

Background

The Phase III & IV drafting team thanks all commenters who submitted comments on the second draft of the standards included in Set Two of the Phase III & IV standards. Set Two of the Phase III & IV standards was posted for a second public comment period from October 17 through December 3, 2005. The SDT asked industry participants to provide feedback on the standards through a special Standard Comment Form. There were 36 sets of comments, including comments from more than 145 different people 6 of the 9 Industry Segments, and all NERC regions as shown in the table on the following pages.

After careful review and consideration of the comments received, the drafting team believes that the following standards have reached stakeholder consensus. With the approval of the Standards Authorization Committee, the drafting team will post these standards for a 30-day pre-ballot review:

- EOP-005 — System Restoration Plans
- MOD-013 — Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures
- MOD-016 — Documentation of Data Reporting Requirements for Actual and Forecast Demands, Net Energy for Load, and Controllable Demand-Side Management

One standard (VAR-002) has not reached stakeholder consensus. The drafting team modified VAR-002 based on stakeholder comments and will post the standard for an additional comment period. VAR-001 is a companion standard to VAR-002, and although stakeholder consensus seems to have been reached on VAR-001, the drafting team wants stakeholders to have another opportunity to review VAR-001 giving consideration to the changes made to VAR-002:

- VAR-001 — Voltage and Reactive Control
- VAR-002 — Generator Operation for Maintaining Network Voltage Schedules

Several commenters indicated that the requirements in VAR-003 Assessment of Reactive Power Resources, duplicate requirements in the already implemented Version 0 (TPL-001 System Performance Under Normal Conditions and TPL-002 System Performance Following Loss of a Single BES Element) standards and the drafting team will ask stakeholders if they agree with these commenters.

The Standards Authorization Committee (SAC) directed the drafting team to field test two of the standards in Set One of Phase III & IV:\

- MOD-026-1 — Verification of Generator Excitation Systems and Voltage Control Model Data
- MOD-027-1 — Verification and Status of Generating Unit Frequency Response

The drafting team posted a description of all these field tests.

Informational versions of MOD-026 and MOD-027 have been posted so stakeholders can see the changes made based on comments submitted during the second comment period.

This 'Consideration of Comments' document includes the comments on the standards that are in 'Set Two' and they are listed in the Index on the following pages.

Consideration of Comments on Second Posting of Set Two of Phase III & IV Standards

In this document, stakeholder comments have been organized so that it is easier to see the summary of changes being requested of each standard. All comments received on the second draft of Phase III & IV Set Two can be viewed in their original format at:

<http://www.nerc.com/~filez/standards/Phase-III-IV.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 Cauley at 609-452-8060 or at gerry.cauley@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

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

Legend:

Groups that submitted comments:

- (G1) - TVA
- (G2) - WECC Loads and Resources Subcommittee
- (G3) - SERC EC Planning Standards Subcommittee
- (G4) - SERC Operations Planning Subcommittee
- (G5) – Southern Co Services
- (G6) – Southern Co Generation
- (G7) - Midwest Reliability Organization
- (G8) – NPCC CP9, Reliability Standards Working Group
- (G9) – Pepco Holdings Inc Affiliates
- (G10) – ISO/RTO Council
- (G11) – WECC Reliability Subcommittee
- (G12) - FRCC

Industry Segments:

- 1 - Transmission Owners
- 2 - RTOs, ISOs, Regional Reliability Councils
- 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 Gv't Entities

(I) – Indicates that a set of comments was submitted individually in addition to submitting comments as part of a group

Commenter	Organization	Industry Segment								
		1	2	3	4	5	6	7	8	9
Bill Shemley (G8)			x							
Mike Green (G3)	AEC	x								
Anita Lee (G10)	AESO		x							
Darrell Pace (G3)	AL Electric Coop	x								
Ken Goldsmith (G7)	ALT									
Kirit Shah	Ameren - Transmission Issues Subcommittee									
John E. Sullivan	Ameren	x								
Peter Burke	ATC	x								

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Commenter	Organization	Industry Segment								
		1	2	3	4	5	6	7	8	9
Scott Waples (G11)	Avista									
Thomas Fung	BCTC		x							
Dave Rudolph (G7)	BEPC									
Mary Johannis (G2)	BPA	x								
Lynn Aspaas	BPA	x		x		x	x			
Rebecca Berdahl (G11) (I)	BPA	x		x		x	x			
Chuck Matthews (G11)	BPA	x								
Phil Park (G11)	British Columbia TC			x						
Lisa Szot (G10)	CAISO		x							
Grace Anderson (G2)	CEC									x
Mike Jaske (G2)	CEC									x
Jesus Moya Vazquez	CFE	x		x		x				
Karl Kohlrus	City Water, Light & Power					x				
Bob Remley (G12)	Clay Electric			x						
Bob Kotecha (G8)	ConEd	x								
John K. Loftis, Jr.	Dominion – Elec Trans	x								
Brian Moss (G3) (G4)	Duke Power	x								
Don Reichenbach (G4)	Duke Power	x								
Greg Mason	Dynegy Generation					x				

