on UFLS design assessment results before design assessment completion for any islands identified by that Planning Coordinator which include a portion of its footprint along with portions of another PC(s) footprint."</p> <p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas. The SDT made conforming changes to the associated Measures.</b></p>
SERC Planning Standards Subcommittee	No	
<b>Response:</b>		
SERC SC UFLS Standard Drafting Team	No	<p>M3: It is unclear what action is intended by the phrase "including the criteria itself." Since the criteria is specified in R3, it is recommend that it be deleted.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p> <p>M5 and R5: This should only apply to PCs who are a part of the joint island, while the way it is currently worded it appears to apply to every PC. Recommend that the wording in M5 be changed to: "Each Planning</p>

Organization	Yes or No	Question 2 Comment
		<p>Coordinator shall have dated evidence such as memorandums, letters, or other dated documentation that it reached concurrence with the other affected Planning Coordinators on design assessment results for any identified islands in accordance with Requirement R5 and identifies the affected Planning Coordinators." Recommend that the wording in R5 be changed to: "Each Planning Coordinator shall reach concurrence with all other affected Planning Coordinators on UFLS design assessment results before design assessment completion for any islands identified by that Planning Coordinator which include a portion of its footprint along with portions of another PC(s) footprint."</p> <p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas. The SDT made conforming changes to the associated Measures.</b></p>
Southern Company Transmission	No	<p>M3: It is unclear what action is intended by the phrase "including the criteria itself." Since the criteria is specified in R3, it is recommend that it be deleted.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p> <p>M5 and R5: This should only apply to PCs who are a part of the joint island, while the way it is currently worded it appears to apply to every PC. Recommend that the wording in M5 be changed to: "Each Planning Coordinator shall have dated evidence such as memorandums, letters, or other dated documentation that it reached concurrence with the other affected Planning Coordinators on design assessment results for any identified islands in accordance with Requirement R5 and identifies the affected Planning Coordinators." Recommend that the wording in R5 be changed to: "Each Planning Coordinator shall reach concurrence with all other affected Planning Coordinators on UFLS design assessment results before design assessment completion for any islands identified by that Planning Coordinator which include a portion of its footprint along with portions of another PC(s) footprint."</p> <p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas. The SDT made conforming changes to the associated Measures.</b></p>
American Transmission Co.	No	<p>M5 - As noted in the comments below for R5, replace the words "reached concurrence with" with "provided a UFLS design assessment report to". Fulfillment of a compliance measure that involves reaching concurrence with another entity is dependent on the other entity and can be outside of the control of the Planning Coordinator. In addition, replace the words "other affected Planning Coordinators" with "other Planning</p>

Organization	Yes or No	Question 2 Comment
		<p>Coordinators that have design assessment responsibilities for islands covered in the design assessment report. The qualification of “other affected Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.</p> <p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT’s proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas. The SDT made conforming changes to the associated Measures.</b></p> <p>M7 - As noted in the comments below for R7, replace “within their Interconnection”, with “that have design assessment responsibilities within the islands covered by the UFLS database”. Planning Coordinators that are within the same Interconnection, but are not within any islands covered by another Planning Coordinators UFLS database, would not need to receive the UFLS information.</p> <p><b>Response: The SDT thinks that database information should be shared beyond that which is being proposed by the commenter. This is the reason why the SDT specified that the PC’s share the database with the other PC’s within their interconnection. This is a measure to ensure information sharing is happening within the interconnection.</b></p> <p>M10 - Replace “automatic switching of Facilities” with “automatic switching of Elements” to be consistent with the associated Requirement R10.</p> <p><b>Response: The SDT clarified Requirement R10 and Measure M10 by explicitly stating the types of Elements.</b></p>
Bonneville Power Administration	No	<p>Measures are too vague, lacking specifics, and not performance-based. This would leave too much up to the Auditor’s interpretation. Measures are only valuable if they contain specific targets or specifications that clarify how an entity will be deemed to be compliant with the standard as written. Measures which merely repeat the standard with the inclusion of “shall have evidence such as...” are not very useful. Measures should be explicit, detailed, consistent, and provide useful guidance to entities. These measures do not provide any useful guidance beyond what is specified in the requirement itself.</p>
<p><b>Response: The SDT thinks that the Measures identify the evidence or types of evidence needed to demonstrate compliance with the associated requirement. The SDT thinks that the commenter is proposing that the SDT propose the RSAW not the Measures.</b></p>		
FirstEnergy	No	<p>Since we do not agree with some of the standard requirements, we therefore do not agree with the measures for some of the requirements as written.</p>

Organization	Yes or No	Question 2 Comment
<p><b>Response: The SDT has made conforming changes to the proposed standard that addresses many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Manitoba Hydro	No	<p>Suggest that the measures be modified to reflect any changes made to standards Requirements per the comments made to questions Q4 through Q13.</p> <p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p> <p>M10 - Replace “automatic switching of Facilities” with “automatic switching of Elements” to be consistent with the associated Requirement R10.</p> <p><b>Response: The SDT clarified Requirement R10 and Measure M10 by explicitly stating the types of Elements.</b></p>
MRO’s NERC Standards Review Subcommittee (NSRS)	No	<p>Suggest that the measures be modified to reflect any changes made to standards Requirements per the comments made to questions Q4 through Q13.</p> <p><b>Response: The SDT has made conforming changes to the proposed standard that addresses many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p> <p>M10 - Replace “automatic switching of Facilities” with “automatic switching of Elements” to be consistent with the associated Requirement R10.</p> <p><b>Response: The SDT clarified Requirement R10 and Measure M10 by explicitly stating the types of Elements.</b></p>
IESO	No	<p>The measures that refer to Requirements with subrequirements (e.g. R2, R3, and R4) should be more consistent.</p> <p><b>Response: The SDT thinks that the Measures as written accurately refer to the associated Requirement sub-parts.</b></p> <p>All of the corresponding Measures (e.g. M2 and M4) should include the final phrase: “including the criteria itself” or none should include this phrase.</p> <p><b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3.</b></p>

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Organization	Yes or No	Question 2 Comment
Tennessee Valley Authority (TVA)	No	TVA believes the following changes to the Measures should be considered:M3: It is unclear what action is intended by the phrase “including the criteria itself.” Since the criteria are specified in R3, it is recommended that it be deleted.
<b>Response: The SDT agrees with the commenter and removed the phrase from both M2 and M3</b>		
Southern California Edison Company	No	We do not agree with the proposed reliability standard and, therefore, we cannot agree with the proposed Measures.
<b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b>		
Pepco Holdings, Inc. - Affiliates	No	We do not concur with the requirements as written
<b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b>		
SPP System Protection and Control Working Group	No	What is meant by “criteria” in Requirement R1? Does “criteria” in R1 have to be justified?
<b>Response: The criteria in Requirement R1 is the criteria used to select islands as the basis for the UFLS program design.</b>		
Indiana Municipal Power Agency	Yes	
IRC Standards Review Committee	Yes	
Long Island Power Authority	Yes	
MEAG Power	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	



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Organization	Yes or No	Question 2 Comment
ReliabilityFirst Engineering Staff	Yes	
South Carolina Electric and Gas	Yes	
Springfield Utility Board	Yes	
United Illuminating Company	Yes	
Y-W Electric Association, Inc.	Yes	
Illinois Municipal Electric Agency	Yes	For M8, M9, and M10 applicable to UFLS entity/TO.
<b>Response: Thank you for your support.</b>		
Northeast Power Coordinating Council	Yes	The Measures are logical and consistent with the corresponding requirements.
<b>Response: Thank you for your support.</b>		
Wisconsin Electric Power Company (dba We Energies)	Yes	We agree with the Measures as far as the draft standard is currently written, however, see our comments for questions 11, 12, and 13 that would require modifications to requirements R9 & R10 and to M9 & M10.
<b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b>		

**3. The SDT drafted Violation Severity Levels for the requirements. Do you agree with the proposed Violation Severity Levels?**

**Summary Consideration:**

Some comments received indicated that the increments in the VSLs were arbitrary. The standard drafting team used the NERC and FERC VSL guidelines to develop the proposed VSLs. However, several commenters suggested making changes to the VSLs such as VSL for Requirement R11 and the team made conforming changes.

The team changed the phrase, “Planning Coordinator footprint” with the phrase, “Planning Coordinator area” throughout the standard.

Organization	Yes or No	Question 3 Comment
Xcel Energy		No comments
The California ISO	No	Cannot support approval until the requirements are closer to being finalized.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Tri-State Generation & Transmission Assoc.	No	<p>Comments: We believe that individual Planning Coordinators are not the appropriate entities to be responsible for determining criteria for areas that may form islands, for identifying the islands, for developing the UFLS program, for periodic assessments, for maintaining databases, or for assessing events.</p> <p>Further, Planning Coordinator footprints are neither defined nor is there any guidance on how they should be established.</p> <p><b>Response: The definition of the Planning Coordinator according to the Function Model Version 5 states: The functional entity that coordinates, facilitates, integrates and evaluates (generally one year and beyond) transmission facility and service plans, and resource plans within a Planning Coordinator area and coordinates those plans with adjoining Planning Coordinator areas.</b></p> <p>Every VSL that refers to a PC footprint should be clarified.</p> <p><b>Response: The SDT replaced “footprint” with “area” to be consistent with the Functional Model.</b></p> <p>What is meant by “annually maintain” is neither clear nor defined.</p> <p><b>Response: The SDT modified Requirement R7 to clarify the intent of the UFLS database: Each Planning Coordinator shall annually maintain a UFLS database containing <i>data necessary to model its</i></b></p>

Organization	Yes or No	Question 3 Comment
		<p><b><i>UFLS program for use in event analyses and assessments of the UFLS program.</i></b></p> <p>The VSL for R6 should be re-written. The increment size between VSLs seems arbitrarily small in R9 and R10. Is there a reliability basis for choosing 5%?</p> <p><b>Response: The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
Bonneville Power Administration	No	<p>Criteria are never actually defined in the requirements.</p> <p><b>Response: The criteria in Requirement R1 is the criteria used to select islands as the basis for the UFLS program design.</b></p> <p>Planning Coordinator footprints are not established.</p> <p><b>Response: The SDT replaced “footprint” with “area” to be consistent with the Functional Model.</b></p> <p><b>The definition of the Planning Coordinator according to the Function Model Version 5 states: The functional entity that coordinates, facilitates, integrates and evaluates (generally one year and beyond) transmission facility and service plans, and resource plans within a Planning Coordinator area and coordinates those plans with adjoining Planning Coordinator areas.</b></p> <p>What does “annually maintain” mean? Does it mean the Database requires annual updates, annual reviews or just to provide a database annually? Frequency excursions precede an islanding event. I.e. low frequency initiates UFLS which should prevent an unintentional islanding event. The wording of this requirement makes it seem like the islanding event occurs first and causes the UF.</p> <p><b>Response: The SDT modified Requirement R7 to clarify the intent of the UFLS database: Each Planning Coordinator shall annually maintain a UFLS database containing <i>data necessary to model its UFLS program for use in event analyses and assessments of the UFLS program.</i></b></p>
MEAG Power	No	<p>Developing a VSL tool similar to the VRF tool would be beneficial. The VSL seem arbitrary. For example, R1 has a "moderate" and "high" VSL if you do not take into account historical events when documenting and developing the criteria, but what if your sub-region never had an UF event? You are still in compliance?</p>
<p><b>Response: The SDT established the VSLs according to the VSL NERC guidelines. Requirement R1 requires that a Planning Coordinator consider historical events in establishing island criteria and does not require that they select islands based on historical islands that have formed.</b></p>		
SPP System Protection and Control Working Group	No	<p>For R11, the lower VSL is stated as a requirement and not as a VSL. Does it need to be reworded?</p>

Organization	Yes or No	Question 3 Comment
<b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b>		
Progress Energy - Carolinas	No	<p>For R4, the VSLs should include a consideration of the timeliness of the completion of the required study (e.g. lower VSL for 3 months late, Moderate for 3-6 months late, etc.).</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that graded the timeliness of the study is necessary.</b></p> <p>For the R11 VSLs, we recommend that the time ranges for the VSLs be expanded to allow more than one month between Low, Moderate, High and Severe. We would suggest revising to Moderate 12-14 months, High 14-16 months, and Severe greater than 16 months past the 12 month requirement.</p> <p><b>Response: The SDT does not agree with the recommendation to add a range of time to the VSLs. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
Ameren	No	<p>For Requirement R11, the ‘Lower’ VSL needs rewording. This VSL as written is just a repeat of the requirement text. Also, the time ranges for the VSL’s should be expanded. Suggested ranges: Moderate: 12-14 months; High: 14-16 months; Severe: 16-18 months.</p>
<b>Response: The SDT made conforming changes to the VSL for Requirement R11. The SDT does not agree with the recommendation to add a range of time to the VSLs. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b>		
AECI	No	<p>In R1 it is unclear how to use historical events and system studies to select portions of the BES.</p> <p><b>Response: Requirement R1 requires that the Planning Coordinator consider historical events and system studies in selecting island criteria but the deliverable for Requirement R1 is a criteria for selecting islands and it doesn’t require the entity to have island criteria based on historical events only to consider historical events.</b></p> <p>In R4, I can see how we should be responsible for our own generators, but the information for generation owned by others is only as good as the data we receive.</p> <p><b>Response: The SDT clarified in the Effective Date section of the standard that Requirement R4 is not effective until PRC-024 is approved and effective.</b></p> <p>In R7 for the lower VSL, up to 40 days seems like it would include 30, should it be changed to say between 30 and 40?</p> <p><b>Response: The SDT agrees with the commenter and made conforming changes to the VSL.</b></p>

Organization	Yes or No	Question 3 Comment
		<p>In R11, for the lower VSL, it appears to be just a restatement of the requirement rather than a VSL.  <b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b></p>
MRO's NERC Standards Review Subcommittee (NSRS)	No	<p>Most of the VSLs are okay. However, the VSLs for R5 and R13 depend on reaching "concurrence" with other entities, which is not a valid basis for measuring compliance. If the concurrence requirement is not revised as suggested below, then we propose that the VSL levels be reduced.</p>
<p><b>Response: The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the Planning Coordinators coordinated should an island cross Planning Coordinator areas.</b></p>		
Western Electricity Coordinating Council	No	<p>R1 unclear definition of "criteria" it is never actually defined in the requirement.  <b>Response: Requirement R1 requires that the Planning Coordinator consider historical events and system studies in selecting island criteria but the deliverable for Requirement R1 is criteria for selecting islands and it doesn't require the entity to have island criteria based on historical events only to consider historical events.</b></p> <p>R2 For clarity Severe level should use the term "greater than 2" of the parts instead of "all" of the parts  <b>Response: The SDT thinks that the intent is the same and did not make any conforming changes to the VSL for Requirement R2.</b></p> <p>R3 For clarity Severe level should use the term "greater than 2" of the parts instead of "all" of the parts  <b>Response: The SDT thinks that the intent is the same and did not make any conforming changes to the VSL for Requirement R2.</b></p> <p>R4 no comment OKR5 very difficult to apply since Planning Coordinator footprints are not established. VSL could be based on number of adjacent PC's that do not concur.  <b>Response: The SDT replaced "footprint" with "area" to be consistent with the Functional Model.</b></p> <p><b>The definition of the Planning Coordinator according to the Function Model version 5 states: The functional entity that coordinates, facilitates, integrates and evaluates (generally one year and beyond) transmission facility and service plans, and resource plans within a Planning Coordinator area and coordinates those plans with adjoining Planning Coordinator areas.</b></p> <p><b>The SDT understands the concern with requiring entities to reach concurrence. The SDT redrafted Requirement R5 and Requirement R13 to address this concern. The SDT's proposal eliminates the need to reach concurrence and replaces it with clear required actions that demonstrate that the</b></p>

Organization	Yes or No	Question 3 Comment
		<p><b>Planning Coordinators coordinated should an island cross Planning Coordinator areas.</b></p> <p>R6 Not clear on what “annually maintain” means. Does it mean the Database requires annual updates, annual reviews or just the ability to provide a database annually?</p> <p><b>The SDT modified Requirement R7 to clarify the intent of the UFLS database: Each Planning Coordinator shall annually maintain a UFLS database containing <i>data necessary to model its UFLS program for use in event analyses and assessments</i> of the UFLS program. Note that the team also revised Requirement R6 to provide greater clarity on the use of the word, ‘annually.’</b></p> <p>R7 at least some of the severity level should be based on the number of requests that were late rather than the time the request was overdue particularly since only an “annual maintenance” is required there is no difference in reliability impact if delivery is made in 30 or 60 days.</p> <p><b>Response: FERC VSL guideline 4 (G4) states that a Violation Severity Level Assignment should be based on a single violation, not on a cumulative number of violations. Adopting the commenter’s suggestion would violate this guideline.</b></p> <p>R8 at least some severity level should be dependent on the lack of sufficiency of data as opposed to the amount of time it was overdue.</p> <p><b>Response: FERC VSL guideline 4 (G4) states that a Violation Severity Level Assignment should be based on a single violation, not on a cumulative number of violations. Adopting the commenter’s suggestion would violate this guideline.</b></p> <p>R9 No comments I will assume the percentages have some basis and are not just arbitrary. R10 No comments I will assume the percentages have some basis and are not just arbitrary.</p> <p><b>Response: Thank you for your comments.</b></p> <p>R11 With respect to the VSLs I would recommend not combining the time duration and inclusion of parts. Use timing for lower and moderate and the lack of components for High and Severe. I have to be dumb here with the wording of the requirement. Does not the frequency excursion precede the islanding event. i.e. low frequency initiates UFLS which should prevent an unintentional islanding event. The wording of this requirement makes it seem like the islanding event occurs first and causes the UF This Requirement and VSL places emphasis on performing analysis and does not address any possible violation for actually having an inadequate UFLS program resulting in unintended islanding.</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that graduated the timeliness of the study is necessary.</b></p> <p>R12 VSL should be binary. Severe for failure to perform the assessment in the required time. Actually the</p>

Organization	Yes or No	Question 3 Comment
		<p>Requirement should be to “implement” the changes and correct the deficiencies not just to “consider” them in another assessment. If implementation were the focus the VSL’s could be based on amount of implementation completed within a specified time frame.</p> <p><b>Response: The SDT does not agree that the VSL for Requirement R12 should be a binary. The SDT thinks that the program is required to meet performance characteristics in Requirement R4. Requirement R12 requires that the Planning Coordinator, in whose islanding event assessment (per R11) UFLS program deficiencies are identified, shall conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. The timeliness of the assessment is an important element of the requirement and should be reflected in the VSLs.</b></p> <p>R13 See comments for R5 with respect to PC footprint and also there is no clear indication of what is meant by event affecting other PC’s does this mean islanding in the other areas or UF load shed or equipment switching?</p> <p><b>Response: The SDT replaced “footprint” with “area” to be consistent with the Functional Model. The definition of the Planning Coordinator according to the Function Model version 5 states: The functional entity that coordinates, facilitates, integrates and evaluates (generally one year and beyond) transmission facility and service plans, and resource plans within a Planning Coordinator area and coordinates those plans with adjoining Planning Coordinator areas.</b></p>
Y-W Electric Association, Inc.	No	<p>Regarding the VSLs for R8, the UFLS entities cannot be punished for failing to meet a schedule if the schedule is not mutually agreed upon between the Planning Coordinator and the UFLS entities to ensure that the UFLS entities are capable of meeting such a schedule. At the very least, there must be some protection for the UFLS entities provided that requires the Planning Coordinator(s) to give the UFLS entities long-term notice of the deadlines that they will need to meet. The lack of any scheduling restrictions for the Planning Coordinators in the standard as written has a strong potential to cause enormous burdens on small UFLS entities that simply do not possess the resources to deal with such data reporting requirements without sufficient advance notice. Additionally, the UFLS entities cannot be penalized for failing to submit data in a format over which they have no control or input. The Planning Coordinator should be required to consult with the UFLS entities and decide upon a mutually agreeable data format in order to ensure that the UFLS entities are capable of providing the required data in the required format. With no language in the standard limiting or clarifying what data can be required of the UFLS entities by the Planning Coordinator, this provision at least should be made to protect small UFLS entities with highly limited resources for dealing with such data reporting requirements.</p>
<p><b>Response: The SDT added a requirement to the proposed standard, Requirement R14, to ensure that the Planning Coordinators collect and respond to</b></p>		

Organization	Yes or No	Question 3 Comment
<b>comments submitted by UFLS entities on the UFLS program, including a schedule for implementation and UFLS design assessment.</b>		
Duke Energy	No	See comment to question #2 above.
<b>Response: Please see our response to your comment to question #2.</b>		
FirstEnergy	No	Since we do not agree with some of the standard requirements, we therefore do not agree with some of the VSL for the requirements as written.
<b>Response: The SDT has made conforming changes to the proposed standard that addresses many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b>		
IRC Standards Review Committee	No	The ability for the PC to comply with R1 and R2 requires ULFS entities and Transmission Owners to comply with this standard. The VSLs should clearly state that it is the PC who did not meet its obligations under R1 and R2 and not that non-compliance to R1 and R21 was the result of non-compliance by a third party which the PC relied on into meeting its obligations under this standard.
<b>Response: The SDT is unclear as to how and why the Planning Coordinator needs to rely on the UFLS entities to comply with the requirements assigned to it. The SDT thinks that the Planning Coordinator can meet the obligations assigned to it in the proposed standard.</b>		
Entergy Services	No	<p>The Lower VSL for R11 needs work. It appears to simply repeat the requirement rather than stating a violation.</p> <p><b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b></p> <p>Recommend that the time ranges for the VSLs addressing being late with the assessment should be expanded to Moderate 12-14 months, High 14-16 months, and Severe greater than 16 months. Revise the High and Severe VSL that contain the phrase "shall conduct and document" to read: "conducted and documented."The R4 VSLs should include a consideration of the timeliness of the completion of the study (e.g. lower VSL for 3 months late, Moderate for 3 to 6 months, etc.).</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that graduated the timeliness of the study is necessary. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
SERC Planning Standards Subcommittee	No	The Lower VSL for R11 needs work. It appears to simply repeat the requirement rather than stating a violation.



