

## Underfrequency Load Shedding (UFLS) SAR Drafting Team Meeting

March 26, 2007 — 10 a.m.–5 p.m. Eastern Daylight Saving Time

### WebEx and Conference Call

☎ Consortium conference server at phone number 1(732)694-2061

Conference code is 1160032607

WebEx Site: <https://nerc.webex.com/>

WebEx Meeting number: 711 045 604

WebEx Meeting password: standards

## Agenda

- 1) Administrative
  - a. Roll call — Dave Taylor
    - Paul Attaway — Georgia Transmission Corporation
    - Larry E. Brusseau — Midwest Reliability Organization
    - Jonathan Glidewell — Southern Company Transmission Company
    - Patrick Huntley — SERC Reliability Corporation
    - Mark J. Kuras — PJM Interconnection, L.L.C.
    - Robert W. Millard — ReliabilityFirst Corporation
    - Steven Myers — Electric Reliability Council of Texas, Inc.
    - Mak Nagle — Southwest Power Pool
    - Robert J. O'Keefe — American Electric Power
    - John E. Odom — Florida Reliability Coordinating Council
    - Quoc Pham — Oklahoma Municipal Power Authority
    - Kenneth J. Wilson — Western Electricity Coordinating Council
    - Richard Young — American Transmission Company, LLC
    - Guy V. Zito — Northeast Power Coordinating Council, Inc.
    - David Taylor — North American Electric Reliability Corporation
  - b. Antitrust Compliance Guidelines (**Attachment 1b**) — Dave Taylor
  - c. Approve meeting notes from the January 22–23, 2007 meeting of the UFLS SAR drafting team in Austin, TX (**Attachment 1c**) — Richard Young
  - d. Reminder — the announcement for self-nomination for the standard drafting team for Project 2007-01 UFLS has been issued (**Attachment 1d**). Anyone wishing to continue working on this project should submit their name for the Standard Drafting Team. — Dave Taylor
- 2) SAR Development
  - a. Review schedule (**Attachment 2a**) — Dave Taylor

- b. Update on any regional UFLS drafting efforts. Each of the regions will be asked to provide a short update on any recent progress in regional UFLS drafting efforts. — Richard Young
  - c. Draft responses to each comment submitted on the second posting of the SAR (**Attachment 2c**) — Richard Young
  - d. Modify the SAR (**Attachment 2d**) based on discussion of comments submitted on the second posting of the SAR — Richard Young
  - e. Discuss disposition of the SAR. The drafting team must decide whether to post the SAR for a third time or recommend to the Standards Committee to move the SAR into the standards drafting phase of the project. — Richard Young
- 3) Summarize action items — Richard Young
  - 4) Select date and time for the next meeting (if any – if the team decides to move the project into the standard drafting phase, this will be the last meeting of the SAR drafting team) — Richard Young



## **NERC Antitrust Compliance Guidelines**

### **I. General**

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

### **II. Prohibited Activities**

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.

### **III. Activities That Are Permitted**

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and

adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation and Bylaws are followed in conducting NERC business. Other NERC procedures that may be applicable to a particular NERC activity include the following:

- Reliability Standards Process Manual
- Organization and Procedures Manual for the NERC Standing Committees
- System Operator Certification Program

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.



## Underfrequency Load Shedding (UFLS) SAR Drafting Team Meeting

ERCOT Offices  
 ERCOT Austin 168  
 7620 Metro Center Drive  
 Austin, Texas 78744  
 (512) 225-7000

January 22, 2007 1–5 p.m. Central Time  
 January 23, 2007 8 a.m.–2 p.m. Central Time

### Meeting Notes

#### 1) Attendance

Paul Attaway — Georgia Transmission Corporation  
 Jonathan Glidewell — Southern Company Transmission Company  
 Patrick Huntley — SERC Reliability Corporation  
 Mark Kuras — PJM Interconnection, L.L.C.  
 Robert Millard — ReliabilityFirst Corporation  
 Steven Myers — Electric Reliability Council of Texas, Inc.  
 Farzaneh Tafreshi — Electric Reliability Council of Texas, Inc.  
 Mak Nagle — Southwest Power Pool  
 Robert O'Keefe — American Electric Power  
 John E. Odom — Florida Reliability Coordinating Council  
 Quoc Pham — Oklahoma Municipal Power Authority  
 Kenneth Wilson — Western Electricity Coordinating Council  
 Richard Young — American Transmission Company, LLC  
 Guy V. Zito — Northeast Power Coordinating Council, Inc.  
 Gerry Cauley — North American Electric Reliability Corporation  
 David Taylor — North American Electric Reliability Corporation

#### 2) Antitrust & Administrative

David Taylor reviewed the NERC Antitrust Guidelines with the group.

#### 3) Meeting Summary:

- a. Gerry Cauley presented a PowerPoint presentation reviewing with the group what the Standards Committee expects of them. Topics included:
  - i. Review of standards processes and roles
  - ii. Drafting team responsibilities and decision-making
  - iii. Work plan and improvements to standards
  - iv. Drafting team products and tools

- b. David Taylor presented a proposed schedule for the development of the SAR and standards associated with Project 2007-01 to the group consistent with the schedule identified in NERC's three-year reliability standards development plan for Project 2007-01. The group concurred with the schedule as proposed.
  - c. Richard Young coordinated the election of the vice-chair of the UFLS SAR drafting team. Jonathan Glidewell of Southern Company Transmission Company was elected vice-chair of the group.
  - d. The group spent the vast majority of the meeting:
    - i. reviewing the comments received from the first posting of the draft SAR for Project 2007-01,
    - ii. developing reply comments for incorporation into a comment report for the SAR for Project 2007-01, and
    - iii. modifying the draft SAR for Project 2007-01 based on discussions of the comments submitted on the first posting of the SAR.
  - e. David Taylor volunteered to draft a SAR Comment Form for the next posting of the SAR for Project 2007-01 based on the discussions held during the review of the comments received on the first posting of the SAR.
  - f. The group agreed to submit a request to the Standards Committee for the purpose of soliciting nominations for the standard drafting team for Project 2007-01. The team agreed that the changes made to the SAR as a result of the comments received were more administrative/formatting, rather than substantial and that the second posting of the SAR will result in a final SAR suitable for submittal to the Standards Committee for approval. The group realizes the time it takes to finalize a standards drafting team and recommends that activity take place in parallel with the finalization of the SAR. The team would like the request for nominations for the standard drafting team to be presented at the February 9 Standards Committee meeting in the hopes that both the standard drafting team and the SAR for Project 2007-01 can be approved by the Standards Committee at their March meeting.
- 4) Summarize action items:
- a) The SAR drafting team agreed with a number of commenters that the standards dealing with relay maintenance and testing addressed in a single project (but not Project 2007-01):
    - PRC-005 (Project 2008-04)
    - PRC-008 (Project 2007-01)
    - PRC-011 (Project 2008-02)
    - PRC-017 (Project 2008-04)
    - PRC-018, Requirement 6 (Project 2007-011)

Richard Young will forward this recommendation to NERC staff for consideration.

- b) David Taylor will draft a SAR Comment Form for the next posting of the SAR for Project 2007-01 based on the discussions held during the review of the comments received on the first posting of the SAR. The draft Comment Form will be distributed to the group for comments.

- c) David Taylor will submit a request to Rich Schneider and Maureen Long for Standards Committee action at their February 9 meeting for soliciting volunteers for the Project 2007-01 UFLS standard drafting team.
- 5) Date and time for the next meeting
- A webcast and conference call will be held February 12, 2007 from 10 a.m.–1 p.m. eastern time as the next meeting of the UFLS SAR drafting team; however, the group agreed to coordinate activities between now and then via e-mail to the maximum extent possible.

## Nomination Form — Underfrequency Load Shedding Standard Drafting Team

Please return this form to [sarcomm@nerc.com](mailto:sarcomm@nerc.com) by **March 29, 2007**. For questions, please contact Gerry Adamski at 609-452-8060 or [gerry.adamski@nerc.net](mailto:gerry.adamski@nerc.net)

Name:	
Organization:	
Address:	
Office Telephone:	
E-mail:	
<p><b>Please briefly describe your experience and qualifications to serve on the Underfrequency Load Shedding Standard Drafting Team. Prefer experience in developing load shedding plans, in specifying criteria for load shedding plans, in testing load shedding plans, or in analyzing load shedding events. Previous experience working on or applying NERC or IEEE standards is beneficial, but not a requirement.</b></p>	
<b>I represent the following NERC Reliability Region(s) (check all that apply):</b>	<b>I represent the following Industry Segment (check one):</b>
<input type="checkbox"/> ERCOT	<input type="checkbox"/> 1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/> 2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/> 3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/> 4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/> 5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/> 6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/> 7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/> 8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/> 9 — Federal, State, and Provincial Regulatory or other Government Entities
	<input type="checkbox"/> 10 – Regional Reliability Organizations and Regional Entities