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		1	2	3	4	5	6	7	8	9
Kham Vongkhamchanh (G3)	Entergy	x								
Uma Gangadharan (G4)	Entergy	x								
Melinda Montgomery (G4)	Entergy	x								
Sam Jones (G10)	ERCOT		x							
Bill Bojorquez	ERCOT – Standards Evaluation Subcommittee		x							
Ray Morella	FirstEnergy	x								
Bob Schoneck (G12)	FPL			x						
John Shaffer (G12)	FPL	x								
John Odom (G12)	FRCC		x							
Linda Campbell (G12)	FRCC		x							
Dick Pursley (G7)	GRE									
David Kiguel (G8)	Hydro One	x								
Roger Champagne	Hydro-Québec TransÉnergie	x								
Ron Schelberg (G11)	Idaho Power Co	x								
Ron Falsetti (G10) (I)	IESO		x							
Rick Haener (G2)	IPC	x								
Pete Brandien (G10)	ISO-NE		x							
Kathleen Goodman (G8) (I)	ISO-NE		x							
Greg Woessner (G12)	Kissimmee Utility Authority			x						

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		1	2	3	4	5	6	7	8	9
Mace Hunter (G12)	Lakeland Electric				x					
Paul Elwing (G12)	Lakeland Electric					x				
Dennis Florom (G7)	LES									
Mo Beshir (G11)	Los Angeles DWP	x								
Shashi Parehk (G8)	MA Dept. Tele. & Elec.									x
John Horakh	MAAC		x							
Mark Kuras	MAAC		x							
Jerry Tang (G4)	MEAG	x								
David Weekley (G3)	MEAG Power	x								
Tom Mielnik (G7)	MEC									
Robert Coish (G7)	MHEB									
Terry Bilke (G7)	MISO		x							
Bill Phillips (G10)	MISO		x							
Joe Knight (G7)	MRO		x							
Peter Lebro (G8)	Nat'l Grid	x								
Julie Reichle (G11)	Northwestern	x								
Guy Zito (G8)	NPCC		x							
Alan Boesch (G7)	NPPD	x								
Dave Little (G8)	NS Power	x								

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		1	2	3	4	5	6	7	8	9
John Leland (G2)	NWE	x								
Greg Campoli (G8)	NYISO		x							
Mike Calimano (G10)	NYISO		x							
Ralph Rufrano (G8)	NYPA	x								
Al Adamson (G8)	NYSRC		x							
Todd Gosnell (G7)	OPPD									
Tom Washburn (G12)	OUC			x						
Ben Morris (G11)	Pacific Gas and Electric	x								
Michael Sidiropoulos (G11)	PacifiCorp	x								
Phil Creech (G4)	PEC	x								
David Thorne (G9)	Pepco	x								
James Newton (G9)	Pepco Energy Services						x			
Richard J. Kafka (G9)	Pepco Holdings	x								
Steve Crutchfie (G4)ld	PJM		x							
Bruce Balmat (G10)	PJM		x							
Mahendra Patel	PJM - Wind Generation TF		x							
Michael Pfeister	Salt River Project	x								
Brian Keel (G11)	Salt River Project	x								
Mohan Kondragunta	SCE	x								

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		1	2	3	4	5	6	7	8	9
Clay Young (G3)	SCE&G			x						
Gene Delk (G4)	SCE&G	x								
Art Brown (G3)	SCPSA	x								
William Gaither (G4)	SCPSA	x								
Steve Wallace (G12)	Seminole Electric Coop				x					
Garl Zimmerman (G12)	Seminole Electric Coop				x					
Carter Edge (G4)	SEPA				x					
Pat Huntley (G3)	SERC		x							
Susan Morris (G4)	SERC		x							
Craig Cameron (G11)	SMUD									
Mohan Kondragunta (G11)	Southern CA Edison	x								
Roman Carter (G6)	Southern Co Generation					x				
Thomas A. Higgins (G6)	Southern Co Generation					x				
Joel Dison (G6)	Southern Co Generation					x				
Wayne Moore (G6)	Southern Co Generation					x				
Doug McLaughlin (G4)	Southern Company	x								
Bob Jones (G3)	Southern Co Services									
Marc Butts (G5)	Southern Co Services	x								
Dan Baisden (G5)	Southern Co Services	x								

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		1	2	3	4	5	6	7	8	9
James Busbin (G5)	Southern Co Services	x								
Wade Pugh (G5)	Southern Co Services	x								
Keith Calhoun (G5)	Southern Co Services	x								
James Ford (G5)	Southern Co Services	x								
Mike Oatts (G5)	Southern Co Services	x								
Doug McLaughlin (G5)	Southern Co Services	x								
Dean Ulch (G5)	Southern Co Services	x								
Jim Viikinsalo (G5)	Southern Co Services	x								
Phil Winston (G5)	Southern Co Services	x								
Rodney O'Bryant (G5)	Southern Co Services	x								
Jim Griffith (G5)	Southern Co Services	x								
Steve Williamson (G5)	Southern Co Services	x								
Monroe Landrum (G5)	Southern Co Services	x								
Raymond Vice (G5)	Southern Co Services	x								
Terry L. Crawley (G6)	Southern Nuclear					x				
Charles Yeung (G10)	SPP		x							
Alan Gale (G12)	Tallahassee Electric				x					
Roger Champagne (G8)	TE	x								
Jerry Nicely (G1)	TVA					x				