Organization	Yes or No	Question 3 Comment
		<p><b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b></p> <p>Recommend that the time ranges for the VSLs addressing being late with the assessment should be expanded to Moderate 12-14 months, High 14-16 months, and Severe 16-18 months.</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that graduated the timeliness of the study is necessary. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
SERC SC UFLS Standard Drafting Team	No	<p>The Lower VSL for R11 needs work. It appears to simply repeat the requirement rather than stating a violation.</p> <p><b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b></p> <p>Recommend that the time ranges for the VSLs addressing being late with the assessment should be expanded to Moderate 12-14 months, High 14-16 months, and Severe greater than 16 months. Revise the High and Severe VSL that contain the phrase "shall conduct and document" to read: "conducted and documented."The R4 VSLs should include a consideration of the timeliness of the completion of the study (e.g. lower VSL for 3 months late, Moderate for 3 to 6 months, etc.).</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that graduated the timeliness of the study is necessary. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
Southern Company Transmission	No	<p>The Lower VSL for R11 needs work. It appears to simply repeat the requirement rather than stating a violation.</p> <p><b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b></p> <p>Recommend that the time ranges for the VSLs addressing being late with the assessment should be expanded to Moderate 12-14 months, High 14-16 months, and Severe greater than 16 months. Revise the High and Severe VSL that contain the phrase "shall conduct and document" to read: "conducted and documented."The R4 VSLs should include a consideration of the timeliness of the completion of the study (e.g. lower VSL for 3 months late, Moderate for 3 to 6 months, etc.).</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that graduated the timeliness of the study is necessary. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
Tennessee Valley Authority	No	<p>The Lower VSL for R11 needs work. It appears to simply repeat the requirement rather than stating a</p>

Consideration of Comments on Underfrequency Load Shedding — Project 2007-01

Organization	Yes or No	Question 3 Comment
(TVA)		<p>violation.</p> <p><b>Response: The SDT made conforming changes to the VSL for Requirement R11.</b></p> <p>Recommend that the time ranges for the VSLs addressing being late with the assessment should be expanded to Moderate 12-14 months, High 14-16 months, and Severe greater than 16 months. Revise the High and Severe VSL that contain the phrase "shall conduct and document" to read: "conducted and documented."The R4 VSLs should include a consideration of the timeliness of the completion of the study (e.g. lower VSL for 3 months late, Moderate for 3 to 6 months, etc.).</p> <p><b>Response: The SDT accurately reflected the severity of not performing the study in the VSLs as proposed and does not agree that gradated the timeliness of the study is necessary. The SDT established increments in the VSLs according to the VSL NERC guidelines.</b></p>
Southern California Edison Company	No	We do not agree with the proposed reliability standard and, therefore, we cannot agree with the proposed Violation Severity Levels.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
Pepco Holdings, Inc. - Affiliates	No	We do not concur with the requirements as written, so this activity is premature.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		
American Transmission Co.	Yes	
Exelon	Yes	
IESO	Yes	
Indiana Municipal Power Agency	Yes	
Long Island Power Authority	Yes	
Manitoba Hydro	Yes	

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 3 Comment
MidAmerican Energy	Yes	
Northeast Power Coordinating Council	Yes	
Oncor Electric Delivery	Yes	
ReliabilityFirst Engineering Staff	Yes	
South Carolina Electric and Gas	Yes	
Springfield Utility Board	Yes	
United Illuminating Company	Yes	
Northeast Utilities	Yes	<p>Although NU agrees with the intent of the subject VSLs, we suggest that for Requirement R8 (Moderate and Severe) that the text beginning with OR is deleted. Additionally we suggest:</p> <ul style="list-style-type: none"> <li>o For Lower, Moderate and High VSLs - the first sentence be revised to read “The UFLS Entity provided data, in the format specified, to its Planning ...”</li> <li>o For Severe VSL - the first sentence be revised to read “The UFLS Entity failed to provide data, in the format specified, to its Planning Coordinator(s) within 20 calendar days ...”</li> </ul>
<p><b>Response: The SDT appreciates the formatting suggestions made by the commenter. The SDT thinks that they have accurately reflected the content of the Requirements in the associated VSLs.</b></p>		
Wisconsin Electric Power Company (dba We Energies)	Yes	We agree with the Violation Severity Levels as far as the draft standard is currently written, however, see our comments for questions 11, 12, and 13 that would require modifications to requirements R9 & R10 and the corresponding Violation Severity Levels.
<p><b>Response: The SDT has made conforming changes to the proposed standard that address many of the concerns highlighted in the comments received during the third posting. Please see the revised standard.</b></p>		

**4. In the second posting, many of the requirements were assigned to groups of Planning Coordinators. These groups were to consist of all the Planning Coordinators within each of the Regional Entity footprints. The SDT has now revised these assignments to replace the groups with individual Planning Coordinators due to difficulties involved in assigning responsibilities to groups that do not currently exist. Do you agree with this revision?**

Summary Consideration:

Many commenters suggested that the Reliability Assurer be assigned responsibility for coordinating UFLS activities and for reaching concurrence. In the third version of the standard Requirement R5 and R13 required concurrence between Planning Coordinators if an island encompassed more than one Planning Coordinator area. Instead of assigning responsibility to the Reliability Assurer the standard drafting team revised Requirements R5 and R13 to define a set of actions that are measurable that will demonstrate that Planning Coordinators worked together should an island span more than one Planning Coordinator area. The standard drafting team confirms that the Planning Coordinator is the appropriate entity to design UFLS and conduct the other UFLS related activities based on the definition of the Planning Coordinator in the Functional Model version 5.

Commenters expressed confusion over having Transmission Owners as part of UFLS Entities but separated out as Transmission Owners in Requirement R10. The team reviewed the rationale for this structure and suggested merging Requirements R9 and R10. Requirement R9 focuses on automatic tripping of load and may be performed by either the Distribution Provider or the Transmission Operator; Requirement R10 focuses on switching of devices to control over-voltage as a result of under frequency load shedding. Therefore, the team decided not to merge the two requirements.

Organization	Yes or No	Question 4 Comment
GDS Associates	No	- Standard not entirely clear regarding to whom will apply (see 4.), groups or individual Planning Coordinators within the Regional Entity footprint.- Not sure what is the intent for paragraph 4.3
<p><b>Response: The standard applies to individual Planning Coordinators, not groups. Applicability 4.3 is intended for Transmission Owners that may need to switch equipment other than load, such as shunt compensation to control over voltage.</b></p>		
Wisconsin Electric Power Company (dba We Energies)	No	Although we agree that the Planning Coordinator has the wide-area view and technical skills to oversee the design of and ensure the effectiveness of a UFLS program, we are concerned with how this concept will actually play out, especially when a UFLS Entity is within multiple Planning Coordinators' footprints.
<p><b>Response: In the case of a UFLS Entity in multiple Planning Coordinator footprints, that entity may need to set UFLS relays differently and may need to accommodate different schedules in the different footprints.</b></p>		

Organization	Yes or No	Question 4 Comment
<p>Tri-State Generation &amp; Transmission Assoc.</p>	<p>No</p>	<p>Comments: Individual Planning Coordinators are not the entities to determine how islands should be formed, unless the Regional Assurer is required to become the only remaining Planning Coordinators, which would be acceptable. The current registration by numerous entities as Planning Coordinators does not lend itself to a comprehensive individual island formation methodology. All Planning Coordinators within an interconnection should be required to collaboratively develop an Interconnection Coordinated UFLS Plan. UFLS works on interconnection basis not on PC footprint basis. We believe that the Regional Assurer will be better able to manage UFLS programs to the extent that the standard clearly lays out what must be accomplished.</p> <p>The primary purpose of any UFLS program is to mitigate the need to form islands by balancing total system loads and resources. It is only a secondary function to balance the loads and resources after the islands have been formed. It appears the Drafting Team focused on the islanding events rather than assuring the interconnection integrity is maintained. Frequency is an interconnection issue not an individual island issue and therefore not driven by an individual PC but by a coordination of PCs efforts within the interconnection. Again, we believe that the Regional Assurer will be better able to manage UFLS programs to the extent that the standard clearly lays out what must be accomplished</p> <p>We strongly believe that this should remain the responsibility of the Regional Assurer (RA), which is the agent(s) for overall coordination within the interconnection or sub-area. For example in the WECC, the RA recognizes the following sub-area groups for UFLS coordination within the Interconnection: Southern Islanding Load Tripping, Northwest Power Pool UFLS Group and the WECC Off Nominal Frequency Load and Restoration Plan. Without the RA assuring coordination of the sub-area groups, PCs could randomly or arbitrarily form sub-area groups whose plans do not coordinate or address the interconnection reliability needs.</p>
<p><b>Response:</b> The SDT believes the Planning Coordinator, having a wide-area view and the necessary technical skills, is the proper entity to oversee the design and implementation of UFLS. There is also wide industry support for the Planning Coordinator as the proper entity for UFLS. The Reliability Assurer has a very limited scope of activity in the Functional Model and is not a user, owner or operator of the BES. The SDT recognizes the need to at least preserve coordination on the regional level and has inserted a requirement (Requirement R2, Part 2.3) to identify each Regional Entity footprint as an island to be assessed for UFLS performance. The PC’s within each region will need to work with each other in order to produce a successful assessment.</p> <p>The SDT agrees that interconnection coordinated UFLS plans are desirable, but the degree of diversity of systems in various regions, particularly in the Eastern Interconnection, makes this an unrealistic goal for a continent-wide standard; some flexibility needs to be reserved to address regional needs. The SDT agrees that frequency is an interconnection issue, but also acknowledges that, should an island form, frequency becomes an island issue also. The SDT does not believe that designating islands as a secondary function of UFLS is a distinction useful for reliability because most UFLS operations are seen to occur following island formation.</p>		

Organization	Yes or No	Question 4 Comment
Exelon	No	Exelon does not agree with the concept of allowing neighboring Planning Coordinators to define or modify islanding criteria. There should be a single criteria for the determination of an island which is consistent across the interconnection, unless a specific geographic or regional exception is identified. Even if differing islanding criteria are allowed for each PC, the Planning Coordinator with responsibility for the footprint should have sole authority for determining and modifying the criteria within that footprint.
<p><b>Response: Neighboring Planning Coordinators cannot redefine or modify another Planning Coordinator’s R1 island determination criteria. A Planning Coordinator may, however, select an island that overlaps a neighboring Planning Coordinator’s footprint in complying with R2. A single criterion for island determination is not something that can be put into a continent-wide standard because many approaches to these criteria are likely to be acceptable.</b></p>		
Bonneville Power Administration	No	It doesn’t make sense to assign responsibilities to organizations that are not currently formed. Footprint or jurisdiction of Planning Coordinators has not been established and no mechanism exists for assigning a specific UFLS entity into a PC’s jurisdiction. PCs within an interconnection should be required to develop an Interconnection Coordinated UFLS Plan. UFLS works on interconnection basis not on PC footprint basis. The purpose of the UFLS Plan is to mitigate the need to form islands by balancing loads and resources; a secondary function would be to balance the loads and resources after the islands have been formed. Frequency is an interconnection issue not an individual island issue and therefore not driven by an individual PC but by a coordination of PCs efforts within the interconnection.
<p><b>Response: The SDT agrees that responsibilities should not be assigned to organizations that are not currently formed. The SDT disagrees that the jurisdiction of Planning Coordinators and their footprints has not been established. Planning Coordinators must be able to identify the entities in their footprints in order to fulfill their coordination responsibilities.</b></p> <p><b>The SDT agrees that interconnection coordinated UFLS plans are desirable, but the degree of diversity of systems in various regions, particularly in the Eastern Interconnection, makes this an unrealistic goal for a continent-wide standard; some flexibility needs to be reserved to address regional needs. The SDT agrees that frequency is an interconnection issue, but also acknowledges that, should an island form, frequency becomes an island issue also. The SDT does not believe that designating islands as a secondary function of UFLS is a distinction useful for reliability because most UFLS operations are seen to occur following island formation.</b></p>		
AECI	No	It is unclear what is meant by footprint if it is not a regional entity footprint. For those of us on a heavily interconnected border between two regional entities, do we now share a footprint with them? What about other utility’s loads on our system, or vice versa, would we share a footprint with them as well? Also, R2.3 talks about if you are in multiple footprints, each of those footprints shall be identified as an island. Does that mean each footprint is a separate island or each footprint is included in the same big island?
<p><b>Response: Planning Coordinators have footprints also. It is possible that a Distribution Provider or Transmission Owner can own equipment in two or</b></p>		

Organization	Yes or No	Question 4 Comment
<p>more Planning Coordinator footprints. If a utility is also a Planning Coordinator and has loads of another utility, also a Planning Coordinator, interspersed within its footprint, it may be best for both to un-register as Planning Coordinators and have a higher level entity register instead.</p> <p>Requirement R2, Part 2.3 requires Regional Entity footprints to be identified as islands. There are no requirements to identify Planning Coordinator footprints as islands. The intent of Requirement R2, Part 2.3 is to attempt to preserve the present regional coordination of UFLS plans and designs because Planning Coordinators within each Regional Entity footprint will need to coordinate with each other in order to produce successful UFLS design assessment for each regional island.</p>		
Entergy Services	No	<p>R5 and R13 seem very problematic. The standard requires that both or all the entities agree. One entity might have larger margin requirements or a different methodology compared to another entity. These differences might not be reconcilable. We do not believe that a standard can require that one PC change its methods because a different PC does not agree with its methods, or agree that another method (any method) is acceptable that it finds a problem with. There at least needs to be a process in the event that two companies cannot agree. We recommend that the following language be added to R5: "If concurrence cannot be reached, an individual Planning Coordinator in that island can demonstrate that its UFLS scheme meets the requirements by performing dynamic simulations that apply its UFLS scheme on the entire island." We recommend that R13 be eliminated since it is covered by R11.</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter's suggestion. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on both design and event assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. R13 is not covered by R11 and cannot be eliminated; R13 is to R11 as R5 is to R4.</b></p>		
SERC SC UFLS Standard Drafting Team	No	<p>R5 and R13 seem very problematic. The standard requires that both or all the entities agree. One entity might have larger margin requirements or a different methodology compared to another entity. These differences might not be reconcilable. We do not believe that a standard can require that one PC change its methods because a different PC does not agree with its methods, or agree that another method (any method) is acceptable that it finds a problem with. There at least needs to be a process in the event that two companies cannot agree. We recommend that the following language be added to R5: "If concurrence cannot be reached, an individual Planning Coordinator in that island can demonstrate that its UFLS scheme meets the requirements by performing dynamic simulations that apply its UFLS scheme on the entire island." We recommend that R13 be eliminated since it is covered by R11.</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter's suggestion. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on both design and event assessments. There may need to be some give and take among</b></p>		

Organization	Yes or No	Question 4 Comment
<p><b>Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. R13 is not covered by R11 and cannot be eliminated; R13 is to R11 as R5 is to R4.</b></p>		
Southern Company Transmission	No	<p>R5 and R13 seem very problematic. The standard requires that both or all the entities agree. One entity might have larger margin requirements or a different methodology compared to another entity. These differences might not be reconcilable. We do not believe that a standard can require that one PC change its methods because a different PC does not agree with its methods, or agree that another method (any method) is acceptable that it finds a problem with. There at least needs to be a process in the event that two companies cannot agree. We recommend that the following language be added to R5: "If concurrence cannot be reached, an individual Planning Coordinator in that island can demonstrate that its UFLS scheme meets the requirements by performing dynamic simulations that apply its UFLS scheme on the entire island." We recommend that R13 be eliminated since it is covered by R11.</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter's suggestion. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on both design and event assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. R13 is not covered by R11 and cannot be eliminated; R13 is to R11 as R5 is to R4.</b></p>		
Ameren	No	<p>Requirement R1 should be revised to read "Each Planning Coordinator, in coordination with its constituent Transmission Owners and Transmission Planners, shall develop and document criteria...". Further, it should include that the Regional Entity should be involved in the studies, as in many cases, the RE has performed or were involved in these studies. Similarly, Requirement R2 should be revised to read "Each Planning Coordinator, in coordination with its constituent Transmission Owners and Transmission Planners, shall identify one or more islands...". Requirement R3 should be revised to read "Each Planning Coordinator, in coordination with its constituent Transmission Owners, Distribution Provider and Transmission Planners, shall develop a UFLS program..." The Planning Coordinator should in all UFLS related activities include UFLS plans and procedures which their Transmission Owner, Distribution Provider and Transmission Planners may have had in place, and functioning adequately, perhaps for many years.</p>
<p><b>Response: The SDT agrees that Transmission Owners and Transmission Planners should be involved in R1, R2 and in R3 along with Distribution Providers, but for compliance purposes, requirements must be clearly assigned to one specific entity. Adding the suggested phrase will cause confusion as to who is responsible to do what. The Functional Model description of Planning Coordinator includes coordination with other entities; the UFLS function should be expected to be added to the Planning Coordinator function once this standard is approved. Requirements cannot be assigned to Regional Entities and enforced the same way as other requirements because Regional Entities are not users, owners or operators of the BES.</b></p>		



Organization	Yes or No	Question 4 Comment
Progress Energy - Carolinas	No	Requirements R5 and R13 require Planning Coordinators (PCs) from two or more areas to agree on assessment results. However, no process is provided in the event that the PCs cannot agree. One party may have larger margin requirements or a different methodology and these differences may not be reconcilable. Therefore, it is possible that multiple PCs could be prevented from meeting the agreement requirement through no fault of their own. There needs to be a process for resolving this. We recommend that R5 include "If concurrence cannot be reached, an individual PC in the applicable island may demonstrate that its UFLS scheme meets the requirements by performing dynamic simulations that apply that PC's individual scheme to the entire island." Also, we recommend that R13 be deleted since R11 would effectively require these actions for multi-PC islands.
<p><b>Response:</b> The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter's suggestion. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on both design and event assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. R13 is not covered by R11 and cannot be eliminated; R13 is to R11 as R5 is to R4.</p>		
Southern California Edison Company	No	SCE does not agree with this revision and supports WECC's position that "The standard should require the PCs within an interconnection to coordinate a UFLS Design with all other PCs within the interconnection and that the PCs should be required to develop a coordinated interconnection wide UFLS Design. As proposed the standard could conceivably result in as many different UFLS plans within WECC as there are Planning Coordinators."
<p><b>Response:</b> The SDT shares SCE's concern regarding further fragmentation of UFLS plans. The standard requires the identification of Regional Entity footprints as islands to be used in UFLS design assessments (Requirement R2, Part 2.3) and that the Planning Coordinators within each Regional Entity footprint work with each other on the design assessments for those islands (R5). The SDT believes that this goes as far as practical to address the need to coordination UFLS plans within an interconnection. The SDT believes that a continent-wide standard cannot require single UFLS plans for each interconnection. The degree of diversity of systems in various regions, particularly in the Eastern Interconnection, makes this an unrealistic goal for a continent-wide standard; flexibility needs to be reserved to address regional needs. The standard does not preclude development of Regional UFLS standards and that approach may address WECC's desire to have one coordinated UFLS design.</p>		
Western Electricity Coordinating Council	No	The PCs within an interconnection should be required to coordinate a UFLS Design with all other PCs within the Interconnection and the PCs should be required to develop an Interconnection Coordinated UFLS Plan. UFLS works on interconnection basis not on PC footprint basis. The primary purpose of the UFLS Plan is designed to mitigate the need to form islands by balancing loads and resources. It is a secondary function to balance the loads and resources after the islands have been formed. Frequency is an interconnection issue not an individual island issue and therefore not driven by an individual PC but by a coordination of PCs efforts

Organization	Yes or No	Question 4 Comment
		<p>within the interconnection. From an audit and enforcement standpoint, no mechanism exists for assigning a specific UFLS entity into a PC's jurisdiction. This has the potential for making this standard unauditible for any entity which is not designated by a PC unless some guidance is established to determine a PC's footprint.</p>
<p><b>Response: The SDT agrees that interconnection coordinated UFLS plans are desirable, but the degree of diversity of systems in various regions, particularly in the Eastern Interconnection, makes this an unrealistic goal for a continent-wide standard; some flexibility needs to be reserved to address regional needs. The standard requires the identification of Regional Entity footprints as islands to be used in UFLS design assessments (Requirement R2, Part 2.3) and that the Planning Coordinators within each Regional Entity footprint work with each other on the design assessments for those islands (R5). The SDT believes that this goes as far as practical to address the need to coordination UFLS plans within an interconnection. The SDT believes that a continent-wide standard cannot require single UFLS plans for each interconnection.</b></p> <p><b>The SDT agrees that frequency is an interconnection issue, but also acknowledges that, should an island form, frequency becomes an island issue also. The SDT does not believe that designating islands as a secondary function of UFLS is a distinction useful for reliability because most UFLS operations are seen to occur following island formation.</b></p> <p><b>The standard does not preclude development of Regional UFLS standards and that approach may address WECC's desire to have one coordinated UFLS design.</b></p> <p><b>The SDT disagrees that the jurisdiction of Planning Coordinators and their footprints has not been established. Planning Coordinators must be able to identify the entities in their footprints in order to fulfill their coordination responsibilities.</b></p>		
Xcel Energy	No	<p>The problem still exists that the mapping of Planning Coordinators to 'subordinate' entities is not clear. Creating additional requirements for a functional entity that is still nebulous creates more confusion. We also believe the term "island" should be a defined NERC term. It is used throughout the standard with the meaning being generally understood within the industry but not explicitly stated.</p>
<p><b>Response: The SDT disagrees that mapping of Planning Coordinator footprints to UFLS Entities is not clear. Planning Coordinators must be able to identify the entities in their footprints in order to fulfill their coordination responsibilities.</b></p> <p><b>The SDT believes the term "island" to be readily understood and does not see a benefit of defining it in the NERC glossary even though its meaning in the industry is not the same as the dictionary definition.</b></p>		
Pepco Holdings, Inc. - Affiliates	No	<p>The SDT has essentially defined groups by requiring concurrence.</p>
<p><b>Response: The SDT abandoned the group of Planning Coordinators concept because of compliance issues as stated in the background section. Concurrence was another method of gaining coordination among individual Planning Coordinators. (Note that the SDT has modified R5 and R13 to address concerns of other commenters on concurrence.) Without some level of cooperation among Planning Coordinators, further fragmentation of UFLS plans, which have been coordinated on a regional basis in the past, is likely. The SDT does not believe further fragmentation is in the interest of</b></p>		

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 4 Comment
<b>reliability.</b>		
American Transmission Co.	Yes	
FirstEnergy	Yes	
IESO	Yes	
Illinois Municipal Electric Agency	Yes	
Indiana Municipal Power Agency	Yes	
Long Island Power Authority	Yes	
Manitoba Hydro	Yes	
MEAG Power	Yes	
MidAmerican Energy	Yes	
Northeast Power Coordinating Council	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
ReliabilityFirst Engineering Staff	Yes	
SERC Planning Standards Subcommittee	Yes	

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Organization	Yes or No	Question 4 Comment
South Carolina Electric and Gas	Yes	
SPP System Protection and Control Working Group	Yes	
Tennessee Valley Authority (TVA)	Yes	
United Illuminating Company	Yes	
Y-W Electric Association, Inc.	Yes	
MRO's NERC Standards Review Subcommittee (NSRS)	Yes	<p>Although THE NSRS agrees with changing the applicability of the requirements from groups of Planning Coordinators to each Planning Coordinator, the present wording in R2.3 says that for a PC with a part of its footprint in more than one region, "each of those Regional Entity footprints shall be identified as an island." We propose that the wording be revised to require a PC with part of its footprint in more than one region to identify only those appropriate parts of its area that are in islands, not the entire Registered Entity footprint where it may be present.</p>
<p><b>Response: The intent of Requirement R2, Part 2.3 is to attempt to preserve the present regional coordination of UFLS plans and designs. To this end, Requirement R2, Part 2.3 requires Regional Entity footprints to be identified as islands. These islands are to be used in UFLS design assessments and the Planning Coordinators within each Regional Entity footprint must work with each other on the design assessments for those islands (R5). The SDT believes that this goes as far as practical to address the need to coordination UFLS plans within a region. There are no requirements to identify Planning Coordinator footprints as islands, but all of a Coordinator's area will be included in one island or another.</b></p>		
NERC Staff	Yes	<p>NERC staff understands and supports this change to replace the groups with individual Planning Coordinators and agrees that it is a good hybrid approach. While NERC recognizes that the move might not be the ideal way to coordinate interregionally, at this point it does seem to be the best way to assign these requirements.</p>
<p><b>Response: Thank you for your support.</b></p>		
Springfield Utility Board	Yes	<p>There remains some abiguity with regards to the following language:"UFLS entities shall mean all entities that are responsible for the ownership,operation, or control of UFLS equipment as required by the UFLS programestablished by the Planning Coordinators. Such entities may include one or moreof the following:4.2.1 Transmission Owners4.2.2 Distribution Providers"SUB is fine with the Planning Coordinator</p>

Organization	Yes or No	Question 4 Comment
		<p>having the authority to determine UFLS requirements and affected entities. But there is a problem with regards implementation of a Planning Coordinator decides that equipment is required where it was not previously required by an entity. What is the process for the Planning Coordinator to provide notice to a registered entity (such as a Distribution Provider)? If a UFLS is required of a DP where a UFLS did not previously exist, what is the implementation plan for becoming compliant without having to be out of compliance on Day 1 just because a PC sent a letter? Under the implementation plan where it states: "The one year phase-in for compliance is intended to provide Planning Coordinators sufficient time to develop or modify UFLS programs and to establish a schedule for implementation." Is this language intended for the PC to establish a schedule for implementation of affected entities that fall under the standard after the standard is adopted?</p>
<p><b>Response: The SDT agrees that UFLS Entities should have opportunity to provide input to the Planning Coordinator on what will be required of them. R14 has now been added to the standard and requires a peer review of a Planning Coordinator's design and schedule for implementation by the UFLS Entities.</b></p> <p><b>The Planning Coordinator has one year to come up with a design and schedule for implementation, but the UFLS Entities are subject only to the Coordinator's schedule according to R9, not this one year phase-in.</b></p>		
<p>IRC Standards Review Committee</p>	<p>Yes</p>	<p>We agree; however, this standard should not disallow the ability for some PCs to group together to develop a wide area UFLS plan. To the extent some PCs do this, the standard should be written and performance measured in a manner that does not cause these PCs to duplicate the same documents that may already be provided by another PC for the same footprint.</p>
<p><b>Response: Each individual Planning Coordinator is subject to compliance. The group concept was abandoned to avoid compliance issues as mentioned in the background section. The standard does not disallow voluntary groupings of Planning Coordinators, but each Planning Coordinator would still be responsible for its own compliance.</b></p>		
<p>Duke Energy</p>	<p>Yes</p>	<p>Yes, except for the issue on "reaching concurrence" identified in our response to question #2 above (R5 and R13).</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern.</b></p>		

5. Several commenters indicated in the second posting potential conflicts and redundancies between PRC-006-1 and EOP-003-1 requirements. The SDT agrees that EOP-003-1 contains requirements that are redundant and/or conflict with the proposed requirements in PRC-006-1. The SDT sought approval to post a supplemental SAR to include EOP-003-1 Underfrequency Load Shedding related requirements in the scope of the UFLS SDT. The SC agreed to post the SAR with a proposal to revise the original scope of the UFLS SAR and the SDT revised the EOP-003-1 requirements to remove the conflicts.