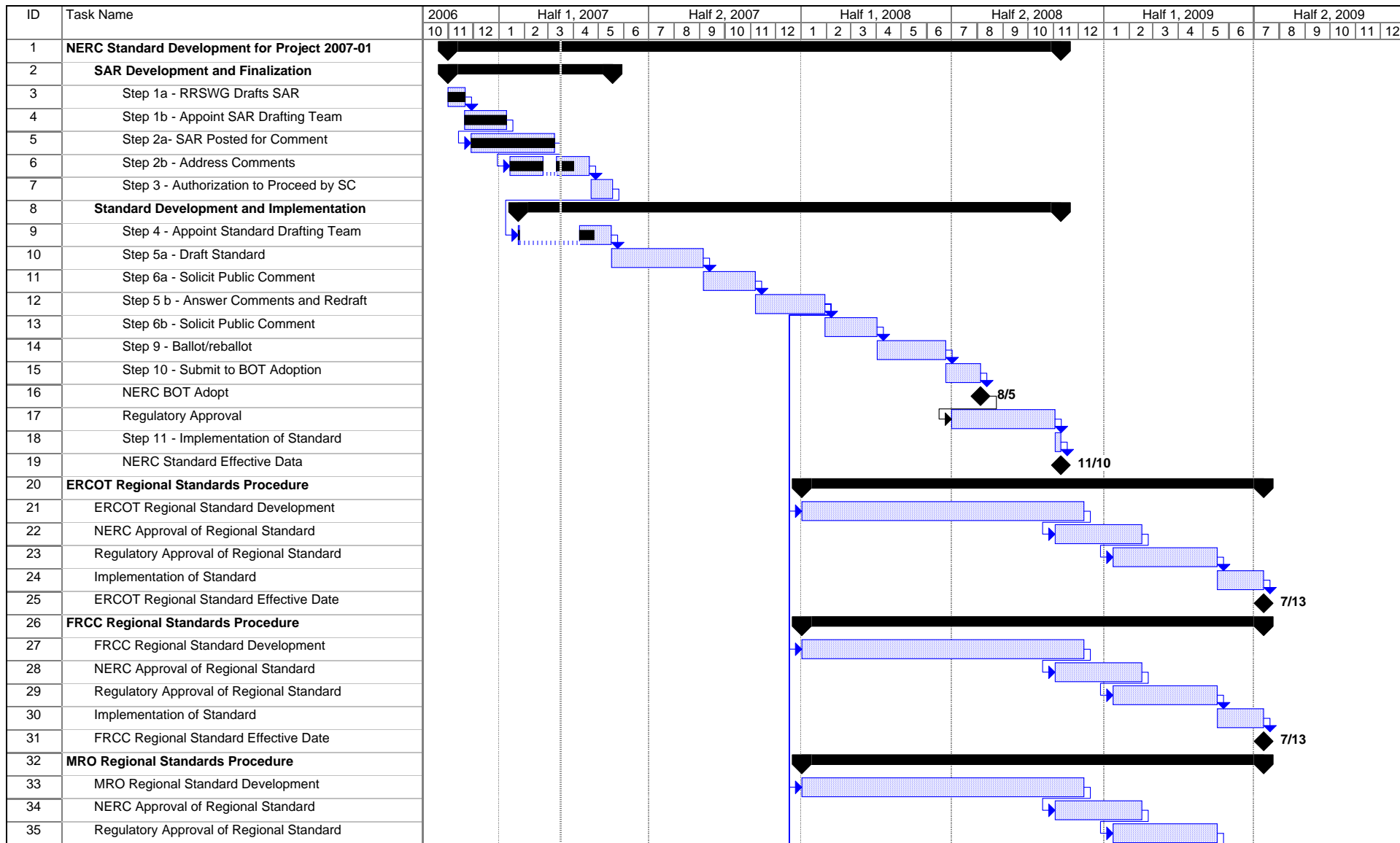
## Nomination Form — Underfrequency Load Shedding Standard Drafting Team

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<b>Check the responsible entities<sup>1</sup> in which you have expertise or responsibilities:</b>	
<input type="checkbox"/> Reliability Coordinator	<input type="checkbox"/> Transmission Service Provider
<input type="checkbox"/> Balancing Authority	<input type="checkbox"/> Transmission Owner
<input type="checkbox"/> Interchange Authority	<input type="checkbox"/> Load Serving Entity
<input type="checkbox"/> Planning Coordinator	<input type="checkbox"/> Distribution Provider
<input type="checkbox"/> Transmission Operator	<input type="checkbox"/> Purchasing-Selling Entity
<input type="checkbox"/> Generator Operator	<input type="checkbox"/> Generator Owner
<input type="checkbox"/> Transmission Planner	<input type="checkbox"/> Resource Planner
	<input type="checkbox"/> Market Operator
<b>Provide the names and contact information for two references who could attest to your technical qualifications and your ability to work well in a group.</b>	
Name:	Office Telephone:
Organization:	E-mail:
Name:	Office Telephone:
Organization:	E-mail:

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<sup>1</sup> These responsible entities are defined in the Functional Model, Version 3 which is downloadable from the following Web site: <http://www.nerc.com/~filez/functionalmodel.html>



Project: Project 2007-01 UFLS Date: Fri 3/16/07	Task		Rolled Up Task		External Tasks	
	Progress		Rolled Up Milestone		Project Summary	
	Milestone		Rolled Up Progress		Group By Summary	
	Summary		Split			



## **Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

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The Underfrequency Load Shedding SAR requesters thank all commenters who submitted comments on Draft 2 of the Underfrequency Load Shedding SAR. This SAR was posted for a 30-day public comment period from February 8 through March 9, 2007. The requesters asked stakeholders to provide feedback on the standard through a special standard Comment Form. There were 17 sets of comments, including comments from more than 31 different people from more than 15 companies representing 9 of the 10 Industry Segments as shown in the table on the following pages.

Based on the comments received, the drafting team is recommending .

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

[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 Director of Standards, Gerry Adamski, at 609-452-8060 or at [gerry.adamski@nerc.net](mailto:gerry.adamski@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>.

## Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR

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.	Anita Lee (G1)	AESO		✓										
2.	Jason Shaver	American Transmission Co.	✓											
3.	Mike Viles	BPA	✓											
4.	Gary Keenan	BPA	✓											
5.	Brent Kingsford (G1)	CAISO		✓										
6.	Ed Thompson	ConEd	✓											
7.	Steve Myers (G1)	ERCOT		✓										
8.	Bruno Jesus (G2)	Hydro One Networks, Inc.	✓											
9.	Roger Champagne	Hydro Québec TransÉnergie	✓											
10.	Ron Falsetti (G1)	IESO		✓										
11.	Matt Goldberg (G1)	ISO New England		✓										
12.	Kathleen Goodman (G1)	ISO New England		✓										
13.	Bill Shemley (G2)	ISO New England		✓										
14.	Brian Thumm (G1)	ITC Holdings	✓											
15.	Jim Cyrulewski (G3)	JDRJC Associates									✓			
16.	Michael Gammon	KCPL	✓											
17.	Don Nelson (G2)	MA Dept. of Tele. And Energy											✓	
18.	Robert Coish	Manitoba Hydro	✓		✓			✓	✓					
19.	Jason Marshall (G3)	Midwest ISO Stakeholders Standards Collaboration Participants		✓										
20.	Bill Phillips (G1)	MISO		✓										
21.	Randy MdDonald (G2)	NBSO		✓										
22.	Herb Schrayshuen (G2)	NGrid	✓											
23.	Guy V. Zito (G2)	NPCC												✓
24.	Jerad Barnhart (G2)	NStar	✓											
25.	Murale Gopinathan (G2)	NU	✓											
26.	Mike Calimano (G1)	NYISO		✓										
27.	Greg Campoli (G2)	NYISO		✓										

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

	Commenter	Organization	Industry Segment											
			1	2	3	4	5	6	7	8	9	10		
28.	Ralph Rufrano (G2)	NYPA	✓											
29.	Al Adamson (G2)	NYSRC		✓										
30.	Richard Kafka (G4)	Pepco Holdings, Inc.												
31.	Alicia Daughtery (G1)	PJM		✓										
32.	Charles Yeung (G1)	SPP		✓										
33.	Roger Champagne (G2)	TransÉnergie Hydro-Québec	✓											
34.	Howard Rulf	We Energies			✓	✓	✓							
35.	Alvin Depew (G4)	Potomac Electric Power Co.	✓											
36.	Carl Kinsley (G4)	Delmarva Power & Light	✓											
37.	Evan Sage (G4)	Potomac Electric Power Co.	✓											
38.	Travis Sykes	TVA	✓											
39.	Darrell Pace	Alabama Electric Coop.	✓											
40.	John Sullivan	Ameren	✓											
41.	Bob McGarrah	Ameren	✓											
42.	Charles Long	Energy	✓											
43.	David Weekley	MEAG Power	✓											
44.	Pat Huntley	SERC Reliability Corp.												✓
45.	Phil Kleckley	SC Electric and Gas			✓									
46.	Bob Jones	Southern Company Services, Inc.	✓											
47.	Brian Moss	Duke Energy Carolinas	✓											
48.	Fred J. Frederick	Vectren Energy Delivery												
49.														
50.														

I – Indicates that individual comments were submitted in addition to comments submitted as part of a group

G1 - IRC Standards Review Committee

G2 – NPCC CP9 Reliability Standards Working Group (NPCC CP9)

G3 – Midwest ISO Stakeholders Standards Collaboration Participants (MISO SSC)

G4 – Pepco Holdings, Inc. – Affiliates

G5 – SERC PC Planning Standards Subcommittee

## **Index to Questions, Comments, and Responses**

1. Do you agree with the revised scope of the proposed SAR? **Error! Bookmark not defined.**
2. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification? **Error! Bookmark not defined.**
3. The SAR DT has checked off a large number of responsible entities as being applicable entities. We have done this in order to provide sufficient flexibility to the eventual SDT and due to the fact that system restoration and blackstart can potentially touch so many different functional areas of operations. Do you agree that a Generator Owner and/or Generator Operator should have a documented plan for non-blackstart units to be restarted after a blackout? **Error! Bookmark not defined.**
4. Do you agree that the SAR is ready to move forward to the standards drafting stage? **Error! Bookmark not defined.**

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

1. Do you agree that PRC-008 should be removed from the list of standards to be revised in association with Project 2007-01 and placed into a project with all the relay maintenance and testing standards? If not, please explain in the comment area.