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		1	2	3	4	5	6	7	8	9
Mark Marcum (G1)	TVA					x				
Dennis Chastain (G1)	TVA	x								
David Marler (G1)	TVA	x								
David Thompson (G1)	TVA					x				
Bob Millard (G1)	TVA	x								
Meredith Snyder (G1)	TVA	x								
Jim Whitehead (G1)	TVA	x								
Travis Sykes (G3)	TVA	x								
David Till (G3)	TVA	x								
Larry Goins (G4)	TVA	x								
Mike Clements (G4)	TVA	x								
Karl A Bryan	US Army Corps of Engineers					x				
Jay Seitz	US Bureau of Reclamation					x				
Darrick Moe (G7)	WAPA									
Leonard York (G11)	WAPA	x								
Mariam Mirzadeh (G11)	WAPA-SNR	x								
Howard Rulf	We Energies			x	x	x				
Jay Loock (G2)	WECC		x							
Dick Simons (G2)	WECC		x							

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		1	2	3	4	5	6	7	8	9
Steve Ruekert (G11)	WECC		x							
Jim Maenner (G7)	WPS									
Pam Oreschnick (G7)	Xcel									
Jim Whitaker (G11)	Xcel Energy	x								

Index to Questions, Comments and Responses:

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1. Please identify anything you believe needs to be modified before EOP-005 (System Restoration Plans – Modified Version 0) is balloted:

Summary Consideration: Several commenters noted that Attachment 1 was not included in the 2nd posting of EOP-005 - Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement (10.1) to update the verification at least once every five years. The change is shown below:

6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures. ~~(at least every three years)~~

Commenters also indicated that the Transmission Operator should be required to coordinate its system restoration plan with the Generator Owner, and this does seem necessary. The Transmission Operator is required to demonstrate that the blackstart units in the Transmission Operator's restoration plan can perform their intended functions as required in the Regional restoration plan. Requirement 4 was modified to require the Transmission Operator to coordinate its restoration plans with Generator Owners (as well as others).

The only other significant change made to the standard was to return the original (Version 0) Compliance Administration language to the standard, but to rearrange the order of the information.

Commenter	Comment
FRCC (G12)	Delete references to Attachment 1 in R1, D2.2 and D2.4.1 (since Attachment 1 has been removed)
	<p>Response: Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below:</p> <p>6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years)</p>
FirstEnergy Raymond Morella	The standard is acceptable as written. It is assumed that Attachment 1-EOP-005-1 remains unchanged as it was not provided.
	<p>Response: Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below:</p> <p>6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years)</p>
Mid-Atlantic Area Coordinating Council John Horakh	<p>The IV.A.M2 and M3 material should NOT be moved to a new Version 1 Standard. Material that is closely related should be kept together as much as possible.</p> <p>I assume the EOP-005-1 Attachment 1 will be the same as the EOP-005-0 Attachment 1. That was not made clear and the Attachment was not included with the Standards as posted.</p>

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Commenter	Comment
	<p>Cranking Path information to be provided (R9 and M2) should be transmitted by a secure method and kept in a secure location. Should that be specified in the Standard?</p>
	<p>Response: Most commenters indicated a preference for leaving the measures from IVAM2 and M3 in EOP-005 so they were not moved into a separate standard.</p> <p>Response: Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below:</p> <p style="padding-left: 40px;">6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years)</p> <p>The standard does not require that the cranking path information be transmitted – the standard only requires that the information be made available for review at the TOP's location. The drafting team modified the language in R9 to make this more clear.</p>
<p>Pepco Holdings, Inc. Affiliates (G9)</p>	<p>PJM requires annual testing of black start units. This does not appear to be unduly burdensome and gives greater assurance of successful black start when required. Fives years is a very long time for units that may not run otherwise. PHI assumes that Attachment 1 (of EOP-005-0) still applies - it should be included in the package.</p>
	<p>Response: EOP-005's intent is to validate that the 'plan' works, not that the 'unit' works. Testing the 'unit' is addressed in EOP-009.</p> <p>Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below:</p> <p style="padding-left: 40px;">6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years)</p>
<p>U.S. Army Corps of Engineers Karl Bryan</p>	<ol style="list-style-type: none"> 1. If references to simulated testing for blackstart should be changed so that only actual testing is performed. Or, at a minimum require blackstart testing to be performed once every 5 years. There is no guarantee that the generating facilities will be able to provide line charging necessary to blackstart the grid and/or pick up the load blocks as identified in the restoration plan. At present blackstart testing is required for blackstart listed facilities, but this blackstart testing is only verifying that the generating facility can energize its own internal powersystem. The proof of the pudding would be for the generating facility to energize a piece of the grid and then to pick up load commensurate with the blocks of load that the system restoration plan says the facility would be expected to pick up. Allowing simulation of the blackstart testing of the grid is like starting a car, the engine starts but that is no guarantee that the car can be driven, especially if the transmission is not connected to the engine. 2. A requirement for developing blackstart agreements between the transmission operator and the generator owner needs to be added. It amazes me how often the restoration plans refer to a blackstart generator and yet the owner/operator of the generator isn't aware that they are even on a blackstart list let alone what role they play in system restoration. Also, how quickly blackstart is required needs to be a part of the agreement. My organization is looking at remote operating some facilities identified as blackstart generating facilities and the time to blackstart will