**Summary Consideration:**

While the standard drafting team received support for the changes to EOP-003 eliminating the redundancy between it and PRC-006 related to underfrequency load shedding requirements, some commenters indicated that the standard drafting team should clarify that the remaining requirements in EOP-003 are related to automatic undervoltage load shedding and manual under frequency load shedding. The drafting team made a conforming change to the proposed standard to clarify that the requirements exclude automatic underfrequency load shedding by adding the following phrase to Requirements R3 and R5: excluding under-frequency load shedding plans

Other comments received indicated that the standard drafting team should revise the requirements related to undervoltage load shedding; however, there is a NERC project tasked with revising EOP-003 and while it is at the initial stages this team will address the requirements that require revision. In addition, the Supplemental SAR approved by the Standards Committee limits the scope to removing conflicts and redundancies related to under-frequency load shedding only in EOP-003-1.

Organization	Yes or No	Question 5 Comment
Xcel Energy		No comments
ReliabilityFirst Engineering Staff		No response seems applicable.
MidAmerican Energy	No	The SAR needs to recognize that all the standards are interconnected and other existing standards development. Automatic load shedding needs to be left in PRC-006. Manual load shedding should be left in EOP-003 according to already existing standards proposed changes. The SAR be revised to call for removing the automatic UFLS requirements from EOP-003-1 and referring them to PRC-006-1 standard, and for removing the automatic UVLS requirements from EOP-003-1 and referring them to a new UVLS standard or PRC-006.
<p><b>Response: The Supplemental SAR approved by the Standards Committee limits the scope to removing conflicts and redundancies related to under-frequency load shedding only in EOP-003-1.</b></p>		

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

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Organization	Yes or No	Question 5 Comment
Ameren	Yes	
American Transmission Co.	Yes	
Duke Energy	Yes	
Exelon	Yes	
IESO	Yes	
IRC Standards Review Committee	Yes	
Long Island Power Authority	Yes	
MEAG Power	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
Progress Energy - Carolinas	Yes	
South Carolina Electric and Gas	Yes	
Southern California Edison Company	Yes	
SPP System Protection and Control Working Group	Yes	
Springfield Utility Board	Yes	
Tennessee Valley Authority	Yes	

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

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Organization	Yes or No	Question 5 Comment
(TVA)		
United Illuminating Company	Yes	
Y-W Electric Association, Inc.	Yes	
Indiana Municipal Power Agency	Yes	IMPA agrees with these actions.
Wisconsin Electric Power Company (dba We Energies)	Yes	See comments for question 6 and 7.
Western Electricity Coordinating Council	Yes	This really doesn't look like a question, and it appears the actual question is asked in number 6.
FirstEnergy	Yes	While we agree with the inclusion of the EOP-003 in this project, the versioning and requirement language adjustments requires coordination with the proposed revision of EOP-003 that is taking place with the Order 693 Directives work Project 2010-12.
<p><b>Response: The scope of work addressed under the Order 693 Directives was revised so that Project 2010-12 no longer addresses EOP-003.</b></p>		



**6. Do you agree with the expanded scope in the Supplemental SAR?**

**Summary Consideration:**

While the standard drafting team received support for the changes to EOP-003 eliminating the redundancy between it and PRC-006 related to underfrequency load shedding requirements, some commenters indicated that the standard drafting team should clarify that the remaining requirements in EOP-003 are related to automatic undervoltage load shedding and manual under frequency load shedding. The drafting team made a conforming change to the proposed standard to clarify that the requirements exclude automatic underfrequency load shedding.

Other comments received indicated that the standard drafting team should revise the requirements related to undervoltage load shedding; however, there is a NERC project tasked with revising EOP-003 and while it is at the initial stages this team will address the requirements that require revision.

Organization	Yes or No	Question 6 Comment
Xcel Energy		No comments
IRC Standards Review Committee	No	Please see comments to 7.
MidAmerican Energy	No	The SAR needs to recognize that all the standards are interconnected and other existing standards development. Automatic load shedding needs to be left in PRC-006. Manual load shedding should be left in EOP-003 according to already existing standards proposed changes. The SAR be revised to call for removing the automatic UFLS requirements from EOP-003-1 and referring them to PRC-006-1 standard, and for removing the automatic UVLS requirements from EOP-003-1 and referring them to either a new UVLS standard or PRC-006
<p><b>Response: There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
American Transmission Co.	No	We propose that the scope of the SAR be revised to call for removing the automatic UFLS requirements from EOP-003-1 and referring them to PRC-006-1 standard, and for also removing the automatic UVLS requirements from EOP-003-1 and referring them to a new PRC standard.
<p><b>Response: There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 6 Comment
Manitoba Hydro	No	We propose that the scope of the SAR be revised to call for removing the automatic UFLS requirements from EOP-003-1 and moving them to PRC-006-1 standard, and for removing the automatic UVLS requirements from EOP-003-1 and moving them to a new PRC standard
<p><b>Response: There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
MRO's NERC Standards Review Subcommittee (NSRS)	No	We propose that the scope of the SAR be revised to call for removing all of the automatic UFLS requirements from EOP-003-1 and moving them to PRC-006-1 standard because no automatic load shedding system requirements should be in the EOP standards. We also note that a separate SAR should be initiated to call for the removal of all the automatic UVLS requirements from EOP-003-1 and moving them to a new PRC standard for the same reason.
<p><b>Response: There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
Ameren	Yes	
Bonneville Power Administration	Yes	
Duke Energy	Yes	
Entergy Services	Yes	
Exelon	Yes	
IESO	Yes	
Indiana Municipal Power Agency	Yes	
Long Island Power Authority	Yes	
MEAG Power	Yes	

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

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Organization	Yes or No	Question 6 Comment
Northeast Power Coordinating Council	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
Progress Energy - Carolinas	Yes	
ReliabilityFirst Engineering Staff	Yes	
SERC Planning Standards Subcommittee	Yes	
SERC SC UFLS Standard Drafting Team	Yes	
South Carolina Electric and Gas	Yes	
Southern Company Transmission	Yes	
SPP System Protection and Control Working Group	Yes	
Tri-State Generation & Transmission Assoc.	Yes	
United Illuminating Company	Yes	
Western Electricity Coordinating Council	Yes	

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 6 Comment
Y-W Electric Association, Inc.	Yes	
NERC Staff	Yes	NERC staff agrees that it is wise to revise requirements specific to Underfrequency Load Shedding in EOP-003-1 to remove inconsistencies and redundancies. The only concern is that because both ad hoc team for expediting certain standards processes and the original EOP-003-1 SDT are working on modifications to the standard, there could be some overlap and miscommunication, especially with respect to these redundancies between PRC-006-1 and EOP-003-1.
<b>Response: The Order 693 Directives team has removed revisions to EOP-003-1 from the scope of its project.</b>		
Tennessee Valley Authority (TVA)	Yes	TVA supports this direction to remove the automatic load shedding components (UFLS and UVLS) from EOP-003 to avoid potential conflict with the PRC standards that address UFLS and UVLS.
<b>Response: Thank you for your supportive comment.</b>		
Southern California Edison Company	Yes	We agree in principle with the expanded scope for the Supplemental SAR.
<b>Response: Thank you for your supportive comment.</b>		
Wisconsin Electric Power Company (dba We Energies)	Yes	We agree with the expanded scope of the supplemental SAR, however, EOP-003-1 needs further revision to focus this standard solely on manual loadshed. References to the development of both UFLS and UVLS programs need to be removed from EOP-003-1 as PRC-006-1 will cover automatic UFLS programs and a series of other PRC standards already cover automatic UVLS programs. The SDT should delete R2, R4, R7 and M1 from the posted SDT revised draft standard EOP-003-1 as part of supplemental SAR limited scope of revising requirements related to underfrequency loadshedding. In addition, the SDT should give consideration to inserting the word “manual” in front of the words “load shedding” in R3 and R5 in the posted SDT revised draft standard EOP-003-1. The Measures and Violation Severity Level sections would need to be updated accordingly.
<b>Response: The drafting team made a conforming change to the proposed EOP-003-1 standard to clarify that the requirements exclude automatic underfrequency load shedding. Removing references to UVLS from EOP-003-1 goes beyond the scope of the supplemental SAR.</b>		
FirstEnergy	Yes	While we agree with the inclusion of the EOP-003 in this project, the versioning and requirement language adjustments requires coordination with the proposed revision of EOP-003 that is taking place with the Order

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

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Organization	Yes or No	Question 6 Comment
		693 Directives work Project 2010-12.
<b>Response: The project related to Order 693 directives has pulled the EOP-003 standard.</b>		

7. Do you agree with the revisions to EOP-003-1?

**Summary Consideration:**

While the standard drafting team received support for the changes to EOP-003 eliminating the redundancy between it and PRC-006 related to underfrequency load shedding requirements, some commenters indicated that the standard drafting team should clarify that the remaining requirements in EOP-003 are related to automatic undervoltage load shedding and manual under frequency load shedding. The drafting team made a conforming change to the proposed standard to clarify that the requirements exclude automatic underfrequency load shedding.

Other comments received indicated that the standard drafting team should revise the requirements related to undervoltage load shedding; however, there is a NERC project tasked with revising EOP-003 and while it is at the initial stages this team will address the requirements that require revision.

Organization	Yes or No	Question 7 Comment
Western Electricity Coordinating Council		Agree with the removal of the words underfrequency and Balancing Authority in EOP-003, but do not agree with the EOP-003-1 or the current version of EOP-003-2 that is out for vote because it still includes automatic UFLS. EOP-003-2 should include reference to manual load shed only. It includes UFLS that is undefined and could cause a conflict with PRC-006.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b>		
MEAG Power		No comment.
Xcel Energy		No comments
Southern California Edison Company		We cannot comment on the proposed revisions to EOP-003-1, as their ramifications have not been studied in detail.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b>		
Long Island Power Authority	No	
Wisconsin Electric Power	No	Although we agree with the intent of the revisions, EOP-003-1 needs further revision to focus this standard solely on manual loadshed. References to the development of both UFLS and UVLS programs need to be

**Consideration of Comments on Underfrequency Load Shedding – Project 2007-01**

Organization	Yes or No	Question 7 Comment
Company (dba We Energies)		removed from EOP-003-1 as PRC-006-1 will cover automatic UFLS programs and a series of other PRC standards already cover automatic UVLS programs. The SDT should delete R2, R4, R7 and M1 from the posted SDT revised draft standard EOP-003-1 as part of supplemental SAR limited scope of revising requirements related to underfrequency loadshedding. In addition, the SDT should give consideration to inserting the word “manual” in front of the words “load shedding” in R3 and R5 in the posted SDT revised draft standard EOP-003-1. The Measures and Violation Severity Level sections would need to be updated accordingly.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b>		
MidAmerican Energy	No	Automatic load shedding needs to be left in PRC-006. Manual load shedding should be left in EOP-003 according to already existing standards proposed changes. The SAR be revised to call for removing the automatic UFLS requirements from EOP-003-1 and referring them to PRC-006-1 standard, and for removing the automatic UVLS requirements from EOP-003-1 and referring them to a new PRC-024-1 standard. In line with the comments for Question 6:R2 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and PRC-024-1.R3 - add the qualification “coordinate manual load shedding plans”.R4 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and PRC-024-1.R5 - add the qualification “implement manual load shedding plans”.R7 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and PRC-024-1
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b>		
Ameren	No	Because EOP-003-1 is the primary load shedding standard, and because UFLS has been removed from EOP-003-1 and placed in PRC-006-1, standard EOP-003-1 should note in the “Purpose” section that UFLS is addressed in PRC-006-1.The stated purpose of EOP-003-1 is to have the capability and authority to shed load rather than risk uncontrolled failure of the interconnection if there is insufficient generation or transmission capacity. It is not clear when and how it is determined that an "automatic" load shedding scheme is necessary or required. Are all TO’s required to have undervoltage load shedding plans in place? Suggest changing the ending phrase of R2 in EOP-003 from “required” to “necessary to minimize the risk of uncontrolled failure of the Interconnection.” Also suggest a review of other UVLS stanadrds for consistency with revised EOP-003.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-</b>		

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 7 Comment
<b>frequency load shedding.</b>		
SERC Planning Standards Subcommittee	No	Because EOP-003-1 is the primary load shedding standard, and because UFLS has been removed from EOP-003-1 to PRC-006-1, standard EOP-003-1 should note in the "Purpose" section that UFLS is addressed in PRC-006-1. Suggest changing the ending phrase of R2 in EOP-003 from "required" to "necessary to minimize the risk of uncontrolled failure of the Interconnection."
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b>		
Tri-State Generation & Transmission Assoc.	No	Comments: The revisions are adequate for the most part, but Requirement R4 needs to specify that only undervoltage load shedding is being addressed. There is also a concern that EOP-003-2 is currently being balloted based on changes made as a part of the Order 693 Directives. The two versions are not compatible.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. The project related to Order 693 directives has removed EOP-003 revisions from its scope of work.</b>		
Bonneville Power Administration	No	EOP-003-1 and the current version of EOP-003-2 still include automatic UFLS. EOP-003-2 should include reference to manual load shed only. To include UFLS that is undefined would cause a conflict with PRC-006.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b>		
Exelon	No	EOP-003-1 needs to define the criteria as to when and how UVLS schemes are installed to provide consistency direction to Planning Coordinators and the entities that have to install UVLS schemes. The relationship between the use of UVLS and compliance with TPL-001 standards should be clarified. Is load shedding (including UVLS) allowed to meet the performance criteria in TPL-001? The standard should define when UVLS are applicable to the BES and thus subject to the requirements of EOP-003. UVLS schemes developed for distribution or other purposes beyond criteria should not be discouraged through regulatory burden. UVLS should be carefully defined. Many types of load will cut out on low voltage.
<b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b>		
American Transmission Co.	No	In line with the comments for Question 6:R2 - remove this requirement because it refers to automatic load



**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 7 Comment
		shedding plans, let this be covered by PRC-006-1 and new PRC standard.R3 - add the qualification “coordinate manual load shedding plans”.R4 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and a new PRC standard.R5 - add the qualification “implement manual load shedding plans”.R7 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and a new PRC standard.
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
Manitoba Hydro	No	In line with the comments for Question 6:R2 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and a new PRC standard.R3 - add the qualification “coordinate manual load shedding plans”.R4 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and a new PRC standard.R5 - add the qualification “implement manual load shedding plans”.R7 - remove this requirement because it refers to automatic load shedding plans, let this be covered by PRC-006-1 and a new PRC standard.
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
MRO’s NERC Standards Review Subcommittee (NSRS)	No	In line with the comments for Question 6:R2 - remove this requirement because it refers to automatic load shedding plans and let the automatic requirements be covered by PRC-006-1 and a new PRC standard.R3 - Recommend R3 be rewritten to read: Each Transmission Operator and Balancing Authority shall provide manual load shedding plans to adjacent interconnected Transmission Operators and Balancing Authorities.
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
United Illuminating Company	No	R1 should use term “shall implement manual load shedding”. The Drafting team note says that PRC-006 is a Planning Standard and therefore EOP-003 R1 is needed to apply to the actual implementation of automatic load shed. We disagree that PRC-006 is solely Planning. The UFLS entity is required to implement the program, meaning protective devices are deployed and armed. By creating the program and arming the protection systems the UFLS Entity has committed to load shed.EOP-003 R1 is addressing the steps or actions a Transmission Operator takes to respond to insufficient resources. The Transmission Operator does

Consideration of Comments on Underfrequency Load Shedding — Project 2007-01

Organization	Yes or No	Question 7 Comment
		<p>not initiate automatic UFLS. The UFLS program is created by the Planning Coordinator and implemented by Transmission Owners and DP. EOP-003 requires the BA and TOP to perform load shed. Again, for UFLS this implies the TOP and BA have on/off control for UFLS protection systems. This we know is not true. The TOP/BA has the authority to implement manual load shed. A similar argument is made for R3. R3 should be "coordinate manual load shed plans". Coordinating plans is a Planning Horizon exercise. Therefore EOP-003 R3 coordination of ufls load shed by TOP/BA is a duplicate function to the PRC-006 coordination by Planning Coordinators. The entity with the best knowledge to coordinate UFLS is the Planning Coordinator. TOP and BA are coordinating the manual load shed plan with the recognition the UFLS is installed. In R5 add the words "automatic load shedding scheme other than UFLS". This will help compliance monitoring by explicitly differentiating this from PRC-006. Update the VSL also with this clarification.</p>
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
Western Area Power Administration	No	<p>R2 thru R5 - is specific to under voltage conditions but the "Purpose" of the standard states is for insufficient generation along with insufficient xmsn capacity. Also the Transmission Operator does not establish plans or coordinate for auto load shedding for under voltage conditions - this is a function of Planning R6 and R7 - now the requirements are back to under frequency along with under voltage. R8 - states the Operator shall be capable of implementing load shed adequate for responding to the EM - in most cases there is not enough time to respond manually. Is this referencing if a condition develops slowly enough to have time to respond? Seems like the purpose and requirements should be further defined so that EOP-003 is specifically for BA and Transmission Operations for developing low voltage/frequency conditions with ability/authority to shed load and PRC-006 for Planning defining auto load shed for low voltage/frequency conditions.</p>
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. There is another NERC project tasked with making comprehensive revisions to EOP-003. The intent of the supplemental SAR was to focus solely on removing conflicts and redundancies related to underfrequency load shedding in EOP-003-1.</b></p>		
Pepco Holdings, Inc. - Affiliates	No	<p>R2.3 appears to require a PC that is involved in more than one region to have an "islanding program" for its footprint in each region. What if the PC is PJM and there is a sliver a region outside RFC. Do we really need a program for the sliver? This requirement assumes without justification that RE boundaries and PC boundaries define potential islands.</p> <p><b>Response: The intent with this approach is to ensure coordination between regions and for selecting islands that overlap adjacent regions within an interconnection.</b></p> <p>R4 - What is a "design assessment"? Why not just require "an assessment every five years"? Why all the</p>

Organization	Yes or No	Question 7 Comment
		<p>extra words like "design assessment"? "conduct and document"? through dynamic simulations?</p> <p><b>Response: The SDT thinks that the added words clarify the intent of the requirements.</b></p> <p>R5 requires concurrence among PCs. My view is that a requirement must be to one and only one functional entity. More than one entity causes questions as to who is non-compliant when things go awry. In R5 who is non-compliant if a peer PC does not concur?</p> <p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern.</b></p> <p>R6 Why not just require a database for UFLS data? Why must the requirement include the editorial requirement "for use in Event Analysis and assessments of UFLS program" Does that mean I MUST use the UFLS database for Event Analysis? Does it mean I can't use the data for other activities?R8 is curious to me. It stipulates that the data is provided "to support the database". I ask, isn't the data being required to support the concept that the UFLS program is up-to-date and operational? For both R6 and R8, the issue is editorial explanations in addition to the actual requirement.</p> <p><b>Response: The SDT thinks that the added words clarify the intent of the requirements.</b></p> <p>R12 seems to say that PC whose assessment shows a problem, that PC shall conduct an assessment (again?). The requirement then goes on to mandate the PC "consider" the deficiencies. I know what they want to say but this requirement doesn't say it to me. Can you imagine proving you "considered the deficiencies"?</p> <p><b>Response: PRC-009 contains an assessment requirement after the actuation of UFLS.</b></p>
AECI	No	<p>R4 says voltage or power flow levels must be considered when designing an automatic load shedding scheme. Our UFLS scheme is an automatic load shedding scheme that does not take voltage or power flow levels into account. R4 needs to be reworded so that it is clear that it is ok to have automatic UFLS schemes that do not rely on under voltage or power flow levels.</p>
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding.</b></p>		
Tennessee Valley Authority (TVA)	No	<p>TVA supports the modifications to the EOP-003 standard which remove UFLS. We believe that EOP-003 should continue to be revised under the appropriate project to focus the emphasis on load shedding plans that are controlled by operator action, and exclude automatic protection schemes (UFLS and UVLS) that do not require operator action to execute their designed function.We have the following comments on the proposed modifications:R2 - We recommend that the text added at the end of this requirement be removed ("if the Transmission Operator or its associated Transmission Planner(s) or Planning Coordinator(s)</p>

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 7 Comment
		<p>determine that an under-voltage load shedding scheme is required.”). This addition introduces entities that are not identified in the “Applicability” section of the standard (A.4). While simulations performed in the planning environment (TPL standards) would likely lead to this determination, references to the Transmission Planner and Planning Coordinator in this requirement will introduce compliance confusion. Can the SDT point to another standard that requires the Transmission Planner or Planning Coordinator to determine if an under-voltage load shedding scheme is required? Our preference would be to strike requirement R2 from the EOP-003 standard altogether, but we realize the scope of this project is limited to UFLS.R4 - With the deletions that are being proposed, we recommend that “undervoltage” be inserted into the requirement for clarification -- “automatic undervoltage load shedding scheme”.R7 - Since the Balancing Authority has been removed, suggest changing “their areas” to “their area” (singular).</p>
<p><b>Response: The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. The Supplemental SAR approved by the Standards Committee limits the scope to removing conflicts and redundancies related to under-frequency load shedding only in EOP-003-1.</b></p>		
<p>IRC Standards Review Committee</p>	<p>No</p>	<p>We understand the concerns that EOP-003-1 contains redundant requirements. However, the Order 693 changes include revisions to EOP-003-1 that are in conflict with the supplemental SAR.</p>
<p><b>Response: The project related to Order 693 directives has removed EOP-003 from the scope of its project.</b></p>		
<p>Duke Energy</p>	<p>Yes</p>	
<p>Entergy Services</p>	<p>Yes</p>	
<p>IESO</p>	<p>Yes</p>	
<p>Oncor Electric Delivery</p>	<p>Yes</p>	
<p>Progress Energy - Carolinas</p>	<p>Yes</p>	
<p>SERC SC UFLS Standard Drafting Team</p>	<p>Yes</p>	
<p>South Carolina Electric and Gas</p>	<p>Yes</p>	

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Organization	Yes or No	Question 7 Comment
Southern Company Transmission	Yes	
SPP System Protection and Control Working Group	Yes	
Y-W Electric Association, Inc.	Yes	
FirstEnergy	Yes	Although we agree with the revisions to EOP-003 with regard to removal of underfrequency load shedding references, we believe the SDT could have improved the standard even further by developing a complete set of measures. There are currently only two measures for eight requirements. Furthermore, since EOP-003-1 is the current approved standard, and this standard would be version 2 (EOP-003-2).
<b>Response: Thank you for your support. The standard drafting team does not think the Measures need to be modified as the team has only eliminated any inference to underfrequency load shedding in the requirements and performed a review of the Measures and determined they do not need revision.</b>		
Northeast Power Coordinating Council	Yes	EOP 003 is on the list of standards identified by the NERC Tiger Team for fast tracking of Order 693 directives. There is concern that coordination between these two DT's may not have occurred and that the changes agreed upon in the revised UFLS SAR should also be considered by the Tiger Team.
<b>Response: : The project related to Order 693 directives has removed EOP-003 from the scope of its project.</b>		
Northeast Utilities	Yes	EOP 003 is on the list of standards identified by the NERC Tiger Team for fast tracking of Order 693 directives. There is concern that coordination between these two DT's may not have occurred and that the changes agreed upon in the revised UFLS SAR should also be considered by the Tiger Team.
<b>Response: : The project related to Order 693 directives has removed EOP-003 from the scope of its project.</b>		
Indiana Municipal Power Agency	Yes	However, changes need to be coordinated with the tiger team and their changes to EOP-003-1.
<b>Response: : The project related to Order 693 directives has removed EOP-003 from the scope of its project.</b>		
NERC Staff	Yes	NERC staff agrees that it is wise to revise requirements specific to Underfrequency Load Shedding in EOP-003-1 to remove inconsistencies and redundancies. The only concern is that because both the team of experts (formerly known as the Tiger Team) and the original EOP-003-1 SDT are working on modifications to

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

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Organization	Yes or No	Question 7 Comment
		the standard, there could be some overlap and miscommunication, especially with respect to these redundancies between PRC-006-1 and EOP-003-1.
<p><b>Response: : The project related to Order 693 directives has removed EOP-003 from the scope of its project.</b></p>		
ReliabilityFirst Engineering Staff	Yes	Yes, the revisions that were made are appropriate. However, EOP-003 will require further substantial revisions as many of the requirements are still inappropriately assigned to the TOP such as establishing automatic undervoltage load shedding plans (R2).
<p><b>Response: There is a NERC project tasked with revising EOP-003 and while it is at the initial stages this team will address the requirements that require revision. The SDT made conforming changes to EOP-003-2 to clarify that the load shedding remaining in the standard is not related to under-frequency load shedding. The Supplemental SAR is focused solely on eliminating redundancies between the two standards related to underfrequency load shedding.</b></p>		

8. Based on industry supplied comments, the SDT modified the applicability of the standard from “Transmission Owners with end-use Load connected to their Facilities where such end use load is not part of a Distribution Provider’s load” and “Distribution Providers” in the second posting to “UFLS entities shall mean all entities that are responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators. Such entities may include Transmission Owners and/or Distribution Providers” in an effort to more appropriately identify those entities responsible for providing UFLS coverage. Has the SDT correctly identified the proper entities for UFLS coverage?