**Summary Consideration:**

<b>Question #1</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
We Energies	<input checked="" type="checkbox"/>		
ATC LLC	<input checked="" type="checkbox"/>		
BPA	<input checked="" type="checkbox"/>		
ERCOT	<input checked="" type="checkbox"/>		
HQT	<input checked="" type="checkbox"/>		
IESO	<input checked="" type="checkbox"/>		
IRC	<input checked="" type="checkbox"/>		
ISO-NE	<input checked="" type="checkbox"/>		
ITC Holdings	<input checked="" type="checkbox"/>		
KCPL	<input checked="" type="checkbox"/>		
Manitoba Hydro	<input checked="" type="checkbox"/>		
MISO SCC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	While we agree with the need for some improvement in the existing standards, there are misstatements in the SAR. The RC has defined responsibilities in the present standards. The SAR implies this isn't the case. Also, a SAR should be setting a clear scope of the end product, such that a different knowledgeable people would draft similar standards. It's unclear where this will go.
<b>Response:</b>			
NPCC CP9 RSWG	<input checked="" type="checkbox"/>		
NYISO	<input checked="" type="checkbox"/>		
Pepco	<input checked="" type="checkbox"/>		PHI concurs that relay maintenance standards should be consolidated.
<b>Response:</b>			
SERC PSS	<input checked="" type="checkbox"/>		
Vectren			None.



**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

2. Do you agree with revising the SAR to clarify the scope of work to be performed on each standard including the addition of Appendix A and Appendix C to the SAR? If not, please explain in the comment area.

**Summary Consideration:**

<b>Question #2</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
We Energies	<input checked="" type="checkbox"/>		
ATC LLC	<input checked="" type="checkbox"/>		
BPA	<input checked="" type="checkbox"/>		
ERCOT	<input checked="" type="checkbox"/>		However, the drafting team should be encouraged to more clearly communicate that such Appendices are lists of topics and comments that are to be considered, but they are not lists of requirements that must be included in the standard to be developed.
<b>Response:</b>			
HQT	<input checked="" type="checkbox"/>		
IESO	<input checked="" type="checkbox"/>		
IRC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The addition of Appendix A and Appendix C does not seem to improve clarity on the scope of work, but rather just add a list of "things to consider" for the standards drafting team. As it stands the scope of work is fairly wide open. However, we do not disagree that the standards drafting team should consider those comments.
<b>Response:</b>			
ISO-NE	<input checked="" type="checkbox"/>		
ITC Holdings	<input checked="" type="checkbox"/>		
KCPL	<input checked="" type="checkbox"/>		
Manitoba Hydro	<input checked="" type="checkbox"/>		MH believes a lot of good effort has been put into the drafting of this SAR to identify all the significant issues that need to be considered in drafting the UFLS standards. The standard drafting team has its work cut out for it! - but at least, hopefully, all the significant issues are identified.
<b>Response:</b>			
MISO SCC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	We're not sure what this means. While the TOP must have a plan that will work, the question implies there must be contractual obligations that back up all plans, and perhaps all scenarios. While it's good to have cranking paths and a plan laid out, we're concerned that this standard will preclude flexibility when the real need arises.

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

<b>Question #2</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
<b>Response:</b>			
NPCC CP9 RSWG	<input checked="" type="checkbox"/>		
NYISO	<input checked="" type="checkbox"/>		The addition of Appendix A and Appendix C does not seem to improve clarity on the scope of work, but rather just add a list of "things to consider" for the standards drafting team. As it stands the scope of work is fairly wide open. However, we do not disagree that the standards drafting team should consider those comments.
<b>Response:</b>			
Pepco	<input checked="" type="checkbox"/>		
SERC PSS	<input checked="" type="checkbox"/>		
Vectren			None.
<b>Response:</b>			
<b>Response:</b>			

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

3. Do you agree with expanding the Applicability section of the SAR to include Balancing Authority, Planning Authority or Planning Coordinator, Transmission Planner, Generator Owner, and Generator Operator so that the standard drafting team can consider these entities when reviewing the appropriate applicability of the standards? If not, please explain in the comment area.

**Summary Consideration:**

<b>Question #3</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
We Energies	<input checked="" type="checkbox"/>		
ATC LLC	<input checked="" type="checkbox"/>		
BPA	<input checked="" type="checkbox"/>		
ERCOT	<input checked="" type="checkbox"/>		
HQT	<input checked="" type="checkbox"/>		
IESO	<input checked="" type="checkbox"/>		
IESO	<input checked="" type="checkbox"/>		
IRC	<input checked="" type="checkbox"/>		
ISO-NE	<input checked="" type="checkbox"/>		
ITC Holdings		<input checked="" type="checkbox"/>	None of the UFLS standards currently apply to either Planning function, and the SAR does not contemplate adding any requirements that do. The Planning Coordinator and the Transmission Planner should be removed from the scope of the SAR.
<b>Response:</b>			
KCPL		<input checked="" type="checkbox"/>	Even though it is not mentioned in the question, the Reliability Coordinator should be included as one of the Applicable Entities. On the SAR the Reliability Authority is not checked in "The Standard will Apply to the Following Functions" table.
<b>Response:</b>			
Manitoba Hydro	<input checked="" type="checkbox"/>		
MISO SCC	<input checked="" type="checkbox"/>		We agree that all generator operators should have an understanding of their role and possible scenarios they will face. The generator operators should also test or train on their plan/role periodically.
<b>Response:</b>			
NPCC CP9 RSWG	<input checked="" type="checkbox"/>		We agree with the additional functions proposed in the Applicability section to allow the

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

<b>Question #3</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
			drafting team the ability to fully consider any entities that may have a role in the standard, also the entities need to be updated to match the latest version of the Functional Model.
<b>Response:</b>			
NYISO	<input checked="" type="checkbox"/>		
Pepco	<input checked="" type="checkbox"/>		
SERC PSS	<input checked="" type="checkbox"/>		The PSS does not see a reason for including the BA, GO, and GOP, but has no objections to allowing the SDT to consider these entities.
<b>Response:</b>			
Vectren			None.
<b>Response:</b>			

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

4. Do you have any other concerns with the revisions made to the SAR? If yes, please explain in the comment area.

**Summary Consideration:**

<b>Question #4</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
We Energies		<input checked="" type="checkbox"/>	
ATC LLC	<input checked="" type="checkbox"/>		<p>The standard should address both underfrequency and overfrequency, to avoid shedding too much load. The standard should also make it clear that generators must be well-protected, while still supporting the integrity of the system. Thus, Generators Owners must be part of the decision process when the regional entities establish the requirements for generators to remain on-line.</p> <p>Since it is possible that an island can be formed that envelopes more than one regional entity, we recommend strong coordination between neighboring regions so that different and/or conflicting standards are not identified as resolution for a common island.</p>
<b>Response:</b>			
BPA		<input checked="" type="checkbox"/>	
ERCOT		<input checked="" type="checkbox"/>	
HQT		<input checked="" type="checkbox"/>	
IESO		<input checked="" type="checkbox"/>	
IRC		<input checked="" type="checkbox"/>	
ISO-NE		<input checked="" type="checkbox"/>	
ITC Holdings	<input checked="" type="checkbox"/>		<p>Independent transmission companies do not have direct access to load (location, nature, etc.) in order to fully implement a UFLS program. The applicability of the Standard should be further modified to reflect the need for the DP/LSE to own/operate/develop/maintain a UFLS program in cooperation with its TO/TOP/RC. The standard is currently written to allow the Regional Entity to require a Transmission Operator or Operator to own/operate a UFLS program, and, in general, an independent transmission company does not have the means to implement load shedding programs.</p>
<b>Response:</b>			
KCPL		<input checked="" type="checkbox"/>	
Manitoba Hydro	<input checked="" type="checkbox"/>		<p>Re-iterating significant comments made in 1st draft of SAR, but not included in MH comment section of Appendix C in 2nd draft:</p>

Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR

Question #4			
Commenter	Yes	No	Comment
			<p>PRC – 007 – 0</p> <p>Measures.</p> <p>M1 - If "consistency" is to be clarified here, it must also be clarified for R1 as well. If R1 does not require this clarification, neither does M1. Also, does "consistency" really require further clarification?</p> <p>NEW COMMENTS FOR 2ND DRAFT.</p> <p>Appendix C -</p> <p><b>PJM Comments.</b> I believe RRO's should stand between regional UFLS owner/control areas and NERC. Various RRO's may have some different methodologies and procedures which are appropriate to their specific RRO regions and not to others. There should not be a single UFLS criteria from NERC that covers ALL UFLS conditions and concerns for the entire grid.</p> <p><b>NCMPA Comments.</b> I agree with non-compulsory compliance for utilities with very low peak loads if they are surrounded by utilities with load levels sizable enough to require compliance to UFLS programs. However, if there are a lot of small load utilities in an RRO region whose total peak load is sizeable enough to require UFLS, these small utilities will have to coordinate as if they were one large utility in order to conform with their RRO's UFLS program in the same fashion a single large load utility would, to ensure proper total RRO region low frequency UFLS mitigation.</p>
<b>Response:</b>			
MISO SCC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Again, we agree for some improvement, but we have difficulty in understanding where this is going.
<b>Response:</b>			
NPCC CP9 RSWG		<input checked="" type="checkbox"/>	
<b>Response:</b>			
NYISO		<input checked="" type="checkbox"/>	

**Consideration of Comments on 2<sup>nd</sup> Posting of Underfrequency Load Shedding SAR**

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<b>Question #4</b>			
<b>Commenter</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
Pepco		<input checked="" type="checkbox"/>	
SERC PSS		<input checked="" type="checkbox"/>	
Vectren	<input checked="" type="checkbox"/>		UFLS steps should be set with a considerable amount of bandwidth. That is if there are 5 steps of 5% required, an entity could drop as much as say 10% in the first step and possibly drop as little as 1% in the second step. As long as the cumulative amount is within the requirements of that level of steps (5-10-15-20-25%). Trying to meet an exact amount of load drop is very difficult and would not provide enough benefit to justify the cost.
<b>Response:</b>			

## Standard Authorization Request Form

### DRAFT 2 Dated 02/01/07

Title of Proposed Standard	Underfrequency Load Shedding (UFLS) Standards Project 2007-01
Request Date	November 14, 2006

<b>SAR Requestor Information</b>	<b>SAR Type</b> ( <i>Check a box for each one that applies.</i> )
Name      Regional Reliability Standards Working Group	<input type="checkbox"/> New Standard
Primary Contact Robert W. Millard Director of Standards ReliabilityFirst Corporation	<input checked="" type="checkbox"/> Revision to existing Standards PRC-006, PRC-007, and PRC-009
Telephone    (630) 261-2621 Fax            (630) 691-4222	<input type="checkbox"/> Withdrawal of existing Standard
E-mail        bob.millard@rfirst.org	<input type="checkbox"/> Urgent Action