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Commenter	Comment
	<p>be close to 2 hours. The system restoration plan developers don't have a time requirement listed for blackstarting. Economics is driving the remoting of the facilities and if blackstarting is required then the cost for the blackstart asset needs to be paid for.</p> <p>3. A requirement for developing cranking path agreements between the transmission operator and the generator owner/operato needs to be added.</p> <p>4. There should also be additional Measures for:</p> <ul style="list-style-type: none"> a. Transmission operator provide documentation of blackstart agreements with the generator owner that has been identified as a blackstart generator. b. Transmission operator should provide test results for verifying that the pieces of the system restoration plan are capable of being performed by the blackstart generators. c. Transmission operator provide documentation of cranking path agreements with the generator owners of generating facilities that are identified as cranking path resources (generators).
<p>Response:</p>	<p>1. EOP-005's intent is to validate that the 'plan' works, not that the 'unit' works. Testing the 'unit' is addressed in EOP-009. To test the entire plan may require shedding load and is not practical.</p> <p>2, 3, 4a, 4c. Adding requirements and associated measures for agreements is outside the scope of the SARs for this set of standards.</p> <p>4b. This is already addressed in R10.</p>
<p>SERC Operations Planning Subcommittee (G4)</p>	<p>Remove the word "availability" from R8 in EOP-005-1. This concept is already addressed in EOP-007-0 in the Regional BCP. Availability is an operating consideration rather than a discrete data element.</p> <p>Incorporating IVAM2 and IVAM3 into EOP-005 is sufficient. There is no need for a new Standard.</p>
<p>Response:</p>	<p>Sufficient availability needs to be considered in the system restoration planning process. EOP-007 and EOP-005 do both use the term, 'availability' but they are not asking for the same thing.</p> <p>Most commenters indicated a preference for leaving the measures from IVAM2 and M3 in EOP-005 so they were not moved into a separate standard.</p>
<p>Dynegy Generation Greg Mason</p>	<p>1.R8. The term "availability" needs to be omitted or clarified. Should the term "reliability" be used instead? How will the Transmission Operator verify/judge the availability or reliability of a unit for blackstart other than the results of the blackstart tests already specified in R10?</p> <p>2. R10. This section needs to clarify the term "intended function." If this term means actually testing or simulating the starting of a larger and perhaps remote unit from a blackstart unit, then the Transmission Owner should be required to obtain the Generation Owner's concurrence on any such test because of the risk to plant equipment during a test.</p> <p>3.R10.1 This section should be modified to require this simulation or testing be completed at least once every five years, unless the Transmission Owner can verify that system conditions that would impact the test/simulation have not substantially changed in the last five years.</p>
<p>Response:</p>	

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Commenter	Comment
	<ol style="list-style-type: none"> 1. Some units may be temporarily unavailable to perform their intended function due to maintenance, seasonal characteristics, e.g. water availability of hydro units. The drafting team believes that ‘availability’ is the correct term. 2. The requirement allows for simulation which is not necessarily an actual test involving the Generator Owner. 3. Five years seems reasonable given the importance of verifying that the blackstart can perform its intended functions. Note that this requirement can be met with simulation, and involves just a subset of the entire network.
<p>U.S Bureau of Reclamation Jay Seitz</p>	<ol style="list-style-type: none"> 1. This standard lists 11 requirements and several sub-requirements (20 in all). However there are only 2 measurements described. The standard should be drafted such that for each requirement there is a defined, documented measure. And each measure should cite which requirement it assesses. 2. We believe the number of requirements for this standard could be greatly distilled. For example the bulk of the standard could be comprised of two requirements: R1 the requirement to develop the restoration plan and all the components required of that plan; and R2 the requirement to prove and document that the plan works. Then, two measurements would follow: one to assess the contents of the plan and one to assess the simulation or testing of the plan. 3. Additional requirements, such as testing communication systems and performing and documenting training exercises, should each have a corresponding measure. 4. R8 of the draft deals with the capabilities of the generating unit. The length of time for the unit to be blackstarted should also be addressed. Although a unit may be blackstart capable it may take an inordinate amount of time to start the unit. The starting time expectations of the plan should be vetted by the generator owner. 5. As part of the restoration plan the transmission operator shall also have documented that the generator owner is aware of the plan, aware of the generator’s role, and agrees to participate.
	<p>Response:</p> <ol style="list-style-type: none"> 1, 3. Adding measures for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements. 2. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. 4. The Regional requirements should include timing constraints. 5. The drafting team modified R4 to include a requirement to coordinate the plan with the Generator Owners.
<p>PJM Interconnection, L.L.C. Mark Kuras</p>	<ol style="list-style-type: none"> 1. Compliance elements need to be developed for all the requirements in this standard. Standards should not be revised piecemeal. These added requirements are in the right place in this Standard but the entire Standard needs to be revised not just a small part added. 2. There is no Attachment 1 to review. 3. In 2.4.1, remove ...exists but... 2.4.2 can then be deleted. 4. Add ...were not provided... to the end of 2.4.3 and delete ...No... at the beginning of 2.4.3.