**Summary Consideration:**

Several commenters indicated that LSEs should be included in the applicability of the standard. The SDT recognizes that the Functional Model Version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in Version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons.

Organization	Yes or No	Question 8 Comment
The California ISO	No	1) Applicability of the proposed Standard PRC-006-1 should also apply to Load Serving Entities (LSEs) for underfrequency load shedding.2) Applicability of the proposed Standard PRC-006-1 should also apply to Generator Owners since GOs would need to be involved for overfrequency generation tripping.3) Applicability of the proposed Standard PRC-006-1 should also apply to the Reliability Assurer/Regional Reliability Organization (RRO). (WECC in our case).4) The Reliability Assurer/Regional Reliability Organization (RRO) should be the entity that coordinates the UFLS programs.
<p><b>Response:</b> 1)The SDT recognizes that the Functional Model Version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons.”</p> <p>2) The responsibility of generator owners resides within a standard under development currently, PRC-024. Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</p> <p>3) Requirements cannot be assigned to Regional Entities and enforced the same way as other requirements because Regional Entities are not users, owners or operators of the BES. This standard is under development as a direct result of this particular issue and was identified as a part of a set of standards for having “fill in the blank” requirements. The SDT has crafted Requirements R5 and R13 to allow for and encourage coordination among</p>		

Organization	Yes or No	Question 8 Comment
<p>PCs. This standard does not preclude the RRO/RA from performing this coordination function, but does not include a requirement for the RRO/RA for this purpose.</p> <p>4) This option is not precluded from the standard as it is written. However, ultimate responsibility for developing UFLS programs lies with the Planning Coordinators.</p>		
Entergy Services	No	<p>1. We recommend that R3 be revised to require the PC to specifically notify the “UFLS Entities” in their PC area that are part of the PC’s UFLS program of the UFLS program.</p> <p><b>Response: In an effort to remove some ambiguity in regard to UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p> <p>2. We are also concerned that the Planning Coordinator is responsible to develop a UFLS program that incorporates information from Generator Owners (R3-R3.3.3) but there is no requirement that Generator Owners provide this information. We are aware that PRC-024 (Project 2007-09) contains reporting requirements (R3, R4 and R5) but are not certain that the tables in PRC-024 match those in PRC-006 nor is there any guarantee that PRC-024 will be FERC approved without change. Therefore, we request that this standard be made applicable to GOs and those GOs provide the required information.</p> <p><b>Response: Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</b></p>
Y-W Electric Association, Inc.	No	<p>Because Load Serving Entities (not Distribution Providers) are actually responsible for the load in the current Functional Model and Compliance Registry Criteria, they should also be included in the applicability section of this standard.</p>
<p><b>Response: The SDT recognizes that the Functional Model Version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons.</b></p>		
Tri-State Generation & Transmission Assoc.	No	<p>Comments: We believe that “ownership” should be removed from the criteria because it may be different from the operating or controlling entity and both entities cannot be responsible.</p> <p><b>Response: The SDT’s intent was to adequately capture the entities which “own, operate or control” UFLS equipment. In the sense it is written here, ‘control’ of the relay setpoints is the critical distinction as the relays operate once a predetermined set of system conditions has been achieved.</b></p>



Organization	Yes or No	Question 8 Comment
		<p>Load Serving Entities should also be included as a “possible” UFLS entity Some large interruptible customers outside of DP or TO could be allowed to own UFLS devices.</p> <p><b>Response: The SDT recognizes that the Functional Model Version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons</b></p> <p>This should remain the responsibility of the Regional Assurer (RA), which is the agent(s) for overall coordination within the interconnection or sub-area. For example in the WECC, the RA recognizes the following sub-area groups for UFLS coordination within the Interconnection: Southern Islanding Load Tripping, Northwest Power Pool UFLS Group and the WECC Off Nominal Frequency Load and Restoration Plan. Without the RA assuring coordination of the sub-area groups, PCs could randomly or arbitrarily form sub-area groups whose plans do not coordinate nor address the interconnection reliability needs.</p> <p><b>Response: Requirements cannot be assigned to Regional Entities and enforced the same way as other requirements because Regional Entities are not users, owners or operators of the BES. This standard is under development as a direct result of this particular issue and was identified as a part of a set of standards for having “fill in the blank” requirements. The SDT has crafted Requirements R5 and R13 in order to allow for and encourage coordination among PCs. This standard does not preclude the RRO/RA from performing this coordination function, but does not include a requirement for the RRO/RA for this purpose.</b></p>
IRC Standards Review Committee	No	<p>Generator owners are not included in the applicability of this standard. We understand from the SDT’s responses to the last posting that there is a separate project for generator requirements that could obligate them to provide required data to planning coordinators for underfrequency load shedding schemes. However, absent that standard, a generator owner has no obligation to provide needed data to a planning coordinator. If the generator owner fails to provide that data, then that planning coordinator could be found in violation of a requirement in PRC-006-1. NERC must recognize that registered entities may vote against PRC-006-1 if they are concerned about the ability to meet requirements which rely on yet to be approved or developed standards and/or definitions. Therefore, in a concerted effort to move proposed standards through the approval process, NERC must not enforce specific requirements upon a registered entity if that entity cannot meet a requirement because a supporting standard or definition is not yet in effect.</p> <p><b>Response: GO applicability lies within the PRC-024 standard currently under development. Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not</b></p>

Organization	Yes or No	Question 8 Comment
		<p><b>come into effect until after PRC-024 is approved.</b></p> <p>We are also concerned that the ULFS standards requirements may not apply to new entities and loads that may be interconnected to the BPS such as those for Demand Response grid services. New technologies such as Smart Grid and Plug-In Electric Vehicles will become more prevalent in the near future and new entities may be aggregating these loads to offer grid services. Because it is unknown how these aggregators may be structured, they may not fall into the registered entity categories specified in this standard. NERC should be diligent in identifying new entities that existing approved standards should apply to and adjust the registry and standards accordingly.</p> <p><b>Response: Thank you for your comment.</b></p>
IESO	No	<p>Generator owners are not included in the Applicability Section of this standard. We understand from the SDT’s responses to the last posting that there is a separate project for generator requirements that would obligate them to provide the required information to the Planning Coordinators with which to design the underfrequency load shedding program. Absent that standard, a Generator Owner has no obligation to provide the necessary data to the Planning Coordinators which can result in the Planning Coordinator failing to meet the PRC-006-1 standard. We therefore request that Generator Owner be included in the Applicability Section and a requirement for it to provide the needed information to the Planning Coordinator be added, or balloting of standard PRC-006-1 be deferred until such a requirement in that other standard is ready for balloting.</p> <p><b>Response: GO applicability lies within the PRC-024 standard currently under development. Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</b></p> <p>The reason for including Transmission Owners in Section A 4.3 after they have been identified in Section A 4.2 is unclear or not needed.</p> <p><b>Response: The SDT added this additional distinction for the purposes stated in Requirement R10. The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>
AECI	No	<p>It seems like generator owners should be added here, especially since R4 deals with generator frequency settings</p>
<p><b>Response: GO applicability lies within the PRC-024 standard currently under development. Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</b></p>		

Organization	Yes or No	Question 8 Comment
Bonneville Power Administration	No	<p>LSE should also be included as a “possible” UFLS entity some large interruptible customers outside of DP or TO could be allowed to own UFLS devices.</p> <p><b>Response: The SDT recognizes that the Functional Model Version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons.</b></p> <p>In addition to the issue previously stated concerning PC authority, no valid way exists to determine which registered entities are under the jurisdiction and authority of any Planning Coordinator. The current version does not address customer-owned UFLS relays. There should be recognized sub-area group(s), which consists of PCs, as assigned by the Regional Assurer (RA) which is the agent(s) for overall coordination within the interconnection or sub-area. For example in the WECC, the RA recognizes the following sub-area groups for UFLS coordination within the Interconnection: Southern Islanding Load Tripping, Northwest Power Pool UFLS Group and the WECC Off-Nominal Frequency Load and Restoration Plan. Without the RA assuring coordination of the sub-area groups, PCs could randomly or arbitrarily form sub-area groups whose plans do not coordinate nor address the interconnection reliability needs.</p> <p><b>Requirements cannot be assigned to Regional Entities and enforced the same way as other requirements because Regional Entities are not users, owners or operators of the BES. This standard is under development as a direct result of this particular issue and was identified as a part of a set of standards for having “fill in the blank” requirements. The SDT has crafted Requirements R5 and R13 in order to allow for and encourage coordination among PCs. This standard does not preclude the RRO/RA from performing this coordination function, but does not include a requirement for the RRO/RA for this purpose.</b></p>
Western Electricity Coordinating Council	No	<p>LSE should also be included as a “possible” UFLS entity Some large interruptible customers outside of DP or TO could be allowed to own UFLS devices.</p> <p><b>Response: The SDT recognizes that the Functional Model Version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons.</b></p> <p>There should be a recognized sub-area group(s), which consist of PCs, as assigned by the Regional Assurer</p>

Organization	Yes or No	Question 8 Comment
		<p>(RA) which is the agent(s) for overall coordination within the interconnection or sub-area. Without the RA assuring coordination of the sub-area groups, PCs could randomly or arbitrarily form sub-area groups whose plans do not coordinate nor address the interconnection reliability needs.</p> <p><b>Response: Requirements cannot be assigned to Regional Entities and enforced the same way as other requirements because Regional Entities are not users, owners or operators of the BES. This standard is under development as a direct result of this particular issue and was identified as a part of a set of standards for having “fill in the blank” requirements.</b></p>
Tennessee Valley Authority (TVA)	No	<p>Our preference is that the applicability section of the standard remain “clean” with regard to the applicable entities listed, and not cluttered with qualifiers. For instance, we see no benefit in listing Transmission Owners twice (4.2.1 and 4.3). If this format is retained, we suggest that section 4 be revised to add clarity. We suggest that section 4.2 be revised to read: “UFLS entities shall mean all entities that are responsible for the ownership, design, or installation of UFLS equipment or automatic switching of Elements as required by the UFLS program established by the Planning Coordinators. Such entities may include one or more of the following: 4.2.1 Transmission Owners 4.2.2 Distribution Providers” and that 4.3 be deleted.</p> <p><b>Response: The SDT added this additional distinction for the purposes stated in Requirement R10. The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>The terms “operation” and “control” are typically used in the context of an operating entity task (RC, TOP, GOP, BA). Therefore we prefer the use of “ownership, design, and installation” over “ownership, operation, or control”.</p> <p><b>Response: The SDT intent was to adequately capture the entities which “own, operate or control” UFLS equipment. In the sense it is written here, ‘control’ of the relay setpoints is the critical distinction as the relays operate once a predetermined set of system conditions has been achieved.</b></p> <p>The omission of the Generator Owner from this standard is potentially problematic in that coordination with generator under- / over-frequency settings is needed.</p> <p><b>Response: Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</b></p> <p>We also note that PRC-008-0 contains the phrase “required by its Regional Reliability Organization to have a UFLS program”. Should this be changed to “required by its Planning Coordinator to have a UFLS program” to align with the proposed changes to PRC-006-1?</p> <p><b>PRC-008 will be addressed as a part of project 2007-17, Protection System Maintenance and Testing,</b></p>

Organization	Yes or No	Question 8 Comment
		<p><b>which is currently out for ballot.</b></p> <p>Lastly, with the modifications to EOP-003, there is no linkage of operating entity applicability to UFLS. While beyond the scope of this drafting team’s objectives, we believe that operator awareness of UFLS installations is a critical component of load restoration following an event that initiates UFLS tripping.</p> <p><b>FERC order 693 is directing the changes to EOP-003. Also, operator action during system restoration typically occurs well after UFLS has attempted to arrest frequency decline during an underfrequency event.</b></p>
Southern California Edison Company	No	SCE agrees with WECC’s position that “the proposed standard fails to address UFLS relays which are currently part of the existing program which are owned by the customer. Recognition of customer owned relays is critical to have a successful program. To assure areas are covered, the LSE needs to be included in the Applicability section”.
<p><b>Response: The SDT recognizes that the Functional Model version 5 and the Statement of Compliance Registry cause confusion regarding the involvement of the LSE in UFLS programs but the SDT refers to the section covering the Roles in Load Curtailment in version 5 of the Functional Model Technical Document; “For non-voluntary curtailment, such as automatic underfrequency and undervoltage load shedding and manual load shedding, the Load-Serving Entity identifies which critical customer loads should be excluded from curtailment for public health, safety and/or security reasons.</b></p>		
Northeast Power Coordinating Council	No	Significant amounts of UFLS capability may fall outside the current FM design, and the DT is trying to capture all entities that control UFLS in its applicability requirements. In spite of this effort ambiguity still exists in the applicability regarding the broad statement pertaining to UFLS entities that ‘control’ UFLS equipment.
<p><b>Response: The SDT intent was to adequately capture the entities which “own, operate or control” UFLS equipment. In the sense it is written here, ‘control’ of the relay setpoints is the critical distinction as the relays operate once a predetermined set of system conditions has been achieved.</b></p> <p><b>In an effort to remove some ambiguity in this regard, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p>		
MidAmerican Energy	No	The word “all” should be replaced with "applicable". The compliance requirement should focus on primary entity identified responsible for that compliance function. An example, might include a jointly owned facility (generator, substation, line, transformer, or capacitor bank) owned by one or more entities and operated by another. One identified entity should be identified and held responsible its UFLS relays whether through majority ownership, interconnection agreements, or contracts. Since ownership and operation can be divided, it is inappropriate to enforce compliance responsibilities on entities outside of their control.

Organization	Yes or No	Question 8 Comment
<p><b>Response: The SDT cannot comment on contractual issues, however, in an effort to remove some ambiguity regarding UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p>		
Xcel Energy	No	<p>We question why Generator Owners are not included as a UFLS entity. Under R4 PCs are required to obtain setting from them. We are not aware of another standard that requires GOs to provide those settings to the PC. Thus there should also be a requirement indicating that GOs (or UFLS Entities) provide data requested by the PC to conduct the required assessments.</p>
<p><b>Response: Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</b></p>		
FirstEnergy	No	<p>We support the applicability section of the standard as asked per this question. However, we do not see any question for general comments and have comments and suggestions regarding the proposed implementation plan for the applicable UFLS entities and Transmission Owners that own Elements identified in the UFLS program. 1. Although we agree that the Planning Coordinator is the appropriate functional entity to develop and implement a UFLS program, we are concerned with the fact that UFLS entities may not know the specifics of their responsibilities until long after this standard is approved. The SDT should consider adjusting the language of the standard to require more transparency and coordination with the UFLS entities during the PC's development of the UFLS program. Also, per the implementation plan, the PC will be given one year to develop its UFLS program. However, the timeframe for the UFLS entity is based on the schedule imposed by the PC. The implementation plan should allow the UFLS entity at least one year (maybe more per capital budget cycles) from the time the PC identifies the UFLS entity in their UFLS program. The UFLS entity will need sufficient lead time in those instances that require purchase of new UFLS equipment that will require long term budget planning for implementation.</p> <p><b>Response: The SDT understands your concern and has added Requirement R14, which requires notification of UFLS entities of the UFLS program design and schedule for application and a requirement to respond to feedback received.</b></p> <p>2. The UFLS entities are identified in the UFLS program established by the PC. However, it is not clear where the PC is explicitly required to notify and coordinate with the UFLS entity. In Requirement R3 it is implied that the PC will notify and coordinate with the UFLS entity per the phrase "including a schedule for implementation by UFLS entities within its footprint". This requirement needs to be more explicit that the PC will notify the UFLS entity, and the measure for R3 needs to require proof that the PC has done this.</p> <p><b>Response: In an effort to remove some ambiguity in regard to UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and</b></p>

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 8 Comment
		<b>response to feedback received.</b>
SPP System Protection and Control Working Group	No	Why are Generator Owners not included in the Standard? The Planning Coordinator can't prove the design without the Generator Owner for Requirements R3 and R4.
<b>Response: Per the implementation schedule, any requirements that necessitate the use of generator tripping data do not come into effect until after PRC-024 is approved.</b>		
Ameren	Yes	
American Transmission Co.	Yes	
Duke Energy	Yes	
Exelon	Yes	
Long Island Power Authority	Yes	
Manitoba Hydro	Yes	
MRO's NERC Standards Review Subcommittee (NSRS)	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
ReliabilityFirst Engineering Staff	Yes	
SERC Planning Standards Subcommittee	Yes	
South Carolina Electric and Gas	Yes	

Consideration of Comments on Underfrequency Load Shedding — Project 2007-01

Organization	Yes or No	Question 8 Comment
United Illuminating Company	Yes	
Wisconsin Electric Power Company (dba We Energies)	Yes	
Indiana Municipal Power Agency	Yes	<p>IMPA believes that this draft allows entities who are currently providing UFLS at the transmission level to stay in place and provide this service going forward. IMPA hopes that the Planning Coordinators will establish their UFLS program by using this current UFLS setup provided by Transmission Owners and not force a financial burden onto Distribution Providers by requiring them to install UFLS equipment. In states such as Indiana and Illinois, UFLS is performed at the transmission level for some entities and includes all the distribution load in the area regardless of size and voltage connection to the BES.</p>
<p><b>Response: Thank you for your support.</b></p>		
NERC Staff	Yes	<p>NERC staff believes that the SDT has sufficiently identified the proper entities for UFLS coverage. NERC staff understands the comments raised by the industry regarding transfer of responsibilities, however, it is worth noting that some inconsistency has been created by the language used in the standard. It could be problematic that the entity with the original responsibility (the Distribution Provider) can delegate responsibility to another entity (the Transmission Owner), because even with that delegation, the Distribution Provider's original responsibility does not disappear.</p>
<p><b>Response: In an effort to remove some ambiguity in regard to UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p>		
Illinois Municipal Electric Agency	Yes	<p>The SDT's consideration of comments during the second posting is very much appreciated. Applicability now recognizes and preserves the widely used practice of a TO factoring interconnected DP (that does not own or operate UFLS equipment) load into the TO UFLS scheme.</p>
<p><b>Response: Thank you for your support.</b></p>		
MEAG Power	Yes	<p>This is an excellent language change.</p>
<p><b>Response: Thank you for your support.</b></p>		
SERC SC UFLS Standard	Yes	<p>We recommend that R3 be revised to require the PC to specifically notify the "UFLS Entities" in their PC area</p>



Organization	Yes or No	Question 8 Comment
Drafting Team		that are part of the PC's UFLS program.
<p><b>Response: In an effort to remove some ambiguity in regard to UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p>		
Southern Company Transmission	Yes	We recommend that R3 be revised to require the PC to specifically notify the "UFLS Entities" in their PC area that are part of the PC's UFLS program.
<p><b>Response: In an effort to remove some ambiguity in regard to UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p>		
Progress Energy - Carolinas	Yes	We recommend that R3 be revised to specifically require the Planning Coordinator to notify the "UFLS entities" in their PC area that they are part of the PC's UFLS program.
<p><b>Response: In an effort to remove some ambiguity in regard to UFLS entity applicability, the SDT has added Requirement R14 which requires notification of UFLS entities of the UFLS program design and response to feedback received.</b></p>		

9. The SDT has modified the performance characteristics in Requirements R6.1 through R6.3 (now parts 3.1, 3.2 and 3.3 of Requirement R3) and the modeling requirements for generator underfrequency and overfrequency protection in Requirement R7.1 and R7.2 (now parts 4.1 through 4.6 of Requirement R4). The modifications replace the discrete points in these requirements with frequency-time curves that achieve the same reliability objective. The SDT agrees with several commenters in the second posting that this approach is easier to understand and better demonstrates the coordination the SDT has achieved with the requirements proposed by the Generator Verification SDT in proposed standard PRC-024. Do you agree with these changes?

**Summary Consideration:**

As a result of the comments received, the SDT believes that there is confusion concerning the application of the curves. The goal of the UFLS is to control frequency during a UFLS event such that generation does not trip. Project 2007-09 Generator Verification for draft Standard PRC-024 is developing the curves to establish the over- and under-frequency protection for the generation, so, the UFLS SDT is trying to stay within those curves by some margin, e.g., between the two curves of Attachment 1 and 2. The SDT recognizes that some generators may not meet those curves and wants the Planning Coordinator to specifically model the trip settings of those generators. We understand that V/Hz is not a standard output, but, it should not be a large effort to monitor voltage and frequency, divide the two, and integrate over each time step. The SDT received many comments on prior versions of this standard to make sure PRC-006 was coordinated with PRC-024 as the two were being drafted. We are taking the direction of the majority of commenters.

Organization	Yes or No	Question 9 Comment
Xcel Energy		No comments
Long Island Power Authority	No	
Western Area Power Administration	No	
GDS Associates	No	- See the answer to question 10. pertaining the classification of generating units / plants
<b>Response: See response to question 10</b>		
MRO's NERC Standards Review Subcommittee (NSRS)	No	1. In R3, simply say that the "program shall shed at least 25% of island load" and avoid use of the formula. If the formula is retained, then we suggest that it be changed to the more common industry nomenclature of "imbalance = (load-generation)/generation."