**Purpose** (Describe the purpose of the standard — what the standard will achieve in support of reliability.)

PRC-006— Development and Documentation of Regional Reliability Organizations' Underfrequency Load Shedding Programs

PRC-007 — Assuring Consistency with Regional UFLS Programs

PRC-009 — UFLS Performance Following an Underfrequency Event

The purpose of revising the above standards is to:

1. Provide an adequate level of reliability for the North American bulk power systems – ensure each of the standards are complete and the requirements are set at an appropriate level to ensure reliability.
2. Ensure they are enforceable as mandatory reliability standards with financial penalties - the applicability to bulk power system owners, operators, and users, and as appropriate particular classes of facilities, is clearly defined; the purpose, requirements, and measures are results-focused and unambiguous; the consequences of violating the requirements are clear.
3. Incorporate other general improvements described in NERC's Reliability Standards Development Plan: 2007-2009 (summarized and outlined in the Reliability Standard Review Guidelines attached as Appendix A).
4. Consider the items mentioned in the Standard Review Forms (excerpted from NERC's Reliability Standards Development Plan: 2007-2009) attached as Appendix B, prepared by the NERC staff, which attempt to capture comments from the:
  - FERC NOPR (Docket # RM06-16-00 dated October 20, 2006) ,
  - FERC staff report dated May 11, 2006 concerning NERC standards submitted with ERO application,
  - Version 0 standards development (see note 1), and
  - Regional Fill-in-the-Blank Team (RRSWG – a NERC working group involved with regional standards development).

The standard drafting team should also consider any other issues that were not completely captured but were stated or referenced in the above materials.

Note 1: Comments received from the industry during public postings of the PRC subject matter were sometimes outside the work being posted or outside the drafting team's scope and were not reflected in the drafting of the final work product. These should now be considered by this SDT.

5. Consider issues raised by the industry during the posting of the SAR for Project 2007-01 during the first comment period from November 29, 2006 through January 12, 2007, attached as Appendix C.
6. Satisfy the standards procedure requirement for five-year review of the standards.

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

**Industry Need** (Provide a detailed statement justifying the need for the proposed standard, along with any supporting documentation.)

The standards in this set are all Version 0 standards. As the electric reliability organization begins enforcing compliance with reliability standards under Section 215 of the Federal Power Act in the United States and applicable statutes and regulations in Canada, the industry needs a set of clear, measurable, and enforceable reliability standards. The Version 0 standards, while a good foundation, were translated from historical operating and planning policies and guides that were appropriate in an era of voluntary compliance. The Version 0 standards and recent updates were put in place as a temporary starting point to stand up the electric reliability organization and begin enforcement of mandatory standards. However, it is important to update the standards in a timely manner, incorporating improvements to make the standards more suitable for enforcement and to capture prior recommendations that were deferred during the Version 0 translation.

**Brief Description** (Describe the proposed standard in sufficient detail to clearly define the scope in a manner that can be easily understood by others.)

PRC-006 is one of the few reliability standards identified by the Regional Reliability Standards Working Group as a standard that has some requirements that need to be defined by each regional entity in a regional standard.

The standard drafting team (SDT) will work with stakeholders to review PRC-006 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to and contained with the UFLS program documentation. The SDT shall determine which requirements should be continent-wide requirements and which requirements should be included in regional standards.

PRC-007 and PRC-009 have some 'fill-in-the-blank' characteristics as identified in the Regional Reliability Standards Working Group work plan which need to be removed. These standards shall be included with PRC-006 for consideration as one or more revised standards as necessary for consistency and clarity of overall program requirements and any other associated programs and/or requirements that affect or impact the UFLS program.

The standard drafting team may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

**Reliability Functions**

<b>The Standard will Apply to the Following Functions</b> <i>(Check box for each one that applies.)</i>		
<input type="checkbox"/>	Reliability Authority	Ensures the reliability of the bulk transmission system within its Reliability Authority area. This is the highest Reliability Authority.
<input checked="" type="checkbox"/>	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within its metered boundary and supports system frequency in real time.
<input type="checkbox"/>	Interchange Authority	Authorizes valid and balanced Interchange Schedules.
<input checked="" type="checkbox"/>	Planning Authority	Plans the Bulk Electric System.
<input type="checkbox"/>	Resource Planner	Develops a long-term (>one year) plan for the resource adequacy of specific loads within a Planning Authority area.
<input checked="" type="checkbox"/>	Transmission Planner	Develops a long-term (>one year) plan for the reliability of transmission systems within its portion of the Planning Authority area.
<input type="checkbox"/>	Transmission Service Provider	Provides transmission services to qualified market participants under applicable transmission service agreements
<input checked="" type="checkbox"/>	Transmission Owner	Owns transmission facilities.
<input checked="" type="checkbox"/>	Transmission Operator	Operates and maintains the transmission facilities, and executes switching orders.
<input checked="" type="checkbox"/>	Distribution Provider	Provides and operates the "wires" between the transmission system and the customer.
<input checked="" type="checkbox"/>	Generator Owner	Owns and maintains generation unit(s).
<input checked="" type="checkbox"/>	Generator Operator	Operates generation unit(s) and performs the functions of supplying energy and Interconnected Operations Services.
<input type="checkbox"/>	Purchasing-Selling Entity	The function of purchasing or selling energy, capacity, and all necessary Interconnected Operations Services as required.
<input type="checkbox"/>	Market Operator	Integrates energy, capacity, balancing, and transmission resources to achieve an economic, reliability-constrained dispatch.
<input checked="" type="checkbox"/>	Load-Serving Entity	Secures energy and transmission (and related generation services) to serve the end user.

***Reliability and Market Interface Principles***

<b>Applicable Reliability Principles</b> <i>(Check box for all that apply.)</i>	
<input checked="" type="checkbox"/>	1. Interconnected bulk electric systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input checked="" type="checkbox"/>	2. The frequency and voltage of interconnected bulk electric systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk electric systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input checked="" type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk electric systems shall be developed, coordinated, maintained and implemented.
<input checked="" type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk electric systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk electric systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk electric systems shall be assessed, monitored and maintained on a wide area basis.
<b>Does the proposed Standard comply with all of the following Market Interface Principles?</b> <i>(Select 'yes' or 'no' from the drop-down box.)</i>	
1. The planning and operation of bulk electric systems shall recognize that reliability is an essential requirement of a robust North American economy. Yes	
2. An Organization Standard shall not give any market participant an unfair competitive advantage. Yes	
3. An Organization Standard shall neither mandate nor prohibit any specific market structure. Yes	
4. An Organization Standard shall not preclude market solutions to achieving compliance with that Standard. Yes	
5. An Organization Standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. Yes	

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

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***Related Standards***

<b>Standard No.</b>	<b>Explanation</b>
EOP-003-1	This standard may not be changed because of the work associated with Project 2007-01 but the standard drafting team should keep it in mind as they work on this set of standards.

***Related SARs***

<b>SAR ID</b>	<b>Explanation</b>

***Regional Differences***

<b>Region</b>	<b>Explanation</b>
ERCOT	
FRCC	
MRO	
NPCC	
SERC	
RFC	
SPP	
WECC	

## **Appendix A: Reliability Standard Review Guidelines**

### **Applicability**

Does this reliability standard clearly identify the functional classes of entities responsible for complying with the reliability standard, with any specific additions or exceptions noted? Where multiple functional classes are identified is there a clear line of responsibility for each requirement identifying the functional class and entity to be held accountable for compliance? Does the requirement allow overlapping responsibilities between Registered Entities possibly creating confusion for who is ultimately accountable for compliance?

Does this reliability standard identify the geographic applicability of the standard, such as the entire North American bulk power system, an interconnection, or within a regional entity area? If no geographic limitations are identified, the default is that the standard applies throughout North America.

Does this reliability standard identify any limitations on the applicability of the standard based on electric facility characteristics, such as generators with a nameplate rating of 20 MW or greater, or transmission facilities energized at 200 kV or greater or some other criteria? If no functional entity limitations are identified, the default is that the standard applies to all identified functional entities.

### **Purpose**

Does this reliability standard have a clear statement of purpose that describes how the standard contributes to the reliability of the bulk power system? Each purpose statement should include a value statement.

### **Performance Requirements**

Does this reliability standard state one or more performance requirements, which if achieved by the applicable entities, will provide for a reliable bulk power system, consistent with good utility practices and the public interest?

Does each requirement identify who shall do what under what conditions and to what outcome?

### **Measurability**

Is each performance requirement stated so as to be objectively measurable by a third party with knowledge or expertise in the area addressed by that requirement?

Does each performance requirement have one or more associated measures used to objectively evaluate compliance with the requirement?

If performance results can be practically measured quantitatively, are metrics provided within the requirement to indicate satisfactory performance?

### **Technical Basis in Engineering and Operations**

Is this reliability standard based upon sound engineering and operating judgment, analysis, or experience, as determined by expert practitioners in that particular field?

### **Completeness**

Is this reliability standard complete and self-contained? Does the standard depend on external information to determine the required level of performance?

### **Consequences for Noncompliance**

In combination with guidelines for penalties and sanctions, as well as other ERO and regional entity compliance documents, are the consequences of violating a standard clearly known to the responsible entities?

**Clear Language**

Is the reliability standard stated using clear and unambiguous language? Can responsible entities, using reasonable judgment and in keeping with good utility practices, arrive at a consistent interpretation of the required performance?

**Practicality**

Does this reliability standard establish requirements that can be practically implemented by the assigned responsible entities within the specified effective date and thereafter?

**Capability Requirements versus Performance Requirements**

In general, requirements for entities to have ‘capabilities’ (this would include facilities for communication, agreements with other entities, etc.), should be located in the standards for certification. The certification requirements should indicate that entities have a responsibility to ‘maintain’ their capabilities.