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Commenter	Comment
	<p>Response:</p> <ol style="list-style-type: none"> 1. Adding compliance for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements. 2. Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below: <ol style="list-style-type: none"> 6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years) 3. The language in the levels of non-compliance for 2.4.1 and 2.4.2 was copied from Version 0 and making changes to these is outside the scope of the SARs. 4. 2.4.3 was modified as suggested.
<p>ISO/RTO COUNCIL (G10)</p>	<ol style="list-style-type: none"> 1. It is the IRC's view the standard needs to be developed to incorporate compliance elements for all requirements within the standard and NERC should avoid evolving / developing standards piecemeal. These added requirements are in the right place in this Standard but the entire Standard ought to be revised rather than adding small parts to it. 2. Requirement R1 specifies that only the applicable elements of Attachment 1 need be included within the plan while the level 4 non-compliance is based on exclusion of two or more elements from the attachment. We recommend inclusion of"applicable "...in the level 4 compliance level to be consistent.. We also suggests an appropriate definition or guidelines to be added to explain what constitutes "Applicable elements". 3. In 2.4.1, remove ..."exists but"... 2.4.2 can then be deleted. 4. Add ..."were not provided"... to the end of 2.4.3 and delete ..."No"... at the beginning of 2.4.3. 5. R7 The IRC suggests guidelines/clarification be provided to explain what constitutes "testing" or "simulation" of the restoration procedure. Is it intended that only simulations through the use of a simulator constitute compliance or will table top restoration plans exercises satisfy this requirement. 6. R4. Should generators be included given that they are a key part for restoration plans? 7. R5. Change to upper case for BA. "periodically" should be a more specific term i. e. yearly, etc. 8. R8. and R10. They might be blended in one text. 9. R10." ..through simulation .." Should be provided a definition for simulation? and if so, consider specifying to what extent. 10. Also, Attachment 1 is not included for review.
	<p>Response: 1. Adding compliance for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.</p> <p>2, 5. R1, R5 and R7 are existing Version 0 Requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. For an interpretation of an</p>

Consideration of Comments on Second Posting of Set Two of Phase III & IV Standards

Commenter	Comment
	<p>already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26).</p> <ol style="list-style-type: none"> 3. The language in the levels of non-compliance for 2.4.1 and 2.4.2 was copied from Version 0 and making changes to these is outside the scope of this drafting team. 4. 2.4.3 was modified as suggested. 5. This is a Version 0 requirement and we encourage you to submit a request to the Director, Standards asking for a formal interpretation. 6. The standard was modified as suggested to require that the TOP coordinate its restoration plan with the Generator Owners. 7. Capitalization errors have been corrected. 8. Agree that R8 and R10 could be combined – however there is nothing wrong with these as two separate requirements and most commenters seemed to support this as two separate requirements so these were not combined. 9. The drafting team has been advised to avoid defining terms that have common definitions. 10. Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below: <ol style="list-style-type: none"> 6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years)
<p>Dominion John Loftis SERC EC Planning Standards Subcommittee (G3)</p>	<p>Revise R8. to be consistent with R1.1 of EOP-007. It should read: Each transmission operator shall provide the name, location, megawatt capacity, type of unit, latest date of test, and starting method of the system blackstart generating units in the transmission operator’s area to meet the regional requirement for maintaining a database.</p> <p>If this recommendation is accepted, revise the reference to number, size, and location of blackstart units in M2 as appropriate.</p>
	<p>Response: The information in R1.1 comes from the Generator Owner, not the TOP and is used for the Regional database.</p>
<p>NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<ol style="list-style-type: none"> 1. The SES assumes the SDT is not recommending any revisions to Attachment 1-EOP-005-1 at this time. For the convenience of the reviewer, the SES recommends all drafting teams to include any attachments referenced to with the draft standard. 2. The SES recommends the SDT review the draft EOP-005-1 and capitalize all entity names and defined terms such as: Transmission Operators, Balancing Authorities, Reliability Coordinator, Cranking Path, etc. 3. R5 requires periodic testing of telecommunication facilities needed to implement the restoration plan. The SES believes the SDT should replace the term periodically with a stated term such as annually. 4. R6 requires the training of operating personnel in the implementation of the restoration plan, but provides little guidance as to how often or to what degree of scope this training shall incur. The SES recommends the SDT provide additional guidance as to this training requirement in order to make it a more effective and easier to measure.

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Commenter	Comment
	<p>5. R10 requires the Transmission Operator to demonstrate, either through simulation or testing, that the Blackstart generating units in its restoration plan can perform their intended functions. The SES notes that many Transmission Operators do not own or physically control generating units. Therefore, the SES would ask the SDT what obligation does the Generator Operator have in this testing? If there is an obligation, should it not be clearly stated in R10?</p> <p>6. R10.1 requires the Transmission Operator to perform a simulation or test the blackstart units in its restoration plan at a minimum of five years. This is a long interval between tests for large, complicated, mechanical devices such as generators. SES recommends that this interval be consistent with Attachment 1-EOP-005-1.</p> <p>7. The SES believes the Measures provided in the draft standard are a good starting point, but do not go far enough. For example in M2, the Transmission Operator is not specifically required to provide a copy of its plan to other entities unless requested. The SDT would agree, effective communication between entities is essential in service restoration; therefore, the SES recommends the SDT specifically state what entities are to receive the restoration documentation and include requirements, including a provision for updates as situations change.</p>
	<p>Response:</p> <p>1. Attachment 1 should have been included in the posting and this has been corrected. Item 6 in Attachment 1 (Elements for Consideration in Development of Restoration Plans) was modified to eliminate the parenthetical phrase. Some commenters interpreted the parenthetical phrase as requiring verification every three years, and this conflicts with the requirement to update the verification at least once every five years. The change is shown below:</p> <p style="padding-left: 40px;">6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years) Adding requirements and measures to address concepts beyond those included in Phase III & IV is outside the scope of the SARs for this drafting team. You can submit a SAR to modify EOP-005 to add more requirements and measures.</p> <p>2. Capitalization errors have been corrected.</p> <p>3,4. R5, R6 are existing Version 0 Requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p> <p>5. It is not the standard's intention to create an obligation. The TOP can work with the Generator Owner to do actual testing or the TOP can simulate the operation. EOP-009 includes requirements for testing the unit. Note that the drafting team did modify R4 to require that the TOP include the Generator Owners in the coordination of its restoration plans.</p> <p>6. Attachment 1 is unclear about periodicity of testing. The only periodicity referenced in Attachment 1 seemed to be periodicity for updating procedures (#6). Because this seemed unclear, the drafting team is recommending that the parenthetical in #6 be removed. Note that the testing of the generator is addressed in EOP-009 and EOP-007 and is every three years.</p>
<p>American Transmission Co. Peter Burke</p>	<p>There are some capitalization problems with all of the standards in this set in that the functional entities, such as Transmission Planner, Regional Reliability Coordinator, etc. should be capitalized consistently throughout the standards.</p> <p>The industry should develop future standards for every generator to establish a blackout plan to improve coordination during an actual restoration event in addition to more specific standards applied to blackstart generators.</p>
	<p>Response: Capitalization errors have been corrected.</p> <p>The suggestion for future standards is outside the scope of this set of SARs. You can submit a SAR for this.</p>