Organization	Yes or No	Question 9 Comment
		<p>2. In R4, we interpret that the Equivalent Inertia Analysis is a valid dynamic simulation methodology for certain aspects of UFLS assessments. This is a methodology that is often recommended in relay application guides and other technical references. Please clarify that this type of dynamic analysis would be accepted toward compliance with the “through dynamic simulation” portion of this requirement.</p> <p>For Attachment 1 (R4.1, R4.2 &amp; R4.3) and Attachment 2 (R4.4, R4.5 &amp; R4.6)3. Attachment 1 and 2 include transient frequency performance curves for at least 30%, 40% and 50% island imbalance. Otherwise, revise the titles for Attachments 1 and 2 to clearly qualify that the transient frequency performance curves apply for a 25% or less island imbalance and that programs which are larger than this minimum load shedding requirement do not have to meet this criteria when overloads are in excess of 25%. In addition, UFLS programs that are designed for appropriate performance under imbalance conditions above 25% will not have the same performance curves as programs that are designed for imbalance conditions of 25% or less.</p> <p>4. If item #3 is not adopted, then the Under Frequency Performance Characteristic line in Attachment 1 should be extended from the knee at approximately 58.9 Hz (for 60 seconds) to 59.3 Hz or 59.5 Hz (for approximately 500 sec). The purpose is to define a single line of constant slope and to get rid of the arbitrary knee in the characteristic curve which serves no reliability purpose. The reason for this change is that the worst case frequency recovery time for frequencies between 58.7 Hz and 59.5 Hz may occur for imbalance conditions significantly less than 25% where the governor response prevents the load shedding blocks from picking up and where frequency recovery times are a function of governor response and system inertia. Likewise, it makes sense to extend this line below 58 Hz to at least as low a frequency as is covered by the generation protection curve.</p> <p>5. Add a note to Attachment 1 that states, "Larger size UFLS programs (e.g., 40%) may require less restrictive (lower) underfrequency (as well as and/or longer time delays) due to island generation and protection characteristics. UFLS programs shedding more than 25% must also increase generation protection delay times and/or change set points to achieve coordination with load shedding. For example, Manitoba Hydro and Saskatchewan need to shed more than 30% of the area load to achieve reasonable frequency recovery in their islands. In these areas, the shedding of a higher percentage of load may allow the frequency to drop below 58.2 Hz for longer than 4 seconds, but the subsequent impacts on the hydro generator in these islands are acceptable. Generator Underfrequency and Overfrequency Coordination Attachments</p> <p>6. The Generation Owner off-nominal frequency coordination requirements and coordination curves should be included only in the PRC-006 standard and not the PRC-024 standard. The generator coordination curves relate directly to the PRC-006 assessment requirements and the PRC-006 curves will be duplicative of, and possibly contradictory to, the curves in the PRC-024 standard if they are finally approved and then changed in the future.</p> <p>7. The generation coordination curves need to be appropriate for the different types of UFLS programs (e.g.</p>

Organization	Yes or No	Question 9 Comment
		<p>25%, 30%, 40%, 50%, etc.) that have, or will be, designed and implemented for different islands. Generation coordination curves for 25% UFLS programs will not be the same for other (e.g. 30%, 40%, 50%) UFLS programs. It can be demonstrated that as the size of the load shedding program is increased, the generation protection settings have to be modified accordingly to achieve the coordination objectives. UFLS programs that are designed for imbalances greater the 25% inherently require lower minimum frequencies and longer frequency recovery times</p> <p>8. If item #7 above is not adopted, then revise the titles for generation coordination curves to clearly qualify that they apply for a 0% to 25% island imbalance and that programs which are larger than this minimum load shedding requirement do not have to meet this criteria when overloads are in excess of 25%. The generation protection line should extend to 57 Hz (at .3 sec) to 59.5Hz (at 1800 sec). The minimum frequency of 57.0 Hz was chosen because most conventional generation can briefly operate down to 57.0 Hz and large load shedding programs may need to make use of that capability to achieve coordination with these UFLS programs.</p> <p>9. We are aware of the technical basis for the generator Under Frequency protection setting, but not aware of the technical basis for the presently proposed generation coordination curves in PRC-006 or PRC-024. We suggest that the SDT provide the industry with the technical basis for the generation coordination curves. We are concerned that the curves allow enough time for load shedding to operate under “worst case conditions”, and as much time as possible needs to be given for frequencies close to 60 Hz. We are also concerned that for actual UFLS events system frequency recovery may stall below 59.5 Hz for a long time while operators try to deal with event with manual shedding of load. Volts/Hertz Performance Characteristic</p> <p>10. The Volts/hertz requirement is not needed in this standard and should be removed for several reasons:</p> <p>[1] Voltage regulators automatically reduce voltage according to volts per hertz when in the automatic mode so they self protect. Industry recommendations/standards (IEEE C37.102 or IEEE C37.106, ANSI C50.13-1989, IEEE C57.12.00-2000) already exist that adequately address the volts/Hz issue.</p> <p>[2] If voltage regulators are in automatic, then the 110% volts/Hz limit becomes active between 57.2 Hz and 51.8 Hz assuming the voltage regulator holds terminal voltage within the allowed 1.05 p.u. to 0.95 pu range.</p> <p>[3] Units with voltage regulators in manual will just trip when volts per Hertz protection picks up. However, units are normally in the automatic control mode per NERC Standards.</p> <p>[4] It appears this requirement is appropriate for programs which may experience frequencies below 57.2 Hz, but few, if any, programs are expected to be designed for frequencies that are this low.</p> <p>[5] Even if UFLS programs are designed for frequencies below 57.2 Hz, this performance characteristic cannot presently be properly simulated in stability cases as the voltage regulator V/Hz controls are not</p>

Organization	Yes or No	Question 9 Comment
		<p>presently included in generator exciter/voltage regulator models of the present power system modeling programs that are used for dynamic power system simulation</p>
<p><b>Response: The SDT is specifying a minimum requirement of a 25% imbalance to design the UFLS program to. Regional standards can be developed to define include larger imbalances. The formula provided in the standard adds clarity. Our interpretation is that Equivalent Inertia Analysis is not sufficient to meet all of the requirements of the standard. We have clarified the language of R4 and the knee of the curves in Attachment 1 to clarify that the UFLS program should be designed such that a steady state frequency between 59.3 and 60.7 Hz is reached within 60 seconds. The SDT believes there is a need for V/Hz requirements because shedding load will cause voltages to climb, which may cause excitation systems / voltage regulators to reach the end of their range, which can lead to a V/Hz condition that could cause generators to trip through GSU protection or other similar protection systems. Therefore, the SDT believes that V/Hz of 1.18 p.u for 2 seconds, etc., can be reached at significantly higher frequencies than 57.2 Hz. The standard does not require modeling of V/Hz protection and only requires monitoring of voltage and frequency and designing the UFLS program to meet the performance criteria described in 3.2. No changes made.</b></p>		
<p>American Transmission Co.</p>	<p>No</p>	<ol style="list-style-type: none"> <li>1. In R3, the term, “imbalance”, should be described using the standard industry nomenclature of imbalance = (load-generation)/generation.</li> <li>2. In R4, we interpret that the Equivalent Inertia Analysis is a valid dynamic simulation methodology for certain aspects of UFLS assessments. So, we expect that this type of dynamic analysis would be accepted toward compliance with the “through dynamic simulation” portion of this requirement</li> </ol> <p>Attachement 1 for R4.1, R4.2, R4.33. The title for Attachment 1 should clearly qualify that this curve applies for a 25% or less island imbalance. The curves that should be used for UFLS programs associated with imbalance levels greater than 25% (e.g. 30%, 40%, 50%) would be different from the 25% curve.</p> <ol style="list-style-type: none"> <li>4. The Under Frequency Performance Characteristic line in Attachment 1 should be extended to 59.5 Hz (at 500 sec). The reason for this change is that the worst case response between 58.7 Hz and 59.5 Hz may occur for imbalance conditions significantly less than 25% where the governor response prevents the load shedding blocks from picking up and where response recovery times is a function of governor response and system inertia (30 seconds to 500 seconds). This removes the knee of the curve at 30 seconds and extends the curve up to 500 seconds. This would change the 30 second at 58.9 Hz cut off point to 500 seconds.</li> <li>5. Add a note to Attachment 1 that states, "Larger size UFLS programs (e.g., 40%) may require less restrictive (lower and/or longer time delays) underfrequency limits due to island generation and protection characteristics." UFLS programs shedding more than 25% must increase generation protection delay times and/or change set points to achieve coordination with load shedding. For example, Manitoba Hydro and Saskatchewan need to shed more than 30% of the area load to achieve reasonable frequency recovery in their islands. In these areas, the shedding of a higher percentage of load may allow the frequency to drop below 58.2 Hz for longer than 4 seconds, but the subsequent impacts on the hydro generator in these islands are acceptable.Attachment 2 for R4.4, R4.5, R4.66. The title for Attachment 2 should clearly qualify that this</li> </ol>

Organization	Yes or No	Question 9 Comment
		<p>curve applies for a 25% or less island imbalance. The curves that should be used for UFLS programs associated with imbalance levels greater than 25% (e.g. 30%, 40%, 50%) would be different from the 25% curve. Generator Underfrequency and Overfrequency Attachments</p> <p>7. The Generation Owner off-nominal frequency coordination requirements and coordination curves should be included in the PRC-006 standard. The generation curves should be applicable for load shedding levels beyond the 25% (e.g. 30%, 40%, 50%). If curves beyond 25% are not include, then the titles of the curves should qualify that they apply for 25% imbalance and include an note regarding coordination with UFLS programs that shed higher than 25% of the island load. The line should extend to 57 Hz (at .3 sec) to 59.5Hz (at 1800 sec). The minimum frequency of 57.0 Hz was chosen because most conventional generation can briefly operate down to 57.0 Hz and large load shedding programs may need to make use of that capability to achieve coordination with these UFLS programs.Volts/Hertz Performance Characteristic</p> <p>8. The Volts/Hz requirement should be removed. This performance characteristic cannot presently be properly simulated. The voltage regulator V/Hz controls are not presently included in generator exciter/voltage regulator models of the present power system modeling programs that are used for dynamic power system simulation. In addition, the Volts/hertz requirement is not need in this standard. Voltage regulators automatically reduce voltage according to volts per hertz when in the automatic mode. Industry recommendations/standards (IEEE C37.102 or IEEE C37.106, ANSI C50.13-1989, IEEE C57.12.00-2000) already exist that adequately address the volts/Hz issue.</p>
<p><b>Response: The SDT is specifying a minimum requirement of a 25% imbalance to design the UFLS program to. Regional standards or Variances can be developed to include larger imbalances. Our interpretation is that Equivalent Inertia Analysis is not sufficient to meet all of the requirements of the standard. We have clarified the language of R4 and the knee of the curves in Attachment 1 to clarify that the UFLS program should be designed such that a steady state frequency between 59.3 and 60.7 Hz is reached within 60 seconds. The SDT believes there is a need for V/Hz requirements because shedding load will cause voltages to climb, which may cause excitation systems / voltage regulators to reach the end of their range, which can lead to a V/Hz condition that could cause generators to trip through GSU protection or other similar protection systems. Therefore, the SDT believes that V/Hz of 1.18 p.u for 2 seconds, etc., can be reached at significantly higher frequencies than 57.2 Hz. The standard does not require modeling of V/Hz protection and only requires monitoring of voltage and frequency and designing the UFLS program to meet the performance criteria described in 3.2. No changes made.</b></p>		
Manitoba Hydro	No	<ol style="list-style-type: none"> <li>In R3, the term, “imbalance”, should be described using the standard industry nomenclature of imbalance = (load-generation)/generation. The present definition defines imbalance as being the same as the required percent load to be shed, and if this is what is intended, it would be better to keep it simple say that everyone needs to shed at least 25% load and avoid use of the term imbalance. In any event, the definition of “imbalance” should follow industry conventions for consistency.</li> <li>For R4.1, R4.2, R4.3 - Attachment 1 and 2:2. The titles for Attachment 1 and 2 should clearly qualify that the transient frequency performance curve applies for a 25% or less island imbalance and that programs</li> </ol>

Organization	Yes or No	Question 9 Comment
		<p>which are larger than this minimum load shedding requirement do not have to meet this criteria when overloads are in excess of 25%. [If the SDT doesn't allow different characteristics for a higher than 25% program, then we propose that the MRO submit a variance for a 30% and higher UFLS programs.] We are quite concerned that the generation tripping curve part of attachments 1 and 2, which matches the curve in PRC-024, as it appears to that this applies to all overload levels and to any size of load shedding program. It can be easily demonstrated that as the size of the load shedding program is increased, that generation protection settings have to be modified accordingly. The reason is to achieve coordination objectives. When we are dealing with the larger imbalances we are also inherently dealing with lower minimum frequencies and longer frequency recovery times. To make matters worse, we are trying to approve PRC-006 using information from PRC-024 which is still a draft, not an approved standard. We would like to elaborate on problems related to the generation protection curve part of attachment 1: UFLS programs have to deal with several mutually conflicting objectives and by setting hard and fast limits for generation underfrequency protection up front, we are adding an unnecessary constraint which will have undesirable effects on other aspects of the program. Such generation protection settings have to be considered in the context of the overall set of compromises that go into UFLS program design. We have to consider what kind of frequency recovery can be achieved with a well coordinated load shedding program and we have to compare that performance to the true capabilities of the generation in the island. When all things are considered, a final compromise can be reached that gives the best of all worlds. The characteristic in PRC-024 is not representative of the raw data from the manufacturers that defines actual capabilities, instead it is just someone's estimation of what is a reasonable tradeoff, and represents some hypothetical amount of accelerated loss of life of the turbine. The generation protection curve from PRC-024 is at best a starting point. From a design perspective, we could use different and equally valid settings if needed.</p> <p>3. 3. The Under Frequency Performance Characteristic line in Attachment 1 should be extended from the knee at approximately 58.9 Hz (for 60 seconds) to 59.3 Hz or 59.6 Hz (at for approximately 500 sec). The purpose is to define a single line of constant slope and to get rid of the arbitrary knee in the characteristic which serves no reliability purpose. The reason for this change is that the worst case frequency recovery time for frequencies between 58.7 Hz and 59.5 Hz may occur for imbalance conditions significantly less than 25% where the governor response prevents the load shedding blocks from picking up and where frequency recovery times is are a function of governor response and system inertia. Likewise it makes sense to extend this line below 58 Hz to at least as low of a frequency as is covered by the generation protection curve spicily for the hydro generator as of Manitoba Hydro case.</p> <p>4. 4. Add a note to Attachment 1 that states, "Larger size UFLS programs (e.g., 60%) may require less restrictive (lower) underfrequency (as well as and/or longer time delays) due to island generation and protection characteristics. UFLS programs shedding more than 25% must also increase generation protection delay times and/or change set points to achieve coordination with load shedding. For example, Manitoba Hydro needs to shed more than 30% of the area load to achieve reasonable frequency recovery</p>

Organization	Yes or No	Question 9 Comment
		<p>in it island. In this case, the shedding of a higher percentage of load may allow the frequency to drop below 58.2 Hz for longer than 4 seconds, but the subsequent impacts on the hydro generator in these islands are acceptable. For R4.4, R4.5, R4.6 - Attachment 2: Generator Underfrequency and Overfrequency Attachments:</p> <p>5. The Generation Owner off-nominal frequency coordination requirements and coordination curves should be included in the PRC-006 standard and PRC-024 should be scrapped. How can PRC-006 even proceed with using curves from PRC-024 when PRC-024 is still being drafted and subject to change? We could approve PRC-006 only to find subsequent changes to PRC-024 have undermined everything. The generation curves which are used to set generation underfrequency protection need to be appropriate for the system studied and one size does not fit all. The generation protection curves in Attachments 1 and 2 appear to be someone's personal estimation of what is a reasonable amount of accelerated loss of life per event but the flaw is that this was developed without first finding out what is really needed to ensure a well coordinated UFLS plan that meets all of the other objectives (planning engineers need to be able to coordinate generation protection with load shedding frequency recovery times as part of the study process, as the recovery times are influenced by the design objectives of the UFLS program). This generation off-nominal frequency characteristic is not what manufacturers provide as limits on their machines. No technical justification was ever provided for these curves that were developed in PRC-024, and that justification is needed. It is insufficient to say that PRC-006 is justified in using this just because it came from PRC-024. The technical justification was never part of any NERC standards drafting effort. Limits of this nature should not be created arbitrarily, and have to be selected as part of the overall final compromise involved in UFLS design to ensure we give enough time for load shedding to operate under worst case conditions, and as much time as possible needs to be given for frequencies close to 60 Hz as UFLS events show that in the real world that things do not always work as planned and system frequency can stall out below 59.5 hz for a long time while operators try to deal with this by manually shedding load. If the generation protection curves are not appropriate for programs covering overloads beyond 25%, then the titles of the curves should qualify that they apply for a 0% to 25% imbalance and include a note that different settings may be needed to coordinate with UFLS programs that shed more than 25% of the island load. Volts/Hertz Performance Characteristic:</p> <p>6. The Volts/hertz requirement is not need in this standard. There are a couple of reasons. Voltage regulators automatically reduce voltage according to volts per hertz when in the automatic mode so they self protect. Industry recommendations/standards (IEEE C37.102 or IEEE C37.106, ANSI C50.13-1989, IEEE C57.12.00-2000) already exist that adequately address the volts/Hz issue. If voltage regulators are in automatic, the 110% volts/Hz limit kicks in between 57.2 Hz and 61.8 Hz assuming the voltage regulator holds terminal voltage within the allowed 1.05 pu to .95 pu range. Units with voltage regulators in manual will just trip when volts per Hertz protection picks up. Units are normally in automatic control so this is not a big worry. It appears this requirement is appropriate for programs which may experience frequencies below 57.2 Hz, but few programs will see frequencies this low. Of course that makes it very</p>



Organization	Yes or No	Question 9 Comment
		<p>easy to demonstrate that programs satisfy this requirement, but it still seems there is no need to put this in the standard. As such, we believe the Volts/Hz requirement is of questionable worth for programs covering overloads of up to 25%, and should be removed. Even if system frequency were to drop below 57.2 hz, this performance characteristic cannot presently be properly simulated in stability cases as the voltage regulator V/Hz controls are not presently included in generator exciter/voltage regulator models of the present power system modeling programs that are used for dynamic power system simulation.</p>
<p><b>Response: The SDT is specifying a minimum requirement of a 25% imbalance to design the UFLS program to. Regional standards (or Variances) can be developed to include larger imbalances. Our interpretation is that Equivalent Inertia Analysis is not sufficient to meet all of the requirements of the standard. We have clarified the language of R4 and the knee of the curves in Attachment 1 to clarify that the UFLS program should be designed such that a steady state frequency between 59.3 and 60.7 Hz is reached within 60 seconds. The SDT believes there is a need for V/Hz requirements because shedding load will cause voltages to climb, which may cause excitation systems / voltage regulators to reach the end of their range, which can lead to a V/Hz condition that could cause generators to trip through GSU protection or other similar protection systems. Therefore, the SDT believes that V/Hz of 1.18 p.u for 2 seconds, etc., can be reached at significantly higher frequencies than 57.2 Hz. The standard does not require modeling of V/Hz protection and only requires monitoring of voltage and frequency and designing the UFLS program to meet the performance criteria described in 3.2. No changes made.</b></p>		
ReliabilityFirst Engineering Staff	No	<p>1. It is not clear how the PC is supposed to enforce performance characteristic 3.3. Part 3.3 is written based on general over-excitation limits for generators and transformers. However, entities should already have over-excitation protection on critical equipment. Isn't the owner obligated to protect its equipment? Also, V/Hz at a bus is not a standard output of dynamic stability programs making it difficult to ensure compliance to part 3.3. It would be more useful if part 3.3 was expressed in terms that are commonly available such as voltage. Additionally, the meaningful per unit voltage is the machine or equipment base and the results would need to be scaled from the system base voltages.</p> <p>2. The reliance on curves in Attachments 1 and 2 is imprecise. The frequency and time coordinates of each change in slope should be given so that entities do not need to interpret it themselves. 3. The standard relies too heavily on the possible implementation of proposed standard PRC-024. 4. The proposed PRC-006-1 UFLS standard and companion PRC-024 establish tightly defined performance characteristics which at best will just barely work for 30% UFLS programs using 3 steps of 10% load shedding. More precisely, it works for a 30% UFLS program for a range of conditions, but not for all of the conditions that can exist or are expected to exist in various portions of ReliabilityFirst over the next five years. Thus, ReliabilityFirst staff believes that these performance characteristics coupled with declining governor response and declining equivalent inertia in the Eastern Interconnection, will encourage a redesign of one or both of the existing 30% UFLS programs within ReliabilityFirst.</p>
<p><b>Response: The SDT believes that there is confusion concerning the application of the curves. The goal of the UFLS is to control frequency during a</b></p>		

Organization	Yes or No	Question 9 Comment
<p>UFLS event such that generation does not trip. Project 2007-09 Generator Verification for draft Standard PRC-024 is developing the curves to establish the over- and under-frequency protection for the generation, so, the UFLS SDT is trying to stay within those curves by some margin, e.g., between the two curves of Attachment 1. The SDT recognizes that some generators may not meet those curves and wants the PC to specifically model the trip settings of those generators. We understand that V/Hz is not a standard output, but, it should not be a large effort to monitor voltage and frequency, divide the two, and integrate over each time step. The SDT received many comments on prior versions of this standard to make sure PRC-006 was coordinated with PRC-024 as the two were being drafted. We are taking the direction of the majority of commenters. No changes made.</p>		
<p>Northeast Power Coordinating Council</p>	<p>No</p>	<p>Although the DT's decision to replace the discrete points in these requirements with frequency time curves that achieve the same objective, the applicability requirement in Requirement R3.3, which addresses Volts per Hz performance characteristics, lists each generator bus and generator step-up transformer high-side bus associated with generating facilities defined in sub-requirements 3.3.1, 3.3.2, and 3.3.3. The facilities listed in the above sub-requirements appear to be quoted from the NERC Statement of Compliance Registry Criteria, Sections III.c.1 &amp; III.c.2. It is not clear why sub requirement 3.3.3 is necessary since it is simply a restatement of requirement 3.3.2. Suggest that 3.3.3 be eliminated and that 3.3.2 be re-written to be consistent with the Registry, Section III.c.2, "Generating plant/facility &gt; 75 MVA (gross aggregate nameplate rating) or when the entity has responsibility for any facility consisting of one or more units that are connected to the bulk power system at a common bus with total generation above 75 MVA gross nameplate rating."</p>
<p><b>Response: The SDT believes Requirement R3, Parts 3.3.1 through 3.3.3 are consistent with the Statement of Compliance Registry.</b></p>		
<p>Bonneville Power Administration</p>	<p>No</p>	<p>Each interconnection should establish discrete set points based upon stability and dynamic analysis. Discrete set points can help establish criteria which are measurable and performance-based for the applicable entities. The existing analysis tools available are unable to model continuous time/frequency curves and therefore specific measurements for all entities cannot be defined leaving the performance at the discretion of the PC. The Standard needs to be very explicit that the curves are interconnection performance curves and not entity specific set points. What is the technical justification and correlation of the curves to the UFLS Plans, i.e. where did these curves come from?</p>
<p><b>Response: The SDT believes that the degree of diversity in systems of various regions, particularly in the Eastern Interconnection, makes the determination of UFLS program design parameters an unrealistic goal for a continent-wide standard; some flexibility needs to be reserved to address regional needs. The standard does not preclude development of Regional UFLS standards and that approach may address WECC's desire to have one coordinated UFLS design. The under and over frequency performance curves are solely for checking frequency trajectories in dynamic simulations of UFLS program performance and should not be misunderstood as applying to UFLS relay set points. The over and under frequency versus time performance curves for UFLS were determined to coordinate with the Generator under and over frequency tripping curves (which have been also coordinated with the PRC-024 SDT) and to set a margin between the UFLS and generator curves.</b></p>		

Organization	Yes or No	Question 9 Comment
Tri-State Generation & Transmission Assoc.	No	<p>Each interconnection should establish discrete set points based upon stability and dynamic analysis. From discrete set points one can establish criteria which are measurable and performance based for the applicable entities. The existing analysis tools available are unable to model continuous time/frequency curves and therefore specific measurements for all entities cannot be defined leaving the performance at the discretion of the PC. Furthermore, the Standard needs to be very explicit that the curves are interconnection performance curves and not specific protective relay set points. It is recommended to combine Attachment 1 and Attachment 2 (which contain discrete set points) into a single graph, making frequency the abscissa, and requiring simulations to maintain frequencies inside the resulting envelope. R3.3. While the concern for loss of additional generation units because of their V/Hz protection schemes is understood, the bases for the 1.18pu and 1.1pu values are not evident and may not be technically supportable when compared against actual protection settings or allowable post-contingency voltage bands. Further, V/Hz protection settings vary across the system and it is unlikely adherence to this requirement will impact reliability. It will only increase dynamic analysis requirements. We recommend removing R3.3.</p>
<p><b>Response: The SDT believes that the degree of diversity in systems of various regions, particularly in the Eastern Interconnection, makes the determination of UFLS program design parameters an unrealistic goal for a continent-wide standard; some flexibility needs to be reserved to address regional needs. The standard does not preclude development of Regional UFLS standards and that approach may address WECC's desire to have one coordinated UFLS design. The SDT intends to combine Attachments 1 and 2 into one Attachment. The under and over frequency performance curves are solely for checking frequency trajectories in dynamic simulations of UFLS program performance and should not be misunderstood as applying to UFLS relay set points. Requirement R3, Part 3.3 is based on IEEE guidelines for setting V/Hz protection. The SDT has debated the question of Requirement R3, Part 3.3 and has decided to retain the V/Hz requirement. The SDT is aware that there have been instances in UFLS studies where V/Hz has been seen as a risk to the tripping of generation and does not wish to leave a possible gap in reliability.</b></p>		
IESO	No	<p>If the overfrequency characteristics are retained, it would be better to combine Attachment 1 and Attachment 2 into one curve. The curves without some explanation may not be consistently interpreted. Should the level line at the shortest times (e.g. &lt; 2 s) and vertical line at the longest time (e.g. &gt; 60s) for the Performance Characteristic be interpreted to mean UFLS tripping is permitted without delay below 58.0 Hz and is not permitted above 59.3 Hz?</p>
<p><b>Response: The SDT intends to combine Attachments 1 and 2 into one Attachment. The under and over frequency performance curves are solely for checking frequency trajectories in dynamic simulations of UFLS program performance and should not be misunderstood as applying to UFLS relay set points.</b></p>		
AECI	No	<p>It is unclear what the system frequency should be after the blue line ends.</p>
<p><b>Response: The SDT fully expects that UFLS simulations will not need to be run beyond 60 seconds and that steady-state conditions between 59.3 and</b></p>		

Organization	Yes or No	Question 9 Comment
<b>60.7 Hz should be achieved well before 60 seconds in most UFLS simulations.</b>		
MidAmerican Energy	No	R3.3 should be deleted as it does not directly apply. If volts / hertz requirements remain, they should be consistent with the proper IEEE standards.
<b>Response: The SDT has debated this question and has decided to retain the V/Hz requirement. The SDT is aware that there have been instances in UFLS studies where V/Hz has been seen as a risk to the tripping of generation and does not wish to leave a possible gap in reliability. Requirement R3, Part 3.3 is based on IEEE guidelines for setting V/Hz protection.</b>		
Southern California Edison Company	No	SCE agrees with WECC's position that "This approach fails to recognize the unique characteristics of the four individual interconnections. Frequency-time curves do not allow for specific and defined measurements and will leave individual entities defaulting to the lowest common denominator. If frequency-time curves are intended to define the boundaries, the determination of discrete set points would fall into the hands of the PCs leading to disagreements among entities. In addition, to determine the frequency-time curves through stability and dynamic modeling, one must establish discrete set points. Frequency-time curves are reverse engineering and require justification and correlation to the reliability of the interconnections - no such justification has been provided."
<b>Response: The SDT believes that the degree of diversity in systems of various regions, particularly in the Eastern Interconnection, makes the determination of UFLS program design parameters an unrealistic goal for a continent-wide standard; some flexibility needs to be reserved to address regional needs. The standard does not preclude development of Regional UFLS standards and that approach may address WECC's desire to have one coordinated UFLS design.</b>		
Western Electricity Coordinating Council	No	The devices which implement UFLS must have discrete setpoints. The standards must establish criteria which is measurable. This type of criteria is only measurable by study or actual performance following a UFLS event. The planning criteria may use curves but these must be translated to a setpoint which can be verified. Each interconnection should establish discrete set points based upon stability and dynamic analysis. From discrete set points one can establish criteria which are measurable and performance based for the applicable entities. The existing analysis tools available are unable to model continuous time/frequency curves and therefore specific measurements for all entities cannot be defined leaving the performance at the discretion of the PC. The Standard needs to be very explicit that the curves are interconnection performance curves and not entity specific set points. What is the technical justification and correlation of the curves to the UFLS Plans, i.e. where did these curves come from?
<b>Response: Each PC will need to devise UFLS Program design parameters that result in observance of the under and over frequency performance curves during dynamic simulations of under frequency events and islands. The under and over frequency performance curves are solely for checking frequency trajectories in dynamic simulations of UFLS program performance and should not be misunderstood as applying to UFLS relay set points.</b>		