**Consistent Terminology**

To the extent possible, does this reliability standard use a set of standard terms and definitions that are approved through the NERC reliability standards development process?

If the standard uses terms that are included in the NERC Glossary of Terms Used in Reliability Standards, then the term must be capitalized when it is used in the standard. New terms should not be added unless they have a ‘unique’ definition when used in a NERC reliability standard. Common terms that could be found in a college dictionary should not be defined and added to the NERC Glossary.

Are the verbs on the ‘verb list’ from the DT Guidelines? If not – do new verbs need to be added to the guidelines or could you use one of the verbs from the verb list?

**Violation Risk Factors (Risk Factor)**

**High Risk Requirement**

A requirement that, if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures;

or a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

**Medium Risk Requirement**

This is a requirement that, if violated, could directly affect the electrical state or the capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. However, violation of a medium risk requirement is unlikely to lead to bulk electric system instability, separation, or cascading failures;

or a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical

state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk electric system instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

### **Lower Risk Requirement**

A requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. A requirement that is administrative in nature;

Or a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. A planning requirement that is administrative in nature.

### **Mitigation Time Horizon**

The drafting team should also indicate the time horizon available for mitigating a violation to the requirement using the following definitions:

- **Long-term Planning** — a planning horizon of one year or longer.
- **Operations Planning** — operating and resource plans from day-ahead up to and including seasonal.
- **Same-day Operations** — routine actions required within the timeframe of a day, but not real-time.
- **Real-time Operations** — actions required within one hour or less to preserve the reliability of the bulk electric system.
- **Operations Assessment** — follow-up evaluations and reporting of real time operations.

### **Violation Severity Levels**

The drafting team should indicate a set of violation severity levels that can be applied for the requirements within a standard. ('Violation severity levels' replaces the existing 'levels of non-compliance.')

The violation severity levels may be applied for each requirement or combined to cover multiple requirements, as long as it is clear which requirements are included.

**The violation severity levels should be based on the following definitions:**

- **Lower: mostly compliant with minor exceptions** — the responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more minor details. Equivalent score: 95% to 99% compliant.
- **Moderate: mostly compliant with significant exceptions** — the responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more significant elements. Equivalent score: 85% to 94% compliant.
- **High: marginal performance or results** — the responsible entity has only partially achieved the reliability objective of the requirement and is missing one or more significant elements. Equivalent score: 70% to 84% compliant.
- **Severe: poor performance or results** — the responsible entity has failed to meet the reliability objective of the requirement. Equivalent score: less than 70% compliant.



**Compliance Monitor**

Replace, 'Regional Reliability Organization' with 'Electric Reliability Organization'

**Bulk Electric System**

Replace, 'Bulk Electric System' with 'bulk power system'

**Fill-in-the-blank Requirements**

Do not include any 'fill-in-the-blank' requirements. These are requirements that assign one entity responsibility for developing some performance measures without requiring that the performance measures be included in the body of a standard – then require another entity to comply with those requirements.

Every reliability objective can be met, at least at a threshold level, by a North American standard. If we need regions to develop regional standards, such as in under-frequency load shedding, we can always write a uniform North American standard for the applicable functional entities as a means of encouraging development of the regional standards.

**Requirements for Regional Reliability Organization**

Do not write any requirements for the Regional Reliability Organization. Any requirements currently assigned to the RRO should be re-assigned to the applicable functional entity.

**Effective Dates**

Must be 1<sup>st</sup> day of 1<sup>st</sup> quarter after entities are expected to be compliant – must include time to file with regulatory authorities and provide notice to responsible entities of the obligation to comply. If the standard is to be actively monitored, time for the Compliance Monitoring and Enforcement Program to develop reporting instructions and modify the Compliance Data Management System(s) both at NERC and Regional Entities must be provided in the implementation plan.

**Associated Documents**

If there are standards that are referenced within a standard, list the full name and number of the standard under the section called, 'Associated Documents'.

**Appendix B: PRC-006, PRC-007, and PRC-009 Standard Review Forms**

Excerpted from NERC's Reliability Standards Development Plan: 2007 - 2009

Standard Review Form Project 2007-01 Underfrequency Load Shedding		
Standard #	PRC-006-0	Comments
<b>Title</b>	Development and Documentation of Regional Reliability Organizations' Underfrequency Load Shedding Programs	Too long – slight difference with header.
<b>Purpose</b>		Implement vs. develop & document. Underfrequency spelled differently.
<b>Applicability</b>		RRO not in FM.
<b>Requirements</b>	<i>Conditions</i>	Okay
	<i>Who?</i>	R1.1 – includes sub-regions.
	<i>Shall do what?</i>	R1.3 – define sufficient; model at RRO or others or both? R1.4.2 – check grammar and capitalization; loosely worded. R2 & 3 – format of documentation.
	<i>Result or Outcome</i>	Missing
<b>Measures</b>		No real measures and definition of evidence required.
<b>Issues to Consider</b>	<p>FERC NOPR</p> <ul style="list-style-type: none"> <li>o Commission will not propose to accept or remand this Reliability Standard until the ERO submits additional information. (see recommendations for improvement)</li> </ul> <p>FERC staff report</p> <ul style="list-style-type: none"> <li>o Concern with Blackout items (especially #21)</li> <li>o Fill in the blank</li> <li>o Definition of RRO as user of system</li> <li>o Lack of coordination</li> </ul> <p>Regional Fill-in-the-Blank Team Comments</p> <ul style="list-style-type: none"> <li>o Modify R1 to require each Region to develop a regional standard, and</li> <li>o Determine what elements (if any) of UFLS should be included in the North American standard and what elements should be included in the regional standards.</li> <li>o Development of regional standards needs to be coordinated with Regional entities. Regional entities should begin process for developing regional standards once the drafting team for the North American standard has determined what elements of UFLS should be included in the continent-wide standard and what elements should be included in the regional standards.</li> <li>o PRC-006 will be a continent-wide standard supported by Regional Reliability Standards.</li> <li>o Related PRC-007, PRC-008, and 009.</li> </ul> <p>V0 Industry Comments</p> <ul style="list-style-type: none"> <li>o Not a standalone standard</li> <li>o Who do you submit compliance material to?</li> <li>o Need to define evidence</li> </ul>	

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

<b>Standard Review Form</b>		
<b>Project 2007-01 Underfrequency Load Shedding</b>		
<b>Standard #</b>	<b>PRC-007-0</b>	<b>Comments</b>
<b>Title</b>	Assuring Consistency of Entity Underfrequency Load Shedding Programs with Regional Reliability Organizations' Underfrequency Load Shedding Program Requirements	Too long and different than header.
<b>Purpose</b>		Same as 006 and doesn't address 007. No value proposition or benefit. Spelling of Underfrequency.
<b>Applicability</b>		Okay
<b>Requirements</b>	<i>Conditions</i>	Okay
	<i>Who?</i>	Okay
	<i>Shall do what?</i>	R1 – what about coordination? R2 – provide format, etc. and define 'as necessary'.
	<i>Result or Outcome</i>	Missing
<b>Measures</b>		2 M for 3 R. M1 – define consistency M2 – define evidence
<b>Issues to Consider</b>	FERC NOPR o No changes identified. Regional Fill-in-the-Blank Team Comments o Change "program" to "standard" in R1. o Coordinated with PRC-006. o The regional procedures need to be converted to a standard to implement this. VO Industry Comments o Need to include RA o Need to refine levels of non-compliance	

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

<b>Standard Review Form</b>		
<b>Project 2007-01 Underfrequency Load Shedding</b>		
<b>Standard #</b>	<b>PRC-009-0</b>	<b>Comments</b>
<b>Title</b>	Analysis and Documentation of Underfrequency Load Shedding Performance Following an Underfrequency Event	Too long and different than header.
<b>Purpose</b>		Same as previous and it doesn't fit. No benefit or value proposition.
<b>Applicability</b>		Okay
<b>Requirements</b>	<i>Conditions</i>	Okay
	<i>Who?</i>	Okay
	<i>Shall do what?</i>	Okay
	<i>Result or Outcome</i>	Missing
<b>Measures</b>		M1 not really a measure. M2 needs definition of evidence.
<b>Issues to Consider</b>	FERC NOPR <ul style="list-style-type: none"> <li>o No changes identified.</li> </ul> FERC staff report <ul style="list-style-type: none"> <li>o No corresponding standard for under-voltage</li> </ul> Regional Fill-in-the-Blank Team Comments <ul style="list-style-type: none"> <li>o Change "program" to "standard".</li> <li>o See notes for PRC-007.</li> </ul> VO Industry Comments <ul style="list-style-type: none"> <li>o Define evidence</li> <li>o 90 days vs. 30 days</li> <li>o Exemptions for those with shunt reactors who don't shed load</li> </ul>	

## Appendix C: Issues Raised by Industry During SAR Posting

### Background

The SAR for Project 2007-01 was first posted for a 30-day comment period from November 29, 2006 through January 12, 2007. The SAR drafting team for Project 2007-01 met to discuss the comments received from the posting in Austin, TX on January 22-23, 2007. The drafting team reviewed every comment received and determined a number of the comments were outside the scope of responsibility for the SAR drafting team to address; however, the SAR drafting team noted these comments and this report is being used to forward these comments to the standard drafting team for their consideration while revising the standards associated with Project 2007-01.

### Comments

The comments below are grouped according to one of three questions included in the comment form used for the initial posting the SAR for Project 2007-01. The comment supplied and the SAR drafting team’s response are noted.

Question #1: *Do you believe that there is a reliability-related need to eliminate the “fill-in-the-blank” characteristics and upgrade the requirements in this set of standards?*

All comments received relative to this question were addressed by the SAR drafting team.