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Commenter	Comment
Bonneville Power Admin. – PBL Rebecca Berdahl	Part of the Black Start Restoration Plan should include a requirement for an appropriate level of coordination with the generation owner/operators that are sited in the plan. This coordination could be documented in the form of an agreement between the administrator of the Black Start Plan and the Generator Owners/Operators participating in the Plan. The coordination agreement should include items such as: identification of generator owner/operator facilities required to participate in the black start plan, when and how quickly a blackstart unit must respond, and what cranking path require energization.
Response: The drafting team modified R4 to require coordination with Generator Owners. Adding requirements for agreements is outside the scope of these SARS.	
Independent Electricity System Operator Ron Falsetti	<ol style="list-style-type: none"> 1. It is IESO's view the standard needs to be developed to incorporate compliance elements for all requirements within the standard and NERC should avoid evolving / developing standards piecemeal. 2. Requirement R1 specifies that only the applicable elements of attachment 1 need be included within the plan while the level 4 non-compliance is based on exclusion of two or more elements from the attachment. We recommend inclusion of"applicable "...in the level 4 compliance level to be consistent.. The IESO also suggests an appropriate definition or guidelines be added to explain what constitutes "Applicable elements" 3. R7 The IESO suggests guidelines/clarification be provided to explain what constitutes "testing" or "simulation" of the restoration procedure. Is it intended that only simulations through the use of a simulator constitute compliance or will table top restoration plans exercises satisfy this requirement.
<p>Response:</p> <ol style="list-style-type: none"> 1. Adding compliance for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements. 2. R1 is an existing Version 0 Requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26). 3. R7 is a Version 0 requirement. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26). 	
Southern Co Generation (G6)	Under Requirement 11.5, the requirement should be modified by removing — may — in the requirement and replacing with: The affected Transmission Operators shall not resynchronize the isolated area(s) with the surrounding area(s) until the following conditions are met. Additionally, we recommend deleting requirement 11.5.4. It does not seem reasonable or logical for a control area to be required to shed 5,000 MWs of load, for example, in order for their neighbor to reconnect 1,000 MWs of their own load.
Response: R11.5 (now 12.5) is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.	
Southern Co Services (G5)	We feel that R11.5 should be reworded to change the operative word in the standard from -may- to -shall.- Furthermore, we feel that R11.5.1, R11.5.2, R11.5.3, and R11.5.4 can be eliminated and the necessary provisions of these standards

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Commenter	Comment
	<p>placed in a more concise statement contained in R11.5. The reworded provision could possibly read as follows: The affected transmission operators shall not re-synchronize the isolated area(s) with the surrounding area(s) unless the voltage, frequency, and phase angle permit, the affected reliability coordinator(s) and the adjacent areas are notified, and reliability coordinator approval is given.</p> <p>We also feel that the training required under R6 should be clearly defined in terms of scope and degree. We feel that this standard is overbroad, vague, and does not provide training personnel with the ability to determine if the requirements of this standard have been met.</p>
<p>Response: R11.5 (now 12.5) and R6 are existing Version 0 Requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	
<p>British Columbia Transmission Corp. Thomas Fung</p>	<p>R3 says each transmission operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection. BCTC is concern this requirement may hinder the transmission operators from restoring their own system to a robust state in order to interconnect with adjacent neighbor systems, and may in fact delay the restoration of the Interconnection. BCTC suggest R3 be revised as follows: Each transmission operator shall develop restoration plans with a priority to restore the integrity of its own system in order to quickly restore the integrity of the Interconnection.</p>
<p>Response: R3 is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	
<p>Midwest Reliability Organization (G7)</p>	<p>The MRO does not believe that the non-compliance item listed in 2.3 should be level 3. The MRO believes it should be level 2 after comparing it with the the non-compliance item listed in 2.2.</p>
<p>Response: The original Measure has already been reduced from level four non-compliance to level three non-compliance.</p>	
<p>Tennessee Valley Authority (G1)</p>	<p>None</p>
<p>WECC Reliability Subcommittee (G11)</p>	<p>None</p>
<p>NERC Wind Generator Task force Mahendra Patel</p>	<p>The WGTF has no comments.</p>
<p>NPCC CP9, Reliability Standards Working Group (G8)</p>	<p>No comment.</p>
<p>Salt River Project Michael Pfeister</p>	<p>None</p>
<p>Hydro-Québec TransEnergie</p>	<p>No comment.</p>