Organization	Yes or No	Question 9 Comment
<p>The over and under frequency versus time performance curves for UFLS were determined to coordinate with the Generator under and over frequency tripping curves (which have been also coordinated with the PRC-024 SDT) and to set a margin between the UFLS and generator curves.</p>		
South Carolina Electric and Gas	No	<p>The graphical representation of the frequency-time curves alone allows plenty of margin for mis-interpretation of the curves data points. A "break-down" of the plotted curves should be clearly displayed (in conjunction with the graphical curve representation) in a table immediately below each frequency-time curve to further clarify the under- and over-frequency performance characteristic curves data points.</p>
<p><b>Response: The SDT intends to document the data points for the curves.</b></p>		
Exelon	No	<p>The standard lacks guidance as to what the trip settings should be. It is not clear as to how Attachment 1 should be used and doesn't provide specific detail for under frequency set points. Exelon disagrees that R3.3 is easier to understand. Clarification is needed as to where the underfrequency set points are. Do all entities contribute equally to Attachment 1? There needs to be a standardized relationship between GO and TO/DP participation in obtaining the desired level of system performance. There should also be explicit criteria as to what the expectations are for each individual entity. It should be clear that all UFLS entities are to participate equally and that larger entities will not be expected to carry the burden for smaller entities. There should be some recognition in the standard that UFLS schemes currently exist and effort should be made to avoid needlessly changing relays or settings on many thousands of installations if some arbitrary and common set points were to be determined by the PC, thus causing needless expense. It is likely desirable to have slightly different settings for UFLS across a footprint so as to not create load changes that are too abrupt. The current practice of allowing contractual agreements between GOs and DPs for additional load shedding as a voluntary business decision, in the event that a unit owner doesn't comply with the unit trip settings should be addressed.</p>
<p><b>Response: The under and over frequency performance curves are solely for checking dynamic simulations of UFLS program performance and should not be misunderstood as applying to UFLS relay set points. Requirement R3, Part 3.3 is based on IEEE guidelines for setting V/Hz protection. The Planning Coordinator, as part of the UFLS program design, will need to determine the participation level of the variously sized Transmission Owners and Distribution Providers. The SDT fully expects that existing UFLS programs will be sufficient to comply with the performance characteristic curves and the the Planning Coordinators will not need to arbitrarily redetermine UFLS design parameters. The SDT has addressed the matter of GO versus TO/DP obligation for non-conforming generators and has decided that, for the likely small amount of non-conforming generation, that it should be a small burden, if any, to be spread across multiple TO sand DPs.</b></p>		
FirstEnergy	No	<p>We are concerned about the coordination between this UFLS SDT and the GV SDT. It will be difficult to approve and begin implementing the PRC-006-1 standard while the PRC-024-1 standard is still under development and scheduled for approval and implementation at a much later date. For these requirements to be adequately coordinated, the two standards need to be developed, balloted and implemented at the same</p>

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Organization	Yes or No	Question 9 Comment
		time. Alternatively, consider adding the following statement in the PRC-006-1 Implementation Plan: "The Effective Date and implementation of this PRC-006-1 standard requires coordination with standard PRC-024-1. Excluding requirement R1, the Effective Date of PRC-006 shall be the later of 1) the completion of the Implementation Plan for PRC-006 or 2) the completion of the Effective Date of the PRC-024-1 standard upon completion of its Implementation Plan."
<p><b>Response: The UFLS (PRC-006) SDT has coordinated with the PRC-024 SDT. The SDT believes that even though the two standards are on different development schedules, there will not be miscoordination of the generator under and over frequency tripping curves, and the requirement on collection of data for the Planning Coordinators to obtain under and over frequency trip settings.</b></p>		
Ameren	No	While this is an improvement over the previous draft, we still believe that Requirement R3.3, dealing with generator V/Hz limitations, should not be part of this standard.
<p><b>Response: The SDT has debated this question and has decided to retain the V/Hz requirement. The SDT is aware that there have been instances in UFLS studies where V/Hz has been seen as a risk to the tripping of generation and does not wish to leave a possible gap in reliability.</b></p>		
Duke Energy	Yes	
Entergy Services	Yes	
Indiana Municipal Power Agency	Yes	
IRC Standards Review Committee	Yes	
MEAG Power	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
SERC Planning Standards Subcommittee	Yes	

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Organization	Yes or No	Question 9 Comment
SERC SC UFLS Standard Drafting Team	Yes	
Southern Company Transmission	Yes	
SPP System Protection and Control Working Group	Yes	
Tennessee Valley Authority (TVA)	Yes	
United Illuminating Company	Yes	
Y-W Electric Association, Inc.	Yes	
Progress Energy - Carolinas	Yes	The curves added as Attachments 1 and 2 are excellent. However, it would be helpful if a footnote to the curves provided the values of the “transition points” or breakpoints of the curves. For example on Attachment 1, there appears to be transition point at 60 seconds/58.85 Hz, but it is difficult to read exactly.
<b>Response: The SDT intends to document the data points for the curves.</b>		
Wisconsin Electric Power Company (dba We Energies)	Yes	We agree with the concept of using the frequency time performance curves instead of discrete points. However, we would like the SDT to provide additional technical background on the methodology utilized to develop both the underfrequency and overfrequency time performance curves beyond what was discussed in the “Review of Technical Changes to Standard” section in the preface of the “Unofficial Comment Form.”
<b>Response: The over and under frequency versus time performance curves for UFLS were determined to coordinate with the Generator under and over frequency tripping curves (which have been also coordinated with the PRC-024 SDT) and to set a margin between the UFLS and generator curves. That is about all that can be said.</b>		
NERC Staff	Yes	Yes, NERC staff supports the idea of better demonstrating coordination with the requirements proposed for PRC-024.
<b>Response: Thank you for your comment.</b>		

10. Besides replacing the discrete point thresholds in R7.1 and R7.2 (now parts 4.1 through 4.6 of Requirement R4) with curves, the SDT has clarified which generators with under- and underfrequency trip settings above and below these curves, respectively, must be included in the UFLS assessments in parts 4.1 through 4.6 of Requirement R4. The generators with non-conforming trip settings that must be included in the UFLS assessments are now limited to individual generating units greater than 20 MVA or generating plants/facilities greater than 75 MVA directly connected to the BES or any facility consisting of one or more units that are connected to the BES at a common bus with total generation above 75 MVA gross nameplate rating. This clarification also makes parts 4.1 through 4.6 consistent with the generator size and connection thresholds in part 3.3.1 of Requirement R3. Do you agree with this clarification?

**Summary Consideration:** In response to the comments received, The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of Attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard’s implementation plan (Project 2007-09 Generator Verification). As a result of the small percentage of generators and the registration issues, the SDT decided to conform with the Statement of Compliance Registry Criteria.

Organization	Yes or No	Question 10 Comment
Southern California Edison Company		SCE is unsure of the ramifications of this change and, therefore, cannot confirm that we are in agreement with the change.
<b>Response: Thank you for your comment</b>		
Long Island Power Authority	No	
GDS Associates	No	- Not sure what is the intent of this classification of generating units >20MVA, generating facilities (two or more units) directly connected to BES >75MVA and generating facilities connected to a common bus to BES >75MVA- Are the requirements for the two
<b>Response: The intent is to match the Statement of Compliance Registry Criteria.</b>		
AECI	No	AECI can understand how we should be responsible for our own data, but the data we use for others is only as good as the data we receive. It seems like this standard also needs to apply to generator owners



Consideration of Comments on Underfrequency Load Shedding — Project 2007-01

Organization	Yes or No	Question 10 Comment
<p><b>Response: The implementation plan and effective date language were changed to clarify that modeling of generator trip settings that do not conform with the curves of new Attachment 1 will only be effective after the Planning Coordinator receives the appropriate data in accordance with Project 2007-09 Generator Verification for draft Standard PRC-024 currently in development.</b></p>		
<p>Tri-State Generation &amp; Transmission Assoc.</p>	<p>No</p>	<p>Comments: Underfrequency is an issue of load and generation balance. It does not make sense to make the distinction of whether or not a generator or generating facilities directly connect to the BES. The loss of sizable generation has the same impact on frequency regardless of what voltage it was connected at. The thresholds used in the standards are registration thresholds for the GO/GOP function. There is nothing that would prohibit a PC, TO or TOP from establishing interconnection requirements for smaller generators that require compliance with an UFLS program if it was important to reliable BES operation</p>
<p><b>Response: The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard's implementation plan (Project 2007-09 Generator Verification). As a result of the small percentage of generators and the registration issues, the SDT decided to conform with the Statement of Compliance Registry Criteria. No change made.</b></p>		
<p>Exelon</p>	<p>No</p>	<p>Exelon feels that a table should be included with the curves. What was the source of the curves and the V/Hz requirements? The table seems to indicate that it is acceptable for the Eastern Interconnection to remain at 58.9 Hz for up to one minute. The data requirements for the assessment study should include additional data other than that for units out of compliance, i.e. all loads for the entire system as load is dropping.</p>
<p><b>Response: Formulas are now provided to supplement the curves. Requirement R4 has been modified to clarify that a steady state condition between 59.3 and 60.7 Hz is expected within 60 seconds, which is the intent of the vertical lines in the curves of Attachment 1. The source of the curves is to provide a margin between the curves developed in Project 2007-09 Generator Verification for draft Standard PRC-024. The V/Hz requirements are derived from IEEE standards. To clarify, units not in conformance with the curves are not necessarily out of compliance. Load modeling is an integral part of the dynamics database developed through the MOD standards.</b></p>		
<p>ReliabilityFirst Engineering Staff</p>	<p>No</p>	<p>It is not clear how the PC will determine which generating units are non-conforming as there is no requirement for the GO to provide this information in this standard. In a best case, it relies on the adoption of proposed standard PRC-024.</p>
<p><b>Response: The implementation plan and effective date language was changed to clarify that modeling of generator trip settings that do not conform with the curves of new Attachment 1 will only be effective after the Planning Coordinator receives the appropriate data in accordance with the Project 2007-09 Generator Verification for draft Standard PRC-024 currently in development.</b></p>		

Consideration of Comments on Underfrequency Load Shedding — Project 2007-01

Organization	Yes or No	Question 10 Comment
NERC Staff	No	<p>NERC staff disagrees with limiting the level of modeling in the assessments and feels that the modeling of generation should go beyond the 20 MVA and 75 MVA units as proposed. NERC staff believes that the UFLS design assessment should not be limited to modeling BES-connected resources. During a frequency excursion, all generation and frequency responsive devices “see” the excursion and react to it, regardless of size and location. Further, as penetration increases for similarly influential blocks of non-traditional resources (i.e., wind and solar farms) that have common underfrequency trip performance characteristics, it is essential that these dynamics and underfrequency trip characteristics should also be modeled and taken into account. This is not to say that each individual wind turbine or 500 kW generator must be modeled everywhere. However, when aggregate groupings of smaller units are known to be influential in dynamics analysis, or groupings of non-traditional resources with like frequency performance characteristics exist, it is essential that their influence be analyzed regardless of their voltage connection. The contribution to frequency response or common-mode tripping of such resources could mean the difference between a successful and unsuccessful UFLS system design.</p>
<p><b>Response: The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard’s implementation plan (Project 2007-09 Generator Verification ). As a result of the small percentage of generators and the registration issues, the SDT decided to conform with the Statement of Compliance Registry Criteria. No change made.</b></p>		
FirstEnergy	No	See our concerns in Question 9 about the coordination between this UFLS SDT and the GV SDT.
<p><b>Response: The implementation plan and effective date language were changed to clarify that modeling of generator trip settings that do not conform with the curves of new Attachment 1 will only be effective after the Planning Coordinator receives the appropriate data in accordance with Project 2007-09 Generator Verification for draft Standard PRC-024 currently in development.</b></p>		
Northeast Power Coordinating Council	No	<p>Similar to the comment provided in response to Question 9, requirements 4.3 and 4.6 are simply restatements of requirements 4.2 and 4.5, respectively. Suggest that requirements 4.3 and 4.6 be eliminated, and that requirements 4.2 and 4.5 be rewritten to contain the language dealing with the applicability of composite facilities as defined in the Registry Criteria Section II.c.2. Additionally, this draft version of PRC-006 states in requirements 4.1 through 4.6 (as well as in requirements 3.3.1 through 3.3.3) that the assessment of non-conforming generator trip settings is limited to those generators generally defined by the Registry Criteria, rather than assuming that the Functional Entities shown in the Applicability Section of the Standard are further defined by the NERC Registry Criteria. This limitation is not necessarily valid for situations where any generator, regardless of size, is material to the reliability of the BES (Registry Criteria III.c.4). In particular during the development of a supporting Regional Standard it is quite possible that the amount of generation</p>

Organization	Yes or No	Question 10 Comment
		<p>whose non-conforming performance characteristics may be tolerated, (and thus eliminated from assessment consideration), will be very limited. In regions where a great preponderance of the total generation is comprised of smaller units the tolerance threshold for ignoring generation below a bright line value defined by PRC-006 may invalidate conclusions of the Regional UFLS Program assessments. These conclusions presently demonstrate that the Regional Program meets the broad performance characteristics and/or requirements of PRC-006. The PRC-006 SDT should be aware that those RSDTs developing Regional Standards will, based on necessity, assess the applicability of Functional Entities and to the degree that a materiality issue is raised will bring that issue before the Regional Entity. Regional Entities would be expected to confirm that reliability is at stake prior to the issuance of a Compliance Guidance Statement, or other communication tool. The RSDT expects that the reach of applicability governing the registration and compliance obligations of any such Functional Entity identified under the “material to the reliability of the bulk power system” clause of the Registry Criteria will be clearly defined in each Regional Standard. Generation facilities which do not meet the NERC generator registration criteria could avoid obligations to meet generator underfrequency and overfrequency trip requirements presented in the standard. Significant amounts of generation categorized as such could cumulatively jeopardize the performance of a UFLS program. Possible future trends in the development of generation could increase the amount of installed generation capacity that does not meet the NERC generator registration criteria. Such trends may include the development of renewable distributed generation that is not connected to the BES system.</p>
<p><b>Response: The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard’s implementation plan (Project 2007-09 Generator Verification). As a result of the small percentage of generators and the registration issues, the SDT decided to conform with the Statement of Compliance Registry Criteria. No change made.</b></p>		
IESO	No	<p>The SDT should clarify the characteristics define where the generators are not permitted to trip rather than define where generators must trip. Correspondingly, it should be clarified for loads, the requirement defines the outer perimeter where UFLS loads must be tripped rather than to define where UFLS loads trip. The phrase; “directly connected to the BES” could be problematic. In the IESO-controlled grid most generators are connected to transmission system with a main output transformer. At many large generating stations, the low voltage bus of these MOTs where the generator is directly connected is not part of the BES while the high voltage bus is part of the BES. A restrictive interpretation of the present wording of the standard would limit applicability to only generating units captured under 3.3.3, What interpretation of “directly connected” was intended by the SDT? Elements of this continent-wide standard are viewed by the IESO as a means to improve reliability not as a justification to weaken existing good practices. Does the STD support retaining existing more stringent standards (e.g. lower underfrequency thresholds and higher overfrequency thresholds or both) for generating units at the Regional or Planning Coordinator level? For example, the IESO-controlled</p>

Organization	Yes or No	Question 10 Comment
		<p>grid mandate generating units &gt; 10 MW and generating facilities &gt; 50 MW directly connected to the IESO-controlled grid to have generator protection set at a level such that they do not trip over the NPCC criteria for generator underfrequency curve. We need to seek the SDTs view on whether these conditions are sufficient to satisfy the intent of the PRC-006 standard. The response of the SDT to the earlier question (see below) concerning the need for overfrequency settings as part of this standard was not satisfactory as new requirements should have a strong motivation. Our Area experienced frequency excursions above those proposed in this standard without material adverse effects. Generation trips at these frequency levels in 2003 would have been inconsistent with the purpose of providing last resort system preservation measures. What are these referenced withstand capabilities and are they applicable to all types of units? What evidence is known to the SDT that units experience a significant loss of life due to the events on August 14, 2003 now that more than six years has passed? Why does the SDT believe overfrequency thresholds are necessary to fulfill the Purpose of this standard? [Response: Thank you for your comments. The SDT has developed the overfrequency characteristic in Requirement R6.3 to coordinate with the overfrequency trip setting limits proposed in PRC-024. The trip setting limits were developed by the Generator Verification SDT based on the withstand capabilities of generating units. The concern with operation of generating units at off-nominal frequency is the cumulative fatigue effect, so it is possible that generating units experienced significant loss of life on August 14, 2003 even if the adverse effects were not readily observable immediately after this event.]</p>
<p><b>Response: The SDT believes that there is confusion concerning the application of the curves. The goal of the UFLS is to control frequency during a UFLS event such that generation does not trip. Project 2007-09 Generator Verification for draft Standard PRC-024 is developing the curves to establish the over- and under-frequency protection for the generation, so, the UFLS SDT is trying to stay within those curves by some margin, e.g., between the two curves of Attachment 1. The SDT recognizes that some generators may not meet those curves and wants the PC to specifically model the trip settings of those generators.</b></p> <p><b>The term “directly connected” is intended in the same fashion as it is used in the Statement of Compliance Registry Criteria.</b></p> <p><b>Regional standards can be more restrictive than the national standard.</b></p>		
Bonneville Power Administration	No	Underfrequency is an issue of load to generation balance regardless of the voltage of the interconnection.
<p><b>Response: The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of Attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard’s implementation plan (Project 2007-09 Generator Verification). As a result of the small percentage of generators and the registration issues, the SDT decided to conform with the Statement of Compliance Registry Criteria. No change made.</b></p>		
Western Electricity Coordinating	No	Underfrequency is an issue of load to generation balance. It does not seem to make sense to make the distinction of whether or not a generator or generating facilities directly connect to the BES. The loss of

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Organization	Yes or No	Question 10 Comment
Council		100MW of generation has the same impact on frequency if they are connected at 69kv or 500kv. The thresholds used in the standards are registration thresholds for the GO/GOP function and do not negate the impact of all generation on frequency response.
<p><b>Response: The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of Attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard’s implementation plan. As a result of the small percentage of generators and the registration issues, the SDT decided to conform with theStatement of Compliance Registry Criteria. No change made.</b></p>		
Wisconsin Electric Power Company (dba We Energies)	No	We agree with the concept of using the PRC-024 generator underfrequency and overfrequency tripping curves instead of discrete points. In addition, we agree with the generator size and connection threshold clarification. However, we continue to believe that this standard places a burden on the UFLS Entity to shed additional load to make up for generators which do not conform to the PRC-006/PRC-024 curves. For example, if an independent power producer did not conform with the PRC-006/PRC-024 curves, it places a burden on the UFLS Entity to potentially have to shed additional load, up to the generator’s rating, to make up for the non-conforming independent generator.
<p><b>Response: Generator conformance with Project 2007-09 Generator Verification for draft Standard PRC-024 is beyond the scope of this standard. The SDT simply wants to recognize that some generators may not conform with that the resulting PRC-024 standard. No change made.</b></p>		
Xcel Energy	No	We feel that our comment in the previous draft was not fully addressed. The dynamic simulation would need to include any small generators (<20MVA or <75MVA aggregate) that are not required to register, but together, could have a material impact on the BES. Additionally, it would need to be clear who is responsible for ensuring those material impacts are included in models/simulations. Distributed Generation (DG) is a growing concern that can have an impact on UFLS programs. Consider the need for adding that the assumptions related to DG be included in the R3 & R4 requirements. Additionally, the Statement of Compliance Registry lists additional criteria for generator registration (i.e. black start, determined to be material to BPS). Shouldn’t these be captured, or a more simple approach may be that all registered GOs be required to provide the requested data?
<p><b>Response: The SDT believes that there is a relatively small percentage of generation that is not registered and also has frequency trip settings that do not conform with curves of Attachment 1. In addition, many commenters have stated that the Planning Coordinator cannot model data that Generator Owners do not provide. Registered Generator Owners will provide the data through PRC-024 in accordance with that standard’s implementation plan (Project 2007-09 Generator Verification). As a result of the small percentage of generators and the registration issues, the SDT decided to conform with theStatement of Compliance Registry Criteria. No change made.</b></p>		

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Organization	Yes or No	Question 10 Comment
Ameren	Yes	
American Transmission Co.	Yes	
Duke Energy	Yes	
Entergy Services	Yes	
IRC Standards Review Committee	Yes	
Manitoba Hydro	Yes	
MEAG Power	Yes	
MidAmerican Energy	Yes	
MRO's NERC Standards Review Subcommittee (NSRS)	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
SERC Planning Standards Subcommittee	Yes	
SERC SC UFLS Standard Drafting Team	Yes	
South Carolina Electric and Gas	Yes	

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Organization	Yes or No	Question 10 Comment
Southern Company Transmission	Yes	
SPP System Protection and Control Working Group	Yes	
Tennessee Valley Authority (TVA)	Yes	
United Illuminating Company	Yes	
Y-W Electric Association, Inc.	Yes	
Progress Energy - Carolinas	Yes	<p>We agree with respect to the Planning Coordinator simulation requirements for modeling as stated in R4. However, the UFLS standard has no requirement for the Generator Owners to provide this information. We have been told that this might be included in PRC-024 (currently under development). This should be a condition for approval of PRC-006.</p> <p>Additionally, the Generator Owners should be required to notify the PC of any Manual (i.e. operator actions) that would result in a trip above/below the specified generator curves of Attachments 1 and 2. It is recognized that manual operator actions would typically be later than the approximately 60 seconds or less simulation times that a PC would use. However, this information regarding manual trips would be necessary for appropriate planning.</p>
<p><b>Response: The implementation plan and effective date language was changed to clarify that modeling of generator trip settings that do not conform with the curves of new Attachment 1 will only be effective after the Planning Coordinator receives the appropriate data in accordance with the Project 2007-09 Generator Verification for standard PRC-024 currently in development.</b></p>		
Indiana Municipal Power Agency	Yes	<p>When looking at generation in the RFC region and by going with generating units that are specified in the current sub requirements of requirement 4, the Planning Coordinators will be capturing 96 PERCENT of the generation in the RFC region in their UFLS program and design assessment (data supplied by RFC). When looking at generation between 69kV and 100kV, only about 2 PERCENT increase is gained in this area by requiring these Generation Owners to report information (this is making the assumption that all these lower voltage units have UFLS relays). One has to question the value of this increase in requiring these generating units to report information when load is not being captured that accurately and the modeling has a certain percent error. In addition, NERC reporting requirements will have to apply to these generating units connected between 69kV and 100 kV which will force the NERC registration of these units. NERC compliance has made</p>

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Organization	Yes or No	Question 10 Comment
		the statement on several documented occasions that if a new Generator Owner goes on the NERC registry, then that entity will have to meet ALL the NERC Generator Owner standard requirements in a NERC and FERC audit, NOT just the NERC UFLS standard. This would be a case where a standard drives the NERC Registry and IMPA does not believe that reliability standards should drive and change the NERC Registry.
<b>Response: Thank you for your comments.</b>		



11. The SDT has replaced Requirement R4 appearing in the previous (second) draft of the standard. Requirement R4 required each group of Planning Coordinators to develop a procedure for coordinating with groups of Planning Coordinators in neighboring regions within an interconnection to identify and reach agreement on islands between its region and neighboring regions within the interconnection. Requirement R4 was removed because procedures for coordination do not directly support reliability. In version 3 of the draft standard, any Planning Coordinator may now select islands including interconnected portions of the BES in adjacent Planning Coordinator footprints and Regional Entity footprints, without the need for coordinating this selection with neighboring regions (Requirement R1). The SDT has added a requirement for the Planning Coordinators to reach concurrence on the UFLS assessments for any islands identified by any one Planning Coordinator that encompasses more than one Planning Coordinator footprint (Requirement R5). Do you agree with this revision?