Question #2: *Do you agree with the scope of the proposed project? (The scope includes all the items noted on the ‘Standard Review Forms’ attached to the SAR as well as other improvements to the standards that meet the consensus of stakeholders, consistent with establishing high quality, enforceable, and technically sufficient bulk power system reliability standards.)*

Commenter	Yes	No	Comment
NCMPA		<input checked="" type="checkbox"/>	<p>NCMPA1 agrees with the need to develop measures to shed load during an underfrequency event that are consistent across the interconnected electric system. However, NCMPA1 disagrees with the approach that has been taken by the regions in responding to this requirement, and we are concerned that the same approach is suggested in this SAR. We are specifically concerned that it is simply not practical for smaller entities to comply with the requirements proposed by this SAR.</p> <p>As a result of the Energy Policy Act, many small utilities are required to register with their respective RROs, and these entities are now subject to mandatory compliance with the reliability standards. Some of these entities have peak annual loads that are smaller than 10 MW. Some are even smaller than 1 MW. Requirements within most, if not all, of the regions state that load must be shed in multiple steps</p>

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

Commenter	Yes	No	Comment
			<p>(three steps in SERC, for example) at different underfrequency set points. While shedding load in multiple steps is perfectly rational for larger systems, most small loads are served by one distribution feeder bus. Furthermore, the entire peak demand on a small entity is a mere fraction of the amount of load that is shed by a larger entity in just one step. Furthermore, larger utilities have the advantage of aggregating load from multiple delivery points that can be shed in one step. Smaller entities do not have this advantage, and face the possibility of large expenditures in order to meet the multiple step shedding criteria.</p> <p>NCMPA1 questions the benefit to reliability by requiring all utilities, regardless of size, to shed load in multiple steps as a result of an underfrequency event. We urge the SAR/standard drafting teams to address this issue and establish simplified requirements for small entities, whereby,</p> <ul style="list-style-type: none"> <li>• Compliance with the UFLS standards be non-compulsory for entities with annual peak demands less than 10 MW</li> <li>• Load shedding can be carried out in one step for entities with annual peak demands less than 100 MW.</li> </ul>
<p><b>Response:</b></p> <p><b>NCMPA1's comment is outside the scope of the SAR drafting team to resolve. The comment has been noted and added to the SAR for resolution during standard drafting.</b></p> <p><b>However, the purpose of the SAR identifies:</b></p> <ol style="list-style-type: none"> <li>2. Ensure they are enforceable as mandatory reliability standards with financial penalties - the applicability to bulk power system owners, operators, and users, and as appropriate particular classes of facilities, is clearly defined; the purpose, requirements, and measures are results-focused and unambiguous; the consequences of violating the requirements are clear.</li> </ol> <p><b>In addition, Appendix A was added to the SAR for Project 2007-01 so that applicability and any limitations of the standards should be reviewed and revised as determined by the standard drafting team:</b></p> <p><b>Applicability</b>            Does this reliability standard clearly identify the functional classes of entities responsible for complying with the reliability standard, with any specific additions or exceptions noted? Where multiple functional classes are identified is there a clear line of responsibility for each requirement identifying the functional class and entity to be held accountable for compliance? Does the requirement allow overlapping responsibilities between Registered Entities possibly creating confusion for who is ultimately accountable for compliance?</p> <p>Does this reliability standard identify the geographic applicability of the standard, such as the entire North American bulk power system, an interconnection, or within a regional entity area? If no geographic limitations are identified, the default is that the standard applies throughout North America.</p>			

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Commenter	Yes	No	Comment
<p>Does this reliability standard identify any limitations on the applicability of the standard based on electric facility characteristics, such as generators with a nameplate rating of 20 MW or greater, or transmission facilities energized at 200 kV or greater or some other criteria? If no functional entity limitations are identified, the default is that the standard applies to all identified functional entities.</p>			
<p>American Electric Power</p>		<input checked="" type="checkbox"/>	<p><b>We support the proposed scope with the following exceptions:</b></p> <p>We do not support the development of Regional Standards for UFLS. Each interconnection should have an UFLS standard requirement(s), and those requirements should be applied consistently throughout the interconnection. Regional variations in UFLS requirements should be only considered in very special situations, such as for FRCC within the Eastern Interconnection. Thus, the SAR scope should include the objective to eliminate the existing Regional variations that exist today and develop interconnection wide UFLS standards. The scope should still include the ability for entities to submit technical justification for why an area within an interconnection should have a separate UFLS Standard requirement that is different the rest of the interconnection. But, the SAR scope should not include the present objective of maintaining the content of PRC-006 which requires each Region to define their UFLS requirements.</p> <p>Additionally, we would request that the drafting team consider geographic dispersion of the underfrequency response load.</p> <p>Lastly, we would request that this SAR apply to all entities that have an impact on the bulk energy system.</p>
<p><b>Response:</b></p> <p>The SAR is written such that the standard drafting team is to determine if regional standards, interconnection-wide standards, or a continent-wide standard should be developed based upon technical reasons.</p> <p>The last two comments from AEP are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</p>			
<p>MRO</p>		<input checked="" type="checkbox"/>	<p>The MRO does NOT agree with the scope of the proposed project because the modification of these standards, PRC-006 through PRC-009, is a much more complex and detailed procedure than outlined in the scope.</p> <p>First, with FERC's recent announcement to remove the Regional Reliability Organizations (RRO's) from the Applicability section of ALL NERC standards, standard PRC-006 now needs to become a Regional Standard and be included in the Region's Delegation Agreement. Additionally, when a Regional Standard is developed for the UFLS program, the standard must enforce ALL member participation and that the UFLS study be customized and performed at a Regional level, not at a member level. The characteristics of each UFLS</p>

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Commenter	Yes	No	Comment
			<p>program may differ greatly between regions, thereby warranting a customized Regional Standard for each region.</p> <p>Finally, the MRO believes that the UFLS standards, PRC-007 through PRC-009 could be broadly applied to ALL entities that comply with a customized Regional UFLS standard. Therefore, for simplification purposes, the MRO would support combining standards PRC-007 through PRC-009 into one UFLS NERC standard.</p>
<p><b>Response:</b></p> <p>The scope of the SAR is designed to provide the standard drafting team with sufficient flexibility to address all necessary revisions. Work is not to be limited to the "To Do List", nor are the items identified in the "List" mandatory revisions. A unique development aspect of the projects included in NERC's three-year reliability standards development plan is that the standard drafting teams will not be inhibited from addressing at one time all necessary improvements to the standards, or from even proposing new changes to the standard, as long as the changes are within the content area of the standard. The goal is for the drafting team to develop the best possible standard within the defined subject area, as supported by a consensus of stakeholders. Volume I of NERC's three-year reliability standards development plan identifies a set of specific issues each standard drafting team is to consider when revising a standard.</p> <p>Further, the scope of the SAR has been modified to delineate additional items the drafting team should consider but are not mandatory revisions.</p> <p>The SAR is written such that the standard drafting team is to determine if regional standards, interconnection-wide standards, or a continent-wide standard should be developed based upon technical reasons.</p> <p>The last comment from the MRO is outside the scope of the SAR drafting team to resolve. The comment has been noted and added to the SAR for resolution during standard drafting.</p>			
BPA Transmission Services		<input checked="" type="checkbox"/>	<p>BPA is in agreement with the scope of the proposed projects for PRC-006, PRC-007 and PRC-008, but not for PRC-009. The To Do List for PRC-009 notes a consideration from V0 Industry Comments of an exemption for those with shunt reactors who don't shed load. As these devices are more associated with UVLS than UFLS, BPA recommends the removal of this item.</p>
<p><b>Response:</b></p> <p>BPA's comment is outside the scope of the SAR drafting team to resolve. The comment has been noted and added to the SAR for resolution during standard drafting.</p>			
PJM		<input checked="" type="checkbox"/>	<p>Suggest that the new UFLS shedding standard should be a continent-wide standard, or at the least, an Interconnection wide standard. If there is real concern about a decaying frequency, then all entities within the Interconnection should contribute to support the system frequency. Therefore a single set of UFLS criteria needs to be established and implemented.</p>



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Commenter	Yes	No	Comment
			<p>Any exceptions would clearly have to be identified and justified in using the NERC standards process.</p> <p>There should only be 7 requirements in this standard. These seven would be split between NERC and the entity that has installed UFLS devices.</p> <ul style="list-style-type: none"> <li>• NERC establish what the UFLS criteria should be, which would include transmission and generation UFLS set-points, time-delays, etc.</li> <li>• NERC should establish acceptable maintenance intervals</li> <li>• NERC shall establish and maintain a database of all UFLS information</li> <li>• NERC should conduct an assessment of its criteria every five years</li> <li>• Each entity shall meet the established criteria</li> <li>• Each entity shall update its information in the NERC database each year</li> <li>• Each entity shall investigate and analyze all UFLS events</li> </ul> <p>The remaining requirements in the four standards should all go away. The entities would all be subject to compliance audits to verify their compliance</p>
<p><b>Response:</b></p> <p>The SAR is written such that the standard drafting team is to determine if regional standards, interconnection-wide standards, or a continent-wide standard should be developed based upon technical reasons.</p> <p>PJM's remaining comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</p>			
KCP&L		<input checked="" type="checkbox"/>	<p>PRC-006                      "Lack of coordination" - It is probably a good idea to know and understand the UFLS program requirements of neighboring regions.                      "Develop Continent Standard" - The current standard is sufficient in scope and requirements to stand as a national standard. As stated above, the requirements are clear and complete to allow Regional Entities and their members to develop their unique UFLS programs, to implement them, to monitor the UFLS regional effectiveness and Regional member effectiveness in maintaining their UFLS equipment. This standard serves a comprehensive national standard for development and implementation of UFLS in the regions.                      "Who submit compliance material to?" - I think it is understood by the industry all compliance programs are administered by Reliability Coordinators and does not need to be included in this standard.</p> <p>The remaining comments in this part of the SAR lack sufficient information to provide a specific response.</p> <p>PRC-007</p>