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Commenter	Comment
Roger Champagne	
City Water, Light & Power Karl Kohlrus	None
ISO New England, Inc. Kathleen Goodman	None
Bonneville Power Administration Lynn Aspaas	None
Southern California Edison Mohan Kondragunta	None
Comision Electricidad de Federal (1, 3, 5) Jesus Moya Vazquez	None
Ameren John Sullivan	None
Tennessee Valley Authority (G1)	None
We Energies Howard Rulf	None

2. Please identify anything you believe needs to be modified before MOD-013 is balloted:

MOD-013-1 — Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures (Modified Version 0)

Summary Consideration: The drafting team made four changes as shown below to Requirement 1.1 based on comments and drafting team discussions:

- Shortened the time to provide design data from one year to three months prior to installation
- Added a parenthetical phrase to clarify which excitation systems were addressed by Requirement 1.1.
- Added a sub-requirement to address situations where design data is not available within that 3 month time period
- Deleted the requirement to provide updated data once the unit is in service because this is already required by another standard.

R1.1 Design data shall be provided for new or refurbished excitation systems (for synchronous generators and synchronous condensers) at least ~~one-year~~ three months prior to the ~~installation date in-service date with updated data provided once the unit is in service.~~

R1.1.1 If design data is unavailable from the manufacturer 3 months prior to the installation date, estimated or typical manufacturer's data, based on excitation systems of similar design and characteristics, shall be provided.

Commenter	Comment
Mid-Atlantic Area Coordinating Council John Horakh	The Future Development Plans table shows a Proposed Effective Date of August 1, 2007, but I believe the intended date is February 1, 2007, as shown in other places.
Response: This was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed to November 1, 2006.	
FirstEnergy Raymond Morella	The proposed effective date of the standard is not consistent throughout various references. The drafting team needs to correct and it is assumed the correct data is August 7, 2007.
Response: This was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed to November 1, 2006.	
ISO New England, Inc. Kathleen Goodman	Drafting Team should match Proposed Effective Date with Anticipated Actions Date in this standard. MOD-012-0 should also be revised once MOD-013-1 is approved because MOD-013-0 requirements are referenced in MOD-012-0.
Response: This was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed to November 1, 2006. The only requirement modified or added to MOD-013 applies to design data for new or refurbished excitation systems. The implementation date is a year after the BOT adoption date and this should be sufficient time for entities to comply with both MOD-012 and MOD-013.	
American	The standard has the same capitalization problems as were identified in EPO-005-01.

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Commenter	Comment
Transmission Co. Peter Burke	The proposed effective dates that are used in the document are different throughout the standard (Anticipated Actions table, footer, and A.5) and need to be synchronized.
<p>Response: Capitalization errors have been corrected.</p> <p>The proposed implementation date was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed (everywhere) to November 1, 2006.</p>	
Ameren John Sullivan	Will this reliability standard also apply to wind generators?
<p>Response: Yes, the standard is applicable to wind generators. Additional language was added to clarify that R1 is only applicable to synchronous excitation systems – this excludes some, but not all wind generators from compliance with this requirement.</p>	
ISO/RTO Council (G10) Independent Electricity System Operator Ron Falsetti	<p>In our comments for MOD-028 (see below), we stated that some items were still required to be added to MOD-013, before MOD-028 could be retired. Our position remains the same..</p> <p>The IRC disagrees with the drafting team’s position that all the information within this standard is redundant and contained within MOD-012 & MOD-013, As an example, Requirement R2 (data has to be validated every five years) is not in the above noted standards. This requirement should be moved to MOD-013. With the above recommendation, MOD-028 could then be retired.</p>
<p>Response: Since there is no MOD-028, the drafting team believes this response was entered on the wrong comment form.</p>	
Tennessee Valley Authority (G1)	R1.1 - Design Data needs to be defined. The requirement to provide design data at least one year prior to in-service-dates may be appropriate for new installations. However, some refurbishment scenario's may be completed in less than one year, i.e., equipment failures, equipment damage, emergency type replacements. Therefore, this std. should provide consideration for those refurbishments that may be procured and installed within one year.
<p>Response: Design data is a term that is commonly used and not unique to the electric utility industry. Design data is data that is associated with a piece of equipment that may or may not exist but is planned to be acquired/installed. The drafting team has been advised to avoid defining terms that have common definitions.</p> <p>The requirement to provide design data a year in advance was modified and is now 3 months in advance of the installation date.</p>	
Southern Co Generation (G6)	R1.1 - In practice, design data may not always be available one-year prior to the installation date. We recommend changing R1.1 to read: Design data shall be provided for new or refurbished excitation systems at the time the equipment is ordered with updated data provided once the unit is in service.
<p>Response: The requirement to provide design data a year in advance was modified and is now 3 months in advance of the installation date. If actual design data is not available, the standard was modified to allow for submittal of estimated or typical manufacturer's data.</p>	
FRCC (G12)	<p>As written R1.1 is too restrictive for changes made to existing units and would delay implementation of new excitation systems on existing units. With budgeting and bidding requirements, this information may not be available 1 year before the in-service date.</p> <p>Remove the words "at least one year" from R.1.1 and add two new requirements R1.1.1 and R1.1.2.</p> <p>R1.1.1. For new units, design data shall be provided at least one year prior to the in-service date.</p>