**Summary Consideration:** Many commenters expressed concern that Planning Coordinators cannot be expected to reach concurrence with another functional entity because it is outside their control to lead them to concurrence. The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on UFLS design assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. The ERO could be the final authority if it wishes to assume that role, otherwise there would be no final authority.

Organization	Yes or No	Question 11 Comment
FirstEnergy		We defer an opinion on this and leave it to the Planning Coordinators to decide if this requirement is feasible for them to implement.
GDS Associates	No	<p>- Requirement R1 is quite unclear. Not sure how the criteria will be developed especially to include the interconnected adjacent sections of the BES. What if one of the adjacent entities does not agree to the criteria? Is that OK because the Planning Coordinator will no longer join groups so is no need to coordinate?</p> <p><b>Response: The SDT believes that criteria for determination of islands should consider past events and system studies. The criteria may be as simple or complex as a Planning Coordinator desires. Since these criteria are used only to identify islands for UFLS assessments, adjacent entities do not need to agree.</b></p>
Tri-State Generation &	No	Comments: Elimination of Requirement R4 is acceptable; however, we believe that individual Planning Coordinators are not the entities to determine how islands should be formed. The current registration by

Organization	Yes or No	Question 11 Comment
Transmission Assoc.		<p>numerous entities as Planning Coordinators does not lend itself to a comprehensive individual island formation methodology. R2.3 seems to require each Planning Coordinator to ultimately divide into multiple islands or separate its transmission system from all other transmission systems as its own island. Part of the purpose of the UFLS program should be to mitigate the need to form islands by balancing total system loads and resources. It is an additional function to balance the loads and resources after the islands have been formed. We recommend eliminating R2.</p>
<p><b>Response: The SDT shares the concerns about Planning Coordinator registration. However, there are no other entities in the Functional Model that would be any better for this role. The problem is a registration issue and it is possible that some registered Planning Coordinators do not fit the Functional Model description very well.</b></p> <p><b>Requirement R2, Part 2.3 requires Regional Entity footprints to be identified as islands. Those islands are to be used only in UFLS design assessments, and the Planning Coordinators within each Regional Entity footprint must work with each other on the design assessments for those islands (R5). The intent of R2, Part 2.3 is to attempt to preserve the present regional coordination of UFLS plans and designs. There are no requirements to identify Planning Coordinator footprints as islands.</b></p> <p><b>UFLS cannot be expected to mitigate island formation. Most interconnections are large enough that a decline in frequency low enough to cause UFLS operations is highly unlikely unless the interconnection is broken into islands. Most UFLS operations are seen to occur following island formation. The SDT does not agree that balancing load and generation after island formation is an “additional” function of UFLS.</b></p> <p><b>R2 cannot be eliminated because islands must be identified in order to carry out the UFLS design assessments (R4).</b></p>		
Exelon	No	<p>Exelons concern is that neighboring Planning Coordinators will be making requests and setting criteria for the local planning coordinators and associated UFLS entities. We do not agree with the text “any Planning Coordinator may now select islands including interconnected portions of the BES in adjacent Planning Coordinator footprints and Regional Entity footprints, without the need for coordinating.”</p>
<p><b>Response: Identification of islands (R2) is for UFLS design assessments only (R4), a requirement that applies only to Planning Coordinators. UFLS entities are not affected, nor will a Planning Coordinator need to make requests of them or set criteria for them as far as island identification is concerned. The SDT believes the quoted text is necessary due to the wide range of island determination criteria (R1) that may be forthcoming.</b></p>		
Western Electricity Coordinating Council	No	<p>From an enforcement standpoint there is concern that if Planning Coordinator may choose its islands, what then is the process for getting “Planning Coordinators to reach concurrence on the UFLS assessments for any islands identified by any one Planning Coordinator”. Who is the final authority and how is the arrangement memorialized and notified? Also, please see comment to Question #8 concerning the role of the RA.</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern. The SDT still</b></p>		

Organization	Yes or No	Question 11 Comment
<p><b>believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on UFLS design assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. The ERO could be the final authority if it wishes to assume that role, otherwise there would be no final authority.</b></p>		
Bonneville Power Administration	No	<p>If each Planning Coordinator may choose its islands, what then is the process for getting “Planning Coordinators to reach concurrence on the UFLS assessments for any islands identified by any one Planning Coordinator”. Who is the final authority and how is the arrangement memorialized and notified? No clear definition of a Planning Coordinator footprint may impact adequate identification of and authority related to establishing concurrence.</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on UFLS design assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others. The ERO could be the final authority if it wishes to assume that role, otherwise there would be no final authority. No requirement exists to identify Planning Coordinator footprints as islands.</b></p>		
MidAmerican Energy	No	<p>Instead of reaching concurrence, entities should be just required to inform adjacent interconnected NERC entities of the assessment results. Otherwise entities could potentially be held responsible for inaction of another planning coordinator. The language could be changed to be consistent with the language in EOP-003 R3, such as, “Each Transmission Operator and Balancing Authority shall coordinate load shedding plans among other interconnected (entities)”.</p>
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on UFLS design assessments. EOP-003, Requirement R3 is problematic in that there is no clear definition of “coordinate.”</b></p>		
Pepco Holdings, Inc. - Affiliates	No	<p>It is difficult to see how this change corrected the described problem.</p>
<p><b>Response: It is a matter of ensuring that each requirement is linked to a reliability goal. The SDT believes that the change will be more acceptable to NERC and FERC approvers who are conscious of the need for each requirement to have a clear contribution to reliability.</b></p>		
Tennessee Valley Authority (TVA)	No	<p>R5 (and M5) is problematic in that it requires all affected PCs to reach concurrence. One PC might have larger margin requirements or a different methodology compared to another PC. These differences might not be reconcilable. We do not believe that a standard should require that one PC change its methods because another PC(s) does not agree with its methods, or agree that another method is acceptable that it finds a problem with. There needs to be a process in the event that PCs cannot reach concurrence. We recommend</p>

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Organization	Yes or No	Question 11 Comment
		that the following language be added to R5: “If concurrence cannot be reached, an individual Planning Coordinator in that island can demonstrate that its UFLS scheme meets the requirements by performing dynamic simulations that apply its UFLS scheme on the entire island.”
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter’s suggestion. The SDT still believes that coordination of UFLS plans is important enough that Planning Coordinators must work with each other on both design and event assessments. There may need to be some give and take among Coordinators with recognition that no one methodology or margin criterion is right to the exclusion of all others.</b></p>		
American Transmission Co.	No	Replace the words “reach concurrence with” with “provide UFLS design assessment results to”. Fulfillment of a compliance measure that involves reaching concurrence with another entity is dependent on the other entity and can be outside of the control of the Planning Coordinator. In addition, replace the words “other affected Planning Coordinators” with “other Planning Coordinators that have design assessment responsibilities for islands covered in the design assessment report. The qualification of “other affected Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter’s suggestion.</b></p>		
Manitoba Hydro	No	Replace the words “reach concurrence with” with “provide UFLS design assessment results to”. Fulfillment of a compliance measure that involves reaching concurrence with another entity is dependent on the other entity and can be outside of the control of the Planning Coordinator. In addition, replace the words “other affected Planning Coordinators” with “other Planning Coordinators that have design assessment responsibilities for islands covered in the design assessment report. The qualification of “other affected Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter’s suggestion.</b></p>		
MRO’s NERC Standards Review Subcommittee (NSRS)	No	Replace the words “reach concurrence with” with “provide UFLS design assessment results to”. Fulfillment of a compliance measure that involves reaching concurrence with another entity is dependent on the other entity and can be outside of the control of the Planning Coordinator. In addition, replace the words “other affected Planning Coordinators” with “other Planning Coordinators that have design assessment responsibilities for islands covered in the design assessment report. The qualification of “other affected Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.

Organization	Yes or No	Question 11 Comment
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern, though with a slightly different approach than the commenter’s suggestion.</b></p>		
Entergy Services	No	See above comment to questions #2 and #4.
SERC SC UFLS Standard Drafting Team	No	see above comment to questions #2 and #4.
Southern Company Transmission	No	see above comment to questions #2 and #4.
Progress Energy - Carolinas	No	See above comments to Questions #2 and #4.
Duke Energy	No	See comments above on questions #2 and #4.
IESO	No	The requirement to reach concurrence is outside of the capability of any single Planning Coordinator as concurrence requires at least two Planning Coordinators. The SDT should consider reformulating this requirement in terms of the actions it believes each Planning Coordinator must perform to reach concurrence with its fellow Planning Coordinators.
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern.</b></p>		
IRC Standards Review Committee	No	We agree with the need for Planning Coordinators in neighboring regions “to identify and reach agreement on islands between its region and neighboring regions”. However, we believe new problems have been introduced. First, 2.3 under R2 is arbitrary and lacks any technical basis. There is no reason for splitting a island based on regional boundaries. Additionally, we are concerned that R1 may be viewed as an attempt to predict islands that may occur. Will a PC be held non-compliant if they predict incorrectly. There requirement needs to be clear that it is intended solely for the purpose of designing UFLS “islands”.
<p><b>Response: The intent of Requirement R2, Part 2.3 is to attempt to preserve the present regional coordination of UFLS plans and designs. Requirement R2, Part 2.3 requires Regional Entity footprints to be identified as islands. Those islands are to be used in UFLS design assessments only, and the Planning Coordinators within each Regional Entity footprint must work with each other on the design assessments for those islands (R5). The SDT believes that this goes as far as practical to address the need to coordination UFLS plans within a region. (The SDT agrees that there is no technical reason for designating Regional Entity footprints as islands.)</b></p> <p><b>R1 does not require Planning Coordinators to predict islands that may occur in the future; it only requires criteria for island identification in order for the design assessments in R4 to be conducted. A Planning Coordinator cannot be judged non-compliant for failing to predict the future, but an</b></p>		

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Organization	Yes or No	Question 11 Comment
<b>unpredicted islanding event may be a reason to revisit the criteria.</b>		
AECI	No	<p>What if somebody else, with more stringent criteria than us, identifies us as an island and wants us to then conform to their more stringent criteria? It seems like if we did not identify them, the burden should not be placed on us. Also there seems to be potential for the actions of another utility to determine our compliance.</p> <p><b>Response: The criteria required in R1 are for island identification only and are only to be applied by the Planning Coordinator that came up with them. No other Planning Coordinator is required to use or comply with another’s R1 criteria. However, when the R4 assessment is performed, the other Planning Coordinator(s) in an island that spans two or more Planning Coordinator footprints will need to work with each other on the design assessments (R5) for those islands. (Note: R5 and R13 have been modified to address other commenter’s concerns with the term “concurrency.”)</b></p>
Ameren	Yes	
Indiana Municipal Power Agency	Yes	
Long Island Power Authority	Yes	
MEAG Power	Yes	
NERC Staff	Yes	
Northeast Power Coordinating Council	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
ReliabilityFirst Engineering Staff	Yes	
SERC Planning Standards Subcommittee	Yes	

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Organization	Yes or No	Question 11 Comment
South Carolina Electric and Gas	Yes	
SPP System Protection and Control Working Group	Yes	
Y-W Electric Association, Inc.	Yes	
Wisconsin Electric Power Company (dba We Energies)	Yes	<p>Although we agree with the revision, we disagree with carrying forward the legacy concept of using an entire Regional Entity’s footprint as an island. It is highly unlikely that the entire Regional Entity footprint would become an island. What is the technical justification for the continuation of the legacy concept of studying islands consisting of the entire Regional Entity’s footprint? In addition, similar to the concurrence that the Planning Coordinators need to reach in R5, concurrence needs to be reached between the Planning Coordinator(s) and the UFLS Entity on the UFLS program design and schedule for application. R9 needs to be revised as follows: “The Planning Coordinator(s) and each UFLS entity shall reach concurrence on the UFLS program design and schedule for application in each Planning Coordinator footprint in which the UFLS entity owns assets. Upon concurrence, each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for application determined by its Planning Coordinator(s) in each Planning Coordinator footprint in which it owns assets.” Measurement M9 needs to be revised to include the concurrence. The Data Retention and Violation Severity Level sections need to be updated accordingly. Similar to the concurrence that the Planning Coordinators need to reach in R5, concurrence needs to be reached between the Planning Coordinator(s) and the Transmission Owner on the automatic switching of Elements in accordance with the UFLS program design and schedule for application. R10 needs to be revised as follows: “The Planning Coordinator(s) and each Transmission Owner shall reach concurrence on the automatic switching of Elements in accordance with the UFLS program design and schedule for application in each Planning Coordinator footprint in which the Transmission Owner owns transmission. Upon concurrence, each Transmission Owner shall provide automatic switching of Elements in accordance with the UFLS program and schedule for application determined by the Planning Coordinator(s) in each Planning Coordinator footprint in which it owns transmission.” Measurement M10 needs to be revised to include the concurrence. The Data Retention and Violation Severity Level sections need to be updated accordingly.</p>
<p><b>Response: The Regional Entity footprint islands are to be used in UFLS design assessments only, and the Planning Coordinators within each Regional Entity footprint must work with each other on the design assessments for those islands (R5). The SDT believes that this goes as far as practical to address the need to coordination UFLS plans within a region. The intent of Requirement R2, Part 2.3 is to attempt to preserve the present regional coordination of UFLS plans and designs. (The SDT agrees that there is no technical reason for designating Regional Entity footprints as islands.)</b></p>		

**Consideration of Comments on Underfrequency Load Shedding — Project 2007-01**

Organization	Yes or No	Question 11 Comment
<p>Several other commenters have expressed concern with use of the term “concurrency” and the SDT has modified R5 and R13 to address those concerns by removing “concurrency.” The SDT agrees that UFLS Entities should have opportunity to provide input to the Planning Coordinator on what will be required of them. R14 has now been added to the standard and requires a peer review of a Planning Coordinator’s design and schedule for implementation by the UFLS Entities. Hopefully, this addresses, at least in part, the commenter’s suggestions.</p>		
Xcel Energy	Yes	<p>As long as the requirement as written still permits PCs to coordinate and select one or more islands between them to consider we are ok. Please clarify that R1 does not require that each PC must come up with their own unique island to consider.</p>
<p><b>Response: R1 only requires island identification criteria, not island identification, which is R2. Also, there are no requirements to identify Planning Coordinator footprints as islands. The only required islands are those portions of a system designed to island (Requirement R2, Part 2.2) and the Regional Entity footprint or interconnection islands (Requirement R2, Part 2.3).</b></p>		
United Illuminating Company	Yes	<p>Replace "reach" with "obtain".</p>
<p><b>Response: The SDT believes either term adequately conveys the intent and declines to make the change.</b></p>		



**12. The SDT added a Requirement R10 that requires each Transmission Owner to provide automatic switching of Elements in accordance with the UFLS program design. The SDT added this requirement in response to comments submitted in the second posting of the standard that indicated that automatic switching of Elements may be important as part of the UFLS program design. Do you agree with this requirement?**

**Summary Consideration:**

Many commenters expressed concern that “switching of Elements” is not clear. The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this ‘providing’ these elements is a function that would be performed by Transmission Owners.

Organization	Yes or No	Question 12 Comment
Western Electricity Coordinating Council		Requirement R10 is unclear and needs to be rewritten to assure the applicability.
<p><b>Response: The SDT added this additional distinction for the purposes stated in Requirement R10. The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Wisconsin Electric Power Company (dba We Energies)	No	<p>Although we agree with the intent of this requirement, similar to the concurrence that the Planning Coordinators need to reach in R5 &amp; R13, concurrence needs to be reached between the Planning Coordinator(s) and the Transmission Owner on the automatic switching of Elements in accordance with the UFLS program design and schedule for application. R10 needs to be revised as follows: “The Planning Coordinator(s) and each Transmission Owner shall reach concurrence on the automatic switching of Elements in accordance with the UFLS program design and schedule for application in each Planning Coordinator footprint in which the Transmission Owner owns transmission. Upon concurrence, each Transmission Owner shall provide automatic switching of Elements in accordance with the UFLS program and schedule for application determined by the Planning Coordinator(s) in each Planning Coordinator footprint in which it owns transmission.” Measurement M10 needs to be revised to include the concurrence. The Data Retention and Violation Severity Level sections need to be updated accordingly. Similar to the concurrence that the Planning Coordinators need to reach in R5 &amp; R13, concurrence needs to be reached between the Planning Coordinator(s) and the UFLS Entity on the UFLS program design and schedule for application. R9 needs to be revised as follows: “The Planning Coordinator(s) and each UFLS entity shall reach concurrence on the UFLS program design and schedule for application in each Planning Coordinator footprint in which the UFLS entity owns assets. Upon concurrence, each UFLS entity shall provide automatic</p>

Organization	Yes or No	Question 12 Comment
		tripping of Load in accordance with the UFLS program design and schedule for application determined by its Planning Coordinator(s) in each Planning Coordinator footprint in which it owns assets.” Measurement M9 needs to be revised to include the concurrence. The Data Retention and Violation Severity Level sections need to be updated accordingly.
<p><b>Response: The SDT understands your concern and has added Requirement R14, which requires notification of UFLS entities of the UFLS program design and schedule for application and a requirement to respond to feedback received.</b></p>		
Tri-State Generation & Transmission Assoc.	No	<p>Comments: Since “UFLS entity” already includes Transmission Owners, requirement R10 is unnecessary and “automatic switching of Elements” ought to be combined into R9 from R10 and then R10 can be deleted.</p> <p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>UFLS programs should be developed by the Reliability Assurer, not individual Planning Coordinators.</p> <p><b>Response: Our current understanding of the standards development process is that requirements written which apply to Reliability Assurer/Regional Reliability Organizations cannot be enforced the same way as other requirements. This standard is under development as a direct result of this particular issue and was identified as a part of a set of standards for having “fill in the blank” requirements. The SDT has crafted Requirements R5 and R13 in order to allow for and encourage coordination among PCs. This standard does not preclude the RRO/RA from performing this coordination function, but does not include a requirement for the RRO/RA for this purpose.</b></p>
American Transmission Co.	No	Consideration should be given to replacing “Transmission Owner” with “UFLS Entity” because the automatic switching of distribution Elements (e.g. capacitor banks) may be more effective and practical UFLS design than restricting the scope of the requirement to just transmission Elements.
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
FirstEnergy	No	FE questions the need for this requirement and the Applicability Section item 4.3. FE asks that the SDT provide some examples of the reliability need related to frequency control for this requirement. If high voltage and automatic capacitor bank switching is the issue we don't believe that rises to a need as a reliability requirement within a UFLS standard. Voltage control should remain a separate issue from controlling frequency that this standard aims to address. Load shedding associated with UFLS is just one of many reasons why proper voltage control - through automatic Element switching of a capacitor bank - would be

Organization	Yes or No	Question 12 Comment
		needed for the transmission system. If there are other technical reasons for this requirement please clarify.
<p><b>Response: Some members of the UFLS SDT have experience with these types of component switching which are integral to certain UFLS schemes where sudden loss of load can quickly negate the necessity of these reactive compensation devices and, in some instances, transmission lines. The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Tennessee Valley Authority (TVA)	No	<p>It is not clear what is included in automatic switching. If it is the automatic switching of Elements for the sake of removing load, it would appear to be covered under R9.</p> <p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>R10 refers to “Elements” and M10 refers to “Facilities”. In both R9 and R10, suggest replacing the word “provide” with “implement”.</p> <p><b>Responses: The SDT agrees and has edited R10 and M10 to amend this discrepancy.</b></p>
SERC Planning Standards Subcommittee	No	<p>It is not clear what is included in automatic switching. This requirement is so vague that it does not appear to add anything in addition to the UFLS program design that it is intended to address. It appears that anything that R10 may be designed to address is already covered by R9.</p>
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Ameren	No	<p>It is not clear what should be included in automatic switching. This requirement is vague. It appears that Requirement R9 would address anything that Requirement R10 would have been intended to cover.</p>
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Northeast Power Coordinating Council	No	<p>Limiting applicability to only the TO limits the thrust of this requirement in cases where other FM entities are responsible for switching of elements that support the UFLS program. The Drafting Team should consider modifying R4 to include a requirement to model any automatically switched elements related to a UFLS program. The Drafting Team should consider a requirement to inform the Planning Coordinator of the implementation of UFLS relay inhibit schemes (e.g. voltage inhibit) and any associated parameters.</p>

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Organization	Yes or No	Question 12 Comment
		Knowledge of such information would be vital to the Planning Coordinator when assessing the performance of a UFLS program.
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Bonneville Power Administration	No	Requirement R10 is unclear and needs to be rewritten to clearly address the applicability.
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Southern California Edison Company	No	SCE would hope that the drafting team provides additional clarification on this requirement, as we are unsure of what the team intends by “automatic switching of Elements”.
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
MRO’s NERC Standards Review Subcommittee (NSRS)	No	The NSRS basically agrees with the concept that owners of automatic switching elements provide control in accordance with the UFLS program requirements. Therefore, [1] consideration should be given to replacing “Transmission Owner” with “UFLS entity” because the automatic switching of distribution Elements (e.g. capacitor banks) may be more effective and practical in UFLS program design than restricting the scope of the requirement to just transmission Elements.[2] And consider replacing “UFLS program” with “UFLS program requirements”.
<p><b>Response: The SDT added this additional distinction for the purposes stated in Requirement R10. The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
IESO	No	The STD may wish to consider reworking R10 in a format that matches changes to applicability. Within the IESO footprint, low voltage capacitors may be switched as part of the ULFS program. In some cases, these capacitors would belong to Distribution Providers rather than Transmission Owners. “Each UFLS entity shall provide automatic switching of Elements in accordance with the UFLS program and schedule for application determined by the Planning Coordinator(s) in each Planning Coordinator footprint.”
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to</b></p>		

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Organization	Yes or No	Question 12 Comment
<p><b>control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Xcel Energy	No	<p>We have concerns that R9 &amp; R10 provide the Authority of a PC to direct investment and actions to another entity, without the agreement from that entity. Thus we feel that R5 should be modified to require concurrence from each affected UFLS Entity as well.</p>
<p><b>Response: The SDT understands your concern and has added Requirement R14, which requires notification of UFLS entities of the UFLS program design and schedule for application and a requirement to respond to feedback received.</b></p>		
Duke Energy	No	<p>We question whether/how this requirement would apply to a Transmission Owner who has UFLS on distribution circuits. It’s unclear to us how this would be determined by the Planning Coordinator.</p>
<p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
MEAG Power	No	<p>What are automatic switching of elements? Does it mean that the TO needs to switch capacitor banks, or does it refer to the breakers equipped with UF relays? If it is referring to capacitor banks, is this applicable near major generation busses?</p>
<p><b>Response: The SDT has clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
Y-W Electric Association, Inc.	No	<p>Y-WEA is concerned about this requirement in that it seems to require the installation of facilities rather than just relays. 16 USC 824o (a)(3) gives NERC the authority to regulate existing facilities and planned additions or modifications to those facilities, not to prompt or require modifications or additions to the existing facilities. This proposed requirement seems to run afoul of this section of the USC.</p>
<p><b>Response: The SDT has added Requirement R14, which requires notification of UFLS entities of the UFLS program design and schedule for application and a requirement to respond to feedback received.</b></p> <p><b>The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p>		
AECI	Yes	

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Organization	Yes or No	Question 12 Comment
Exelon	Yes	
Illinois Municipal Electric Agency	Yes	
Indiana Municipal Power Agency	Yes	
IRC Standards Review Committee	Yes	
Long Island Power Authority	Yes	
Manitoba Hydro	Yes	
MidAmerican Energy	Yes	
NERC Staff	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
ReliabilityFirst Engineering Staff	Yes	
South Carolina Electric and Gas	Yes	
SPP System Protection and	Yes	

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Organization	Yes or No	Question 12 Comment
Control Working Group		
United Illuminating Company	Yes	
Entergy Services	Yes	<p>It is not clear what is included in automatic switching. Illustrative examples would be helpful to clarify what is meant (e.g. automatic switching of a capacitor to avoid overvoltage).</p> <p><b>Response: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>R10 refers to “Elements” and M10 refers to “Facilities.”, please change one of the references for consistency. In both R9 and R10, replace the word “provide” with “implement.”</p> <p><b>Respond: The SDT agrees and has edited R10 and M10 to amend this discrepancy.</b></p>
SERC SC UFLS Standard Drafting Team	Yes	<p>It is not clear what is included in automatic switching. Illustrative examples would be helpful to clarify what is meant (e.g. automatic switching of a capacitor to avoid overvoltage).</p> <p><b>Respond: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>R10 refers to “Elements” and M10 refers to “Facilities.” In both R9 and R10, replace the word “provide” with “implement.”</p> <p><b>Respond: The SDT agrees and has edited R10 and M10 to amend this discrepancy.</b></p>
Southern Company Transmission	Yes	<p>It is not clear what is included in automatic switching. Illustrative examples would be helpful to clarify what is meant (e.g. automatic switching of a capacitor to avoid overvoltage).</p> <p><b>Respond: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>R10 refers to “Elements” and M10 refers to “Facilities.” In both R9 and R10, replace the word “provide” with “implement.”</p> <p><b>Respond: The SDT agrees and has edited R10 and M10 to amend this discrepancy.</b></p>

Organization	Yes or No	Question 12 Comment
Progress Energy - Carolinas	Yes	<p>It is not clear what would be included in automatic switching. Illustrative examples would be helpful to clarify what is meant (e.g. automatic switching out of a capacitor bank to avoid overvoltage when designed as part of the UFLS scheme).</p> <p><b>Respond: The SDT has further clarified R10 to include the “automatic switching of capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of under frequency load shedding” and believes this is a function which would be performed by Transmission Owners.</b></p> <p>R10 refers to “Elements” and M10 refers to “Facilities”. Revise to make consistent. In both R9 and R10, replace the word “provide” with “implement.”</p> <p><b>Respond: The SDT agrees and has edited R10 and M10 to amend this discrepancy.</b></p>



13. The SDT added new Requirements, R11 through R13. Requirement R11 requires each Planning Coordinator, in whose footprint a BES islanding event resulting in system frequency excursions below the initializing set points of the UFLS program, to conduct and document an assessment of the performance of UFLS equipment and the UFLS program effectiveness within one year of event actuation. Requirement R12 requires Planning Coordinators, in whose islanding event assessments (per R11) UFLS program deficiencies are identified, to conduct and document a UFLS design assessment to consider the identified deficiencies within two years of event actuation. Lastly, Requirement R13 requires Planning Coordinators, in whose footprint a BES islanding event affecting multiple Planning Coordinator footprints and resulting in system frequency excursions below the initializing set points of the UFLS program, to reach concurrence with the other affected Planning Coordinators on the event assessment results before event assessment is complete. These requirements were added to provide continuity on the requirement to assess UFLS program effectiveness for events since there is a similar requirement (with different applicable entities) currently in PRC-009-0, but PRC-009-0 is to be retired on approval of this standard. Do you agree with the addition of these requirements?