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Commenter	Yes	No	Comment
			<p>"Need language to implement" - I do not agree with the notion mentioned in the SAR document that it is necessary to add language requiring "implementation" of programs. The UFLS regional programs are required to specify in PRC-006 the frequency steps and load shed at a given step for TO's and Distribution Providers to adhere to. PRC-008 requires TO's and Distribution Providers to maintain and test their UFLS equipment. It is not possible to comply with these standards without equipment installed in the field.</p> <p>PRC-008 "Maintenance intervals not addressed" - I do agree that a minimum maintenance interval should be included in the standard for the industry to comment on. I imagine solid state relays and electromechanical relays probably have differing maintenance needs.</p> <p>PRC-009 "No corresponding standard for under-voltage" - This comment is outside the scope of this standard. Any development of an under-voltage standard should be separate and distinct from the UFLS standard. Both UFLS and under-voltage involve shedding of load but to address different operating condition recovery.</p> <p>General comments: The remainder of the SAR items in the "To Do Lists" are basically editorial in nature and do not change the substance of the standard. I do not have any fundamental problems with making the suggested modifications to the standards, but I also do not see any great need either. It is unclear who the entity responsible for determining the interconnections setpoints should be.</p>
<p><b>Response:</b></p> <p>The majority of KCP&amp;L's comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</p> <p>With respect to KCP&amp;L's final comment related to scope, the scope of the SAR is designed to provide the standard drafting team with sufficient flexibility to address all necessary revisions. Work is not to be limited to the "To Do List", nor are the items identified in the "List" mandatory revisions. A unique development aspect of the projects included in NERC's three-year reliability standards development plan is that the standard drafting teams will not be inhibited from addressing at one time all necessary improvements to the standards, or from even proposing new changes to the standard, as long as the changes are within the content area of the standard. The goal is for the drafting team to develop the best possible standard within the defined subject area, as supported by a consensus of stakeholders. Volume I of NERC's three-year reliability standards development plan identifies a set of specific issues each standard drafting team is to consider when revising a standard.</p>			
LADWP		<input checked="" type="checkbox"/>	Comments regarding the scope of the project (Question #2) and additional revisions that needs to be incorporated into the standards (Question #3).

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Commenter	Yes	No	Comment
			<p>The Reliability Functions checked off on page 3 of the SAR should include the Generator Owner and Generator Operator. This is because of the need to closely coordinate load tripping frequency settings to the generating unit off-nominal protection frequency and time delay settings. The objective is to provide enough separation between the load tripping and generating unit protection frequency and time delay settings. This will allow load tripping to be completed and thereby arrest system frequency decline without activating any generating unit off-nominal frequency protection.</p> <p>The recommended generating unit off-nominal frequency protection settings vary depending on the unit manufacturer and type of unit. The number of generating units in an interconnection is numerous so will the variety of manufacturer's recommended off-nominal frequency and time delay settings. The worst case of these generating unit off-nominal protection settings have to be taken into account in determining the size of load tripped at each load-shedding step. If some units are not included in the consideration, it is possible for these units to have off-nominal settings that would trip the unit during load shedding, exacerbating the situation. A solution to this problem is requiring the owner of the generating unit to trip additional load to cover the additional loss of generation. But this solution is discriminatory if an extensive survey of generator off-nominal frequency protection was not conducted prior to the design of the load shedding steps. It would be similar to adding insult to injury to require generator owners to trip additional load when their generating units were excluded in the design of Regional Reliability Organization's (RRO) UFLS Program, in the first place. Besides these generator owners may not have load available for load shedding.</p> <p>It is therefore important to add a requirement to "Standard PRC-006-0 – Development and Documentation of Regional UFLS programs that a thorough survey of all the off-nominal frequency protection settings of all interconnection generating units be conducted and the results used in the design of the RRO's Regional UFLS Program.</p>
<p><b>Response:</b></p> <p><b>The "applicability" identified in the SAR is the starting point for consideration of redrafting of the standard. The standard drafting team is to review the appropriate applicability of the standard. The SAR drafting team added Generator Operator and Generator Owner as the potential functional entities the revised standard might apply to.</b></p> <p><b>The balance of LADWP's comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</b></p>			
Manitoba Hydro		<input checked="" type="checkbox"/>	<p><b>General Comment:</b>  <b>We support the requirement to upgrade standards, however, it is difficult to provide meaningful comments on the scope of work for this SAR. The SAR does not adequately communicate the proposed scope of work; it simply provides an encrypted list of requirements. NERC needs to rewrite the SAR to clearly communicate the scope of work to</b></p>

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Commenter	Yes	No	Comment
			<p>the stakeholders and the drafting team (beyond a summary table). A poorly written scope document will transfer into a poorly directed rewrite of a standard. Project Management 101.</p> <p>Detailed Comments: PRC – 007 – 0</p> <p>To Do List:</p> <ul style="list-style-type: none"> <li>- Need to include RA. [This should refer to the new functional model.]</li> <li>- Need to refine levels of compliance. [In what manner? Different percentages of insufficient UFLS at stated non-compliance levels? Perhaps 90%-80%-70% instead of the 95%-90%-85% presently stated?]</li> </ul> <p>PRC-008-0</p> <p>To Do List:</p> <ul style="list-style-type: none"> <li>- Include a requirement that maintenance and testing of UFLS programs must be carried out with in a maximum allowable interval appropriate to the relay type and the potential impact on the Bulk-Power System. [ A maximum maintenance interval based on the relay type and system impact should not be defined by the standard. The required maintenance frequencies can not only be dependent upon relay type and system impact, but also many factors, including relay construction, age, maintenance practices, maintenance philosophies, environment, and operating context. The responsible entities are best situated to determine the maintenance requirements of their equipment. Revising PRC-008-0 requirements to be similar to the PRC-005-1 requirements provides more consistency across the standards and includes</li> <li>R1.1. Maintenance and testing intervals and their basis.</li> <li>R1.2. Summary of maintenance and testing intervals.</li> </ul> <p>Both these requirements make available information which can be used for a review of an entity's maintenance frequencies and practices.]</p> <p>PRC – 009 – 0</p> <p>Requirements – Result or Outcome. [Do not agree the “results” are “missing”. The results are inherently implied by adhering to the conditions stated in the requirements. Same as for PRC-007.]</p> <p>Measures - [M1 - Disagree.]</p>

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Commenter	Yes	No	Comment
			<p>To Do List.</p> <p>Change "program" to "standard" in R1. [Disagree. Using "standard" in this location of R1 could easily be confused with using the word "standard" in the rest of the document. There is nothing inappropriate with the word "program" in the context of R1. Same as for PRC-007.]</p> <p>90 days vs 30 days. [Depending on complexity of UFLS involved disturbance, 90 days may be required to properly analyze event and document results.]</p> <p>Exemptions for those with shunt reactor who don't shed load. [Do not understand context of comment. Whether or not shunt reactors are tripped out by UF relays ( possibly via UFLS relay facilities ) is not relevant. Dumping reactors will increase voltages, but provide no significant ( if any ) improvements to sagging network frequency compare</p>
<p><b>Response:</b></p> <p>The scope of the SAR is designed to provide the standard drafting team with sufficient flexibility to address all necessary revisions. Work is not to be limited to the "To Do List", nor are the items identified in the "List" mandatory revisions. A unique development aspect of the projects included in NERC's three-year reliability standards development plan is that the standard drafting teams will not be inhibited from addressing at one time all necessary improvements to the standards, or from even proposing new changes to the standard, as long as the changes are within the content area of the standard. The goal is for the drafting team to develop the best possible standard within the defined subject area, as supported by a consensus of stakeholders. Volume I of NERC's three-year reliability standards development plan identifies a set of specific issues each standard drafting team is to consider when revising a standard.</p> <p>The SAR drafting team encourages the commenter to read Volume I of NERC's three-year reliability standards development plan and the new Appendix A of the SAR to better understand the development of the "To Do List" identified for each standard in the plan.</p> <p>Manitoba Hydro's comments have been added to the SAR for resolution during standard drafting.</p>			
So. Company Transmission, Generation, and Alabama Power		<input checked="" type="checkbox"/>	<p>While we agree with most of the Standard Review Forms, Southern does not agree that all recommendations contained in the To-Do-List from the Standard Review Forms are necessary. For example, while we agree the RC would utilize the UFLS as a means to relieve an emergency situation, we do not agree that the RC should be included in the Applicability section. There are no particular requirements that would address the RC and, therefore, it would be more appropriate for these standards to be applicable to the Load Serving Entity (LSE) or possibly the Transmission Owner (TO).</p>

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Commenter	Yes	No	Comment
			Also, the term Evidence should be used in the Measurements in this standard as in other standards- it includes but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications, computer printouts or other equivalent evidence.
<p><b>Response:</b></p> <p>The scope of the SAR is designed to provide the standard drafting team with sufficient flexibility to address all necessary revisions. Work is not to be limited to the "To Do List", nor are the items identified in the "List" mandatory revisions. A unique development aspect of the projects included in NERC's three-year reliability standards development plan is that the standard drafting teams will not be inhibited from addressing at one time all necessary improvements to the standards, or from even proposing new changes to the standard, as long as the changes are within the content area of the standard. The goal is for the drafting team to develop the best possible standard within the defined subject area, as supported by a consensus of stakeholders. Volume I of NERC's three-year reliability standards development plan identifies a set of specific issues each standard drafting team is to consider when revising a standard.</p> <p>The SAR drafting team encourages the commenter to read Volume I of NERC's three-year reliability standards development plan and the new Appendix A of the SAR to better understand the development of the "To Do List" identified for each standard in the plan.</p> <p>So. Company Transmission, Generation, and Alabama Power's last comment is outside the scope of the SAR drafting team to resolve. The comment has been noted and added to the SAR for resolution during standard drafting.</p>			

Question #3: *Please identify any additional revisions that should be incorporated into this set of standards, beyond those that have already been identified in the SAR.*

All comments received relative to this question were addressed by the SAR drafting team.

Question #2: *Do you agree with the scope of the proposed project? (The scope includes all the items noted on the 'Standard Review Forms' attached to the SAR as well as other improvements to the standards that meet the consensus of stakeholders, consistent with establishing high quality, enforceable, and technically sufficient bulk power system reliability standards.)*

Commenter	Yes	No	Comment
IRC Standards Review Committee	<input checked="" type="checkbox"/>		<p>Please take a closer look at the applicability of each of the standard requirements. We believe some of them may not cover all the responsible entities. For example:</p> <p>a. PRC-007-0</p> <p>TOP's &amp; LSE's are missing from R1, R2 &amp; M1.</p>

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Commenter	Yes	No	Comment
			<p>b. PRC-008-0</p> <p>TOP's &amp; LSE's are missing from the Applicability, Requirements &amp; Measures sections.</p>
<p><b>Response:</b></p> <p>The standard drafting team is to review the appropriate applicability of the standard's measures and requirements. The IRC Standards Review Committee's comments added to the SAR for resolution during standard drafting.</p>			
<p>MISO Stakeholders Standards Collaboration</p>			<p>This does not appear to be a yes-no question.</p> <p>One major change needed in all the standards is to separate the standard into two pieces. The first is the set of core reliability requirements. The second portion is the supporting text. More than half the text in the current standards is supporting text that explains the true requirements. Now NERC is in the process of developing measures for and assigning risk to sentences that were never intended to be measured.</p>
<p><b>Response:</b></p> <p>The MISO Stakeholders Standards Collaboration comment has been added to the SAR for resolution during standard drafting.</p>			
<p>American Transmission Company</p>			<p>The SAR fails to identify two existing standards that are related to this effort.</p> <p>1) EOP-003-1 Load Shedding Plans. This standard will not be changed because of this work but the SDT should keep it in mind as they work on this set of standards.</p> <p>2) PRC-005-1 Transmission and Generation Protection System Maintenance and Testing. This standard is identified in the review form for PRC-008-0 (page SAR-8). The SDT should consider if PRC-005 and PRC-008 could be combined into one single standard.</p> <p>At a minimum both of these standards should appear in the Related Standards section of the SAR.</p> <p>The SDT should also develop a new standard that addresses Generator Frequency Response. It's our opinion that Generator Frequency Response goes hand-in-hand with Under Frequency Load Shedding and therefore should be included in this set of standards.</p>
<p><b>Response:</b></p> <p>1) EOP-003-1 was added to the Related Standards section of the SAR.</p> <p>2) The SAR drafting team agrees with American Transmission Company's comment and recommends that the standards dealing with relay maintenance and testing be addressed in the same project (but not Project 2007-01):</p>			

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Commenter	Yes	No	Comment
<ul style="list-style-type: none"> <li>▪ PRC-005 (Project 2008-04)</li> <li>▪ PRC-008 (Project 2007-01)</li> <li>▪ PRC-011 (Project 2008-02)</li> <li>▪ PRC-017 (Project 2008-04)</li> <li>▪ PRC-018, Requirement 6 (Project 2007-011)</li> </ul> <p>The SAR drafting team will forward this recommendation to NERC staff for consideration.</p> <p>ATC's last comment related to generator frequency response has been added to the SAR for resolution during standard drafting.</p>			
American Electric Power			<p><b>What is the technical basis of having varying Regional UFLS standards? Each Interconnection should have a consistent and coordinated UFLS standard requirement(s). Therefore, we support the development of Interconnection wide UFLS standards, not Regional standards within each interconnection, except for in situations that have technical justification to do otherwise.</b></p> <p><b>We would also request clarity regarding compliance measures. Some requirements will lend themselves to plus or minus tolerances for a prescribed value, while others may be best described in terms of greater than or less than the prescribed value.</b></p> <p><b>Additionally, Standard PRC-009 requires a simulation of the event (in addition to a description, a review of the set points and tripping times, and a summary of the findings). The time frame associated with providing documentation of the analysis, following the underfrequency event, is 90 calendar days (Requirement R2). Based on our experiences, we would request that the drafting team consider a longer time frame, such as 120 days.</b></p>
<p><b>Response:</b></p> <p><b>The SAR is written such that the standard drafting team is to determine if regional standards, interconnection-wide standards, or a continent-wide standard should be developed based upon technical reasons.</b></p> <p><b>American Electric Power's last two comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</b></p>			
ISO-NE			<ol style="list-style-type: none"> <li><b>1. Because PRC-005, -008, -011, and -017 are related in the maintenance issues that they cover, there would be a benefit in consolidating these requirements of the standards into one standard.</b></li> <li><b>2. Specific concerns with this Standards at issue in this SAR:</b> <ol style="list-style-type: none"> <li><b>a. PRC-006-0 would benefit from greater description as to the technical requirements. Specifically, R1.2.4 needs to be defined as to what particular generator protection schemes</b></li> </ol> </li> </ol>



Commenter	Yes	No	Comment
			<p>will be included in the requirement e.g. U/F trip settings.</p> <p>b. R1.2.8 is too broad &amp; encompassing in scope covering "any other schemes that are part of or impact the UFLS programs". The schemes that may be impacted by this requirement need to be defined in order to be measurable.</p> <p>c. The levels of non-compliance should be augmented in PRC-006-0. For example, a level 2 non-compliance should be added for not meeting 2 or more elements of R1. A level 3 non-compliance should be added for not meeting R2. Level 4 non-compliance should be modified to target only those entities that do not complete a UFLS assessment within the last five years or those entities who do not provide this assessment to the regional entity.</p> <p>d. As indicated by FERC, PRC-008 should be modified "to include a requirement that maintenance and testing of programs must be carried out within a maximum allowable interval appropriate to the relay type and the potential impact on the Bulk-Power System."</p> <p>3. The PRC Standards need to be reviewed to ensure applicable entities/functions are appropriately identified. For example, TOP's &amp; LSEs' are missing from: (i) R1, R2 &amp; M1 in PRC-007, and (ii) the Applicability, Requirements and Measures sections in PRC-008. In addition, in certain instances (PRC-007 &amp; -008), because independent system operators and regional transmission organizations are TOPs, the PRC-007 and PRC-008 may not be appropriately applied to these entities, because such entities do not own/operate UFLS.</p> <p>4. The SAR should consider deleting PRC-009, and add the requirements to PRC-006-0 as R1.4.3.</p>
<p><b>Response:</b></p> <p>The SAR drafting team agrees with ISO-NE's comment and recommends that the standards dealing with relay maintenance and testing be addressed in the same project (but not Project 2007-01):</p> <ul style="list-style-type: none"> <li>• PRC-005 (Project 2008-04)</li> <li>• PRC-008 (Project 2007-01)</li> <li>• PRC-011 (Project 2008-02)</li> <li>• PRC-017 (Project 2008-04)</li> <li>• PRC-018, Requirement 6 (Project 2007-011)</li> </ul> <p>The SAR drafting team will forward this recommendation to NERC staff for consideration.</p> <p>The balance of ISO-NE's comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</p>			

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Commenter	Yes	No	Comment
KCP&L			To expand on the general comment above, the standards would be better organized by separating the reliability requirements from the supporting text that explains the requirements. Measures should then be applied only to the requirements and not the text.
<p><b>Response:</b></p> <p>KCP&amp;L comment has been added to the SAR for resolution during standard drafting.</p>			
Manitoba Hydro			<p>PRC – 007 – 0</p> <p><b>Purpose -</b></p> <p>If each standard included a list of all other closely related standards, the individual non-repeated purposes of related standards could be more easily compared by readers when necessary.</p> <p><b>Requirements – Shall Do What?</b></p> <p>R2 – “As necessary” should be removed. Annual updates of UFLS data to the RRO are necessary, even if they just only confirm that the previous year’s data is still valid. Please refer to R3 comment below.</p> <p>R3 – Recommend further revision of R3. As well as RRO requested data within 30 days, there should be a mandatory requested annual update. This will coordinate with comment of R2.</p> <p><b>Measures - 2M for 3R.</b></p> <p>By making revisions to R2 and R3 as shown above, measure M2 will now appropriately cover both R2 and R3 for annual data updating and appropriate documentation transmission to RRO.</p> <p>PRC-008-0</p> <p>Measure M1 needs to be revised to clearly reflect the measures applied to Requirement R1.</p>
<p><b>Response:</b></p> <p>Manitoba Hydro’s comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</p>			

**Standards Authorization Request Form - Project 2007-01 Underfrequency Load Shedding (UFLS)**

Commenter	Yes	No	Comment
<p>So. Company Transmission, Generation, and Alabama Power</p>			<p><b>Under PRC-006, Requirement 1.2, it is recommended the Regions have the responsibility for design details for determining Load Shedding Blocks (MWs), intentional and total tripping time delays, Generation protection, Islanding Schemes, Tie tripping schemes (within a Region), frequency set points (excludes BAL standard) and Load Restoration schemes. Also, the reporting of the time delay should only include the total time and not include the intentional time delay. The intentional time delay is included in the total time.</b></p> <p><b>In PRC-006, Requirement 1.3, the Regional UFLS database is required to be updated at least every 5 years. However, under PRC-007, R2, the Transmission Owner is required to update its underfrequency data at least annually. These two timing update requirements should be consistent with one another.</b></p> <p><b>In PRC-008 it is unclear how often the Transmission Owners are required to assess its maintenance and testing program. We recommend adding language to the SAR that says on a "as needed" basis.</b></p> <p><b>Under PRC-008, Requirement 2, it states that Transmission Owner must implement its maintenance and testing program that is required in R1. It would seem more appropriate to include the implementation portion of R2 into R1 to say the Transmission Owner must have and implement a maintenance and testing program.</b></p> <p><b>The SAR drafting team should recognize that individual generator frequency trip set points are established by the manufacturer of the generator and not by the Generator Owner. Therefore, in the development of the underfrequency load shedding scheme, each Transmission Owner should recognize that these generator frequency trip settings cannot be adjusted and the load shedding schemes should take this into account. This standard should not require a Generator Owner to operate beyond the limits set by the manufacturer.</b></p>
<p><b>Response:</b></p> <p><b>So. Company Transmission, Generation, and Alabama Power's comments are outside the scope of the SAR drafting team to resolve. The comments have been noted and added to the SAR for resolution during standard drafting.</b></p>			