**Summary Consideration:**

Several commenters indicated that the requirement for the event assessment should contain a lower threshold. However, PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.

Several comments questioned whether the Planning Coordinator is the appropriate entity for UFLS activities. The SDT believes the Planning Coordinator, having a wide-area view and the necessary technical skills, is the proper entity to oversee the design and implementation of UFLS. There is also wide industry support for the Planning Coordinator as the proper entity for UFLS. The Reliability Assurer has a very limited scope of activity in the Functional Model and is not a user, owner or operator of the BES.

Organization	Yes or No	Question 13 Comment
Western Electricity Coordinating Council		From and enforcement standpoint whom is the final authority and how are arrangements memorialized and notified? In addition these requirements address issues which indicate a failure or inadequacy of the initial required planning process and appear overall to allow PC to establish a program based on inadequate study and then fix it after an event which proves the program was inadequate. All without any violation of standard.
<p><b>Response:</b> (Note: R5 and R13 have been modified to address other commenter’s concerns with the term “concurrence.”) For R13, the ERO could be the final authority if it wishes to assume that role, otherwise there would be no final authority.</p>		

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Organization	Yes or No	Question 13 Comment
<p>Whether a UFLS plan or design is able to secure or would fail to secure a system or island during an underfrequency event is something that cannot be predicted ahead of time. This in no way suggests that the design and assessment requirements (R3 and R4) are somehow inadequate. 100 percent reliability cannot realistically be assured; it is possible that an underfrequency event may occur that exceeds the UFLS design parameters, but that is an acceptable risk. R12 is included so that, should an event occur where a UFLS design failed to secure a system or was otherwise deficient, a process to at least consider improvements or enhancements would be followed.</p>		
FirstEnergy		<p>We defer an opinion on this and leave it to the Planning Coordinators to decide if this requirement is feasible for them to implement.</p>
GDS Associates	No	<p>- Requirement R11. The one year deadline it seem very long. There can be multiple events before assessment is due. - Requirement R12. Same comment regarding the assessment due date.   <b>Response: Some events can be very complicated and take much time to figure out. The SDT would rather allow too much time, rather than not enough time.</b></p>
American Transmission Co.	No	<p>1. For R11, replace “Each Planning Coordinator, in whose footprint . . . to evaluate” with “When a disturbance event occurs in a Planning Coordinator’s footprint that involves automatic UFLS program operation or frequency excursions should have activated UFLS program operation, and a final disturbance report is required per EOP-004, each Planning Coordinator shall evaluate within one year of the disturbance event:”. 2. Either part of or after R11, there should be a requirement that “Each Planning Coordinator shall provide a preliminary event assessment report to the other Planning Coordinators who must conduct an assessment of the event for review at least 90 days before finalizing the event assessment report.3. For R13, replace “in whose footprint . . .on the event assessment result” with “that conducts an UFLS design assessment (per R12) for islands where other Planning Coordinators have design assessment responsibilities shall provide a preliminary design assessment report to those Planning Coordinators for review at least 90 days before finalizing the design assessment report. The reference to the event assessment report should be part of R11. The qualification of “event affecting multiple Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors</p>
<p><b>Response: 1. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b>  <b>2, 3. These suggestions are more administrative to facilitate agreement. Requirements should try to spell out the reliability objective to be achieved and less how a reliability objective may be achieved.</b></p>		
Manitoba Hydro	No	<p>1. For R11, replace “Each Planning Coordinator, in whose footprint . . . to evaluate” with “When a disturbance event occurs in a Planning Coordinator’s footprint that involves automatic UFLS program operation or frequency excursions should have activated UFLS program operation, and a final disturbance report is</p>

Organization	Yes or No	Question 13 Comment
		<p>required per EOP-004, each Planning Coordinator shall evaluate within one year of the disturbance event”.</p> <p>2. We have concerns about specifying that the evaluation must be complete within one year we know that some historical studies of events that included UFLS took longer than one year [e.g., three years] to complete. Therefore, we would prefer a more flexible wording, a longer time frame to be used in this requirement. Perhaps the requirement could stipulate that the evaluation must begin within 6 months and be completed within the schedule set by the investigative team.</p> <p>3. For R13, replace “in whose footprint . . . on the event assessment result” with “that conducts an UFLS design assessment (per R12) for islands where other Planning Coordinators have design assessment responsibilities shall provide a design assessment report to those Planning Coordinators.” The reference to the event assessment report should be part of R11. The qualification of “event affecting multiple Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.</p>
<p><b>Response: 1. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p> <p><b>2. One year should be sufficient for the majority of events.</b></p> <p><b>3. This suggestion is more administrative to facilitate agreement. Requirements should try to spell out the reliability objective to be achieved and less how a reliability objective may be achieved.</b></p>		
MRO’s NERC Standards Review Subcommittee (NSRS)	No	<p>1. For R11, replace “Each Planning Coordinator, in whose footprint . . . to evaluate” with “When a disturbance event occurs in a Planning Coordinator’s footprint that involves automatic UFLS program operation or frequency excursions that should have activated UFLS program operation, and a final disturbance report is required per EOP-004, each Planning Coordinator shall evaluate within one year of the disturbance event”.</p> <p>2. We have concerns about specifying that the evaluation must be complete within one year we know that some historical studies of events that included UFLS took longer than one year [e.g., three years] to complete. Therefore, we would prefer a more flexible wording, a longer time frame to be used in this requirement. Perhaps the requirement could stipulate that the evaluation must begin within 6 months and be completed within the schedule set by the investigative team.</p> <p>3. For R13, replace “in whose footprint . . . on the event assessment result” with “that conducts an UFLS design assessment (per R12) for islands where other Planning Coordinators have design assessment responsibilities shall provide a design assessment report to those Planning Coordinators.” The reference to the event assessment report should be part of R11. The qualification of “event affecting multiple Planning Coordinators” is too vague and could be interpreted and categorized differently by various entities and auditors.</p> <p>4. R11.2, change the wording to replace “effectiveness of the UFLS program” with “conformance with UFLS program design”. Because no UFLS program can be designed to be effective for all possible contingency scenarios but should be effective for the contingency</p>

Organization	Yes or No	Question 13 Comment
		scenarios for which it was designed.
<p><b>Response: 1. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p> <p><b>2, 3. These suggestions are more administrative to facilitate agreement. Requirements should try to spell out the reliability objective to be achieved and less “how” a reliability objective may be achieved.</b></p> <p><b>4. The SDT disagrees because this change reduces the scope of the assessment. Conformance with UFLS program design is a subpart of effectiveness of UFLS program. The overall effectiveness is still of interest even if an event is beyond design capability.</b></p>		
Wisconsin Electric Power Company (dba We Energies)	No	<p>Although we agree with the intent of these requirements, the assessment required in R11 &amp; R13 should only be completed for significant UFLS events.</p> <p>Similarly, the significant event concept should be applied to the islanding criteria in R1. In fact, the SDT mentions this concept in the “Review of Technical Changes to Standard” section in the preface of the “Unofficial Comment Form.” In the aforementioned section, the SDT uses a 500 MW qualifier which states “...resulting in 500 MW or greater of...” for R11 &amp; R13 but the qualifier was not added to version 3 of the draft standard. Instead of an arbitrary 500 MW qualifier, the SDT should define islands of significance by looking at the transmission interface that feeds the potential island area and what is the IROL (Interconnection Reliability Operating Limit) for that transmission interface. If the amount of load in the island area is below the IROL limit, the island would not be considered as a basis in the UFLS program design and excluded from a UFLS assessment following a UFLS event. This significant event concept based on IROL should be included in the islanding criteria in R1 and the assessment requirements of R11 and R13.</p> <p>Similar to the concurrence that the Planning Coordinators need to reach in R13, concurrence needs to be reached between the Planning Coordinator(s) and the UFLS Entity on the UFLS program design and schedule for application. R9 needs to be revised as follows:</p> <p style="padding-left: 40px;">“The Planning Coordinator(s) and each UFLS entity shall reach concurrence on the UFLS program design and schedule for application in each Planning Coordinator footprint in which the UFLS entity owns assets. Upon concurrence, each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for application determined by its Planning Coordinator(s) in each Planning Coordinator footprint in which it owns assets.”</p> <p>Measurement M9 needs to be revised to include the concurrence.</p> <p>The Data Retention and Violation Severity Level sections need to be updated accordingly.</p> <p>Similar to the concurrence that the Planning Coordinators need to reach in R13, concurrence needs to be reached between the Planning Coordinator(s) and the Transmission Owner on the automatic switching of</p>

Organization	Yes or No	Question 13 Comment
		<p>Elements in accordance with the UFLS program design and schedule for application.</p> <p>R10 needs to be revised as follows:</p> <p style="padding-left: 40px;">“The Planning Coordinator(s) and each Transmission Owner shall reach concurrence on the automatic switching of Elements in accordance with the UFLS program design and schedule for application in each Planning Coordinator footprint in which the Transmission Owner owns transmission. Upon concurrence, each Transmission Owner shall provide automatic switching of Elements in accordance with the UFLS program and schedule for application determined by the Planning Coordinator(s) in each Planning Coordinator footprint in which it owns transmission.”</p> <p>Measurement M10 needs to be revised to include the concurrence.</p> <p>The Data Retention and Violation Severity Level sections need to be updated accordingly.</p>
<p><b>Response: The arbitrary qualifier of 500 MW was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p> <p><b>The Regional Entity footprint islands are to be used in UFLS design assessments only, and the Planning Coordinators within each Regional Entity footprint must work with each other on the design assessments for those islands (R5). The SDT believes that this goes as far as practical to address the need to coordination UFLS plans within a region. The intent of R2.3 is to attempt to preserve the present regional coordination of UFLS plans and designs. (The SDT agrees that there is no technical reason for designating Regional Entity footprints as islands.)</b></p> <p><b>Several other commenters have expressed concern with use of the term “concurrence” and the SDT has modified R5 and R13 to address those concerns by removing “concurrence.” The SDT agrees that UFLS Entities should have opportunity to provide input to the Planning Coordinator on what will be required of them. R14 has now been added to the standard and requires a peer review of a Planning Coordinator’s design and schedule for implementation by the UFLS Entities. Hopefully, this addresses, at least in part, the commenter’s suggestions.</b></p>		
Entergy Services	No	As noted in our response to question #4 above, we recommend elimination of R13. The 500 MW limitation discussed in the background section should be included in R11. There is no need to evaluate smaller islanding events.
<p><b>Response: See SDT response to Q4 comment. The arbitrary qualifier of 500 MW was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p>		
SERC SC UFLS Standard Drafting Team	No	As noted in our response to question #4 above, we recommend elimination of R13. The 500 MW limitation discussed in the background section should be included in R11. There is no need to evaluate smaller islanding events.

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Organization	Yes or No	Question 13 Comment
<p><b>Response: See SDT response to Q4 comment. The arbitrary qualifier of 500 MW was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p>		
Southern Company Transmission	No	As noted in our response to question #4 above, we recommend elimination of R13. The 500 MW limitation discussed in the background section should be included in R11. There is no need to evaluate smaller islanding events.
<p><b>Response: See SDT response to Q4 comment. The arbitrary qualifier of 500 MW was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p>		
Progress Energy - Carolinas	No	As per our comment to Question #4, we recommend R13 be deleted. The 500 MW limitation discussed in the background section of the comment form should be included in R11. There is no need to require assessments for smaller islanding events.
<p><b>Response: See SDT response to Q4 comment. The arbitrary qualifier of 500 MW was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p>		
Northeast Power Coordinating Council	No	At present, the language in the implementation plan describes a one year phase in for compliance intended to provide Planning Coordinators sufficient time to develop or modify UFLS programs and to establish a schedule for implementation. NPCC has already developed an implementation plan. It must be noted that the NPCC implementation plan is a six year plan and the final language of the NERC implementation plan with regard to the overall approved term will have to be closely monitored.
<p><b>Response: Thank you for your comment. The schedule for implementation by UFLS Entities is at the discretion of the Planning Coordinator and is not set by the standard.</b></p>		
MidAmerican Energy	No	MidAmerican notes that past under frequency event analyses are complex and that the minimum time frames for analysis and implementation should be increased to at least 2 years and exception requests for additional time should be allowed.
<p><b>Response: One year should be sufficient for the majority of events.</b></p>		
Duke Energy	No	R11 and R12 are okay, but R13 contains the problematic requirement to “reach concurrence”, as discussed in our responses to questions #2 and #4 above. Perhaps R13 could be revised to require affected Planning Coordinators to share event assessment results and respond to technical questions/comments within a

Organization	Yes or No	Question 13 Comment
		prescribed time period.
<b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern</b>		
AECI	No	R13 seems unreasonable. If we do everything in our power to concur with another planning coordinator and they do not concur, our compliance is then determined by somebody else's actions.
<b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern.</b>		
Bonneville Power Administration	No	Requirement R13 needs to be rewritten because language is unclear, i.e. what is meant by "of UFLS actuated loss of load"?
<b>Response: R13 was revised and the phrase, ". . . of UFLS actuated loss of load occurs. . ." was deleted.</b>		
IESO	No	Small islands and frequency excursions below the initializing set points can result from recognized contingencies. In some cases, the island formed will be so small as to provide no meaningful evaluation for UFLS program effectiveness. Some additional guidance from the SDT is needed to define the nature of events that are intended to trigger an evaluation under R11.
<b>Response: PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b>		
Ameren	No	The intention of R13 is good but a provision should be provided for each Planning Coordinator to comply with R11 in the event that it is not feasible to satisfy R13 within the one year assessment period. The Planning Coordinator's compliance with R11 should not be dependent on actions by others. The 500 MW limitation discussed in the background section should be included in R11 to make sure this thought is not lost if/when the standard becomes effective. There is no need to evaluate smaller islanding events.
<b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern. The 500 MW qualifier was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b>		
SERC Planning Standards Subcommittee	No	The intention of R13 is good but a provision should be provided for each Planning Coordinator to comply with R11 in the event that R13 is not satisfied within the one year assessment period specified in R11. A Planning Coordinator's compliance with R11 should not be dependent on actions by other Planning Coordinators. The 500 MW limitation discussed in the background section should be included in R11. There is no need to

Organization	Yes or No	Question 13 Comment
		evaluate smaller islanding events.
<p><b>Response: The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern. The 500 MW qualifier was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009.</b></p>		
Tennessee Valley Authority (TVA)	No	TVA agrees with the intent of transitioning post-event analysis from PRC-009-0 to the proposed PRC-006-1 standard, but has the following comments:R11: The “500 MW or greater” threshold included in the background information should be included in R11.R13/M13: TVA has similar concerns with the requirement to reach concurrence with other affected PCs that are expressed in response to Question 11 for R5/M5. We recommend elimination of R13/M13, or the addition of language that would eliminate the compliance of a PC having dependency on the concurrence of one or more other PCs.
<p><b>Response: The 500 MW qualifier was an item of earlier SDT discussion and inadvertently was left in the comment form. PRC-009, a FERC approved standard, does not have an event threshold, and PRC-006 is absorbing PRC-009. The SDT agrees that reaching concurrence could be problematic and has modified R5 and R13 to address this concern.</b></p>		
Xcel Energy	No	We don’t believe these should be limited to islanding events. Suggest rewording to indicate that “events resulting in frequency excursions below initializing set points of the UFLS program, or actuate automatic switching or tripping shall ...”
<p><b>Response: The purpose of automatic switching of capacitor banks, Transmission Lines and reactors is to control voltage as a result of under frequency load shedding. This requirement was added to assist in recovery as a result of under-frequency load shedding.</b></p>		
Exelon	Yes	
Indiana Municipal Power Agency	Yes	
IRC Standards Review Committee	Yes	
Long Island Power Authority	Yes	
MEAG Power	Yes	



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Organization	Yes or No	Question 13 Comment
NERC Staff	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
ReliabilityFirst Engineering Staff	Yes	
South Carolina Electric and Gas	Yes	
SPP System Protection and Control Working Group	Yes	
United Illuminating Company	Yes	
Y-W Electric Association, Inc.	Yes	
Tri-State Generation & Transmission Assoc.	Yes	<p>Comments: The concept is correct but we believe an individual Planning Coordinator is the wrong entity to assess the operation and revise it. There is no clear jurisdiction for a PC. This should remain the responsibility of the Regional Assurer (RA), which is the agent(s) for overall coordination within the interconnection or sub-area. Why is “of UFLS actuated loss of load occurs” included in R13 but not in R11? It does not seem to add any information but does seem to unnecessarily complicate the requirement. This again seems like an argument for having the Regional Assurer involved because concurrence between Planning Coordinators is required. The language is unclear in R13 and should be re-written.</p>
<p><b>Response:</b> The SDT believes the Planning Coordinator, having a wide-area view and the necessary technical skills, is the proper entity to oversee the design and implementation of UFLS. There is also wide industry support for the Planning Coordinator as the proper entity for UFLS. The Reliability Assurer has a very limited scope of activity in the Functional Model and is not a user, owner or operator of the BES.</p> <p><b>R13 was revised and the phrase, “. . . of UFLS actuated loss of load occurs. . .” was deleted.</b></p>		

14. The industry identified a need for a variance for the Québec Interconnection within NPCC to address the physical characteristics of the Québec system. This variance allows frequency decline to be arrested at a lower threshold and higher frequency overshoot without jeopardizing reliability because the installed generation in the Québec Interconnection is 98 percent hydraulic. The variance also establishes a different capacity threshold for the generating units for which underfrequency and overfrequency trip settings must be modeled to address concerns that by 2020, 10 percent of the installed capacity in Québec may be located at plants less than 75 MVA. The SDT has proposed the variance that meets the needs of the Québec interconnection in the third draft of the standard. In particular SDT developed the variance to Requirement R3 parts 3.1 and 3.2 and Requirement R4 parts 4.1 through 4.6. The variance to these requirements reference separate under and overfrequency curves included as attachments 1A and 2A to the standard. Do you agree with this Variance?

**Summary Consideration:**

The standard drafting team received support for the variance. Several un-related comments were received and the standard drafting team provided responses to those comments below.

Organization	Yes or No	Question 14 Comment
MEAG Power		No comment.
Xcel Energy		No comments
Western Electricity Coordinating Council		The standard and performance requirements should reflect the individual interconnections and not a continent wide standard allowing for the uniqueness of each interconnection to be addressed similar to Hydro Quebec's variance. There is not a place to provide a response to question 15 from the unofficial word verison, so it is being provided here. Q 15 While the concern for loss of additional generation units because of their V/Hz protection schemes is understood, the bases for the 1.18pu and 1.1pu values are not evident and may not be technically supportable when compared against actual protection settings or allowable post-contingency voltage bands. Further, V/Hz protection settings vary across the system and it is unlikely adherence to this requirement will impact reliability. It will only increase dynamic analysis requirements. We recommend removing R3.3.
<p><b>Response: The V/Hz is derived from IEEE standards. The standard allows the Planning Corodinators within a region to work together to develop a</b></p>		

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Organization	Yes or No	Question 14 Comment
<b>program accounting for the characteristics of each Interconnection or region. No change made.</b>		
Tri-State Generation & Transmission Assoc.	No	Comments: The standard should adequately recognize the performance characteristics of different type of generation and a variance should not be required. Faster acting and greater inertia systems should be allowed the operating margins appropriate to their systems. Real differences exist between interconnections. The standard and its performance requirements should reflect this fact. This would allow for the uniqueness of each interconnection to be addressed similar to Hydro Quebec's variance.
<b>Response: The standard allows the Planning Coordinators within a region to work together to develop a program accounting for the characteristics of each Interconnection or region. No change made.</b>		
Bonneville Power Administration	No	The standard and performance requirements should reflect the individual interconnections and not a continent-wide standard. This would allow for the uniqueness of each interconnection to be addressed similar to Hydro Quebec's variance. Other Comments: While the concern for loss of additional generation units because of their V/Hz protection schemes is understood, the bases for the 1.18pu and 1.1pu values are not evident and may not be technically supportable when compared against actual protection settings or allowable post-contingency voltage bands. Further, V/Hz protection settings vary across the system and it is unlikely adherence to this requirement will impact reliability. It will only increase dynamic analysis requirements. We recommend removing R3.3.
<b>Response: The standard allows the Planning Coordinators within a region to work together to develop a program accounting for the characteristics of each Interconnection or region. No change made.</b>		
Ameren	Yes	
American Transmission Co.	Yes	
Entergy Services	Yes	
Exelon	Yes	
FirstEnergy	Yes	
IESO	Yes	

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Organization	Yes or No	Question 14 Comment
Indiana Municipal Power Agency	Yes	
IRC Standards Review Committee	Yes	
Long Island Power Authority	Yes	
MidAmerican Energy	Yes	
MRO's NERC Standards Review Subcommittee (NSRS)	Yes	
NERC Staff	Yes	
Northeast Power Coordinating Council	Yes	
Northeast Utilities	Yes	
Oncor Electric Delivery	Yes	
Pepco Holdings, Inc. - Affiliates	Yes	
Progress Energy - Carolinas	Yes	
ReliabilityFirst Engineering Staff	Yes	
SERC SC UFLS Standard Drafting Team	Yes	
South Carolina Electric and Gas	Yes	
Southern Company Transmission	Yes	

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Organization	Yes or No	Question 14 Comment
SPP System Protection and Control Working Group	Yes	
Tennessee Valley Authority (TVA)	Yes	
United Illuminating Company	Yes	
Wisconsin Electric Power Company (dba We Energies)	Yes	
Y-W Electric Association, Inc.	Yes	
SERC Planning Standards Subcommittee	Yes	The comments expressed herein represent a consensus of the views of the above named members of the SERC Planning Standards Subcommittee only and should not be construed as the position of SERC Reliability Corporation, its board or its officers.
<b>Response: Thank you</b>		
Manitoba Hydro	Yes	We are contemplating a variance. However, this variance must apply to other areas such as Manitoba Interconnection within MRO to address the physical characteristics of the Manitoba system. Manitoba system physical characteristics are very much similar to Quebec system. More than 90 % of installed generation in the Manitoba Interconnection is hydraulic. Manitoba Hydro may provide modifications to attachments 1B and 2B that would be applicable for Manitoba hydro area and cover UFLS program for an imbalance of more than 25%.
<b>Response: Thank you. Variances requested will be reviewed.</b>		
The California ISO	Yes	We request a WECC Regional variance for WECC to use its own set-points that are applicable to WECC members. (similar to what Hydro Quebec has done.)
<b>Response: This comment process is not the method to request a variance. Variances requested will be reviewed.</b>		