Consideration of Comments on Second Posting of Set Two of Phase III & IV Standards

Commenter	Comment
	R1.1.2. For refurbished units, design data shall be provided at least four months prior to the in-service date.
	Response: The requirement to provide design data a year in advance was modified and is now 3 months in advance of the installation date. If actual design data is not available, the standard was modified to allow for submittal of estimated or typical manufacturer's data.
Dynergy Generation Greg Mason	1.R1.1 This requirement is not practical as written. It will not always be feasible to provide new excitation system design data one year prior to the in-service date.Exceptions need to be provided for excitation system failures or other unforeseen circumstances. In those cases,the Generation Owner may temporarily install a backup system with little notice. In addition,the normal advance notice should be changed from one year to 6 months to reflect more typical excitation system project timeframes. Also, suggest deleting the wording "other associated generation equipment" since it is vague and adds nothing to the "such as..." phrase.
	Response: The requirement to provide design data a year in advance was modified and is now 3 months in advance of the installation date. If actual design data is not available, the standard was modified to allow for submittal of estimated or typical manufacturer's data. The phrase, 'other associated generation equipment' is in R1.2 which is an existing V0 requirement – modifying this is outside the scope of the SARs for this drafting team.
U.S Bureau of Reclamation Jay Seitz	The standard should be drafted such that for each requirement there is a defined, documented measure. And each measure should cite which requirement it assesses. Requirement R.1.2.2 requires unit-specific data for generators installed after 1990. the justification for this requirement is not clear. Data for sister units should be allowable regardless of the date of installation.
	Response: Adding measures for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements. R1.2.2 is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26).
U.S. Army Corps of Engineers Karl Bryan	R1.2.1 should allow the data from sister or identical units procured under the same contract in lieu of requiring unit specific data. Performing the required tests on identical units is not cost effective when you consider that the resulting data from identical units is well within the modelling parameter tolerances. Also, what is the justification for the 1990 cut off date for actual data vs. manufacturers data? The requirement that only unit specific data is acceptable for generators installed after 1990 means that each generator procured under the same contract would have to be individually tested even though the units are essentially identical. Requiring each unit to be tested seems to be a great waste of money and resources. Recommend that the last sentence of R1.2.1 be removed. There should be a measure for each requirement, otherwise how can you audit the requireme
	Response: R1.2.1 is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26). Adding measures for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.

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Commenter	Comment
NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT	<ol style="list-style-type: none"> 1. The SES recommends the SDT review the draft MOD-013-1 and capitalize all entity names such as: Regional Reliability Organization, Transmission Owners, Transmission Planners, etc. 2. Also the SES recommends the SDT revise the Applicability section to include the named entities in R1 since each entity incurs some level of obligation to satisfying the standard. 3. R1.2.1 states that estimated or typical manufacturer's dynamic data may be submitted to the RRO when unit-specific data cannot be obtained. The SES believes the best source of this data is actual testing. However, for the standard, the SES recommends the SDT give each RRO the discretion to determine if estimated or test-verified dynamic data is acceptable, including any year or size thresholds. 4. R1.3, the terms static VAR controllers and static compensators are different terms for the same device. 5. The SES believes the review of the data requirements and reporting procedures for this draft standard listed in R2 at five years is too long. The SES recommends this interval be 3 years.
<p>Response:</p> <ol style="list-style-type: none"> 1. Capitalization errors have been corrected. 2. The Applicability section was developed during the development of Version 0 – and modifying this is outside the scope of the drafting team's assignment. 3. R1.2.1, R1.3 and R2 are existing Version 0 Requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. 	
Bonneville Power Admin. – PBL Rebecca Berdahl	Recommend that the last sentence of R1.2.1 be revised or removed to account for generation owners procurement of multiple 'in-kind' generation equipment. This would eliminate needless and costly testing of generators procured under the same contract that perform to the same specs.
<p>Response: R1.2.1 is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	
Southern Co Services (G5)	We feel that under R1.2.1, the operative word -may- should be changed to -shall,- as -may- could imply that there is an option not to act.
<p>Response: R1.2.1 is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	
NERC Wind Generator Task force Mahendra Patel	The WGTF suggests that the standard drafting team clarify that R1.1 is applicable to wind generator plants (not individual wind generators). R1.2 should be clarified to refer to wind generator plants (not individual wind generators).
<p>Response: The standard was modified to clarify that R1 is only applicable to synchronous generator and synchronous condenser excitation systems.</p> <p>R1.2 is an existing Version 0 Requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	

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Commenter	Comment
SERC EC Planning Standards (G3)	<p>1) In the Levels of Non-Compliance section, change R1 to Requirement 1 in sections 2.3 and 2.4.</p> <p>(2) Since design data generally will not be available one-year prior to the installation date, change R1.1 to read: Design data shall be provided for new or refurbished excitation systems at the time the equipment is ordered with updated data provided once the unit is in service.</p>
<p>Response:</p> <p>1. The format used for cross references to requirements within a standard is the format established by the Director-Standards. The first reference within a standard to a requirement within that standard includes the use of the word, 'Requirement' – but all successive references to the same requirement use 'R' followed by the applicable requirement number.</p> <p>2. The requirement to provide design data a year in advance was modified and is now 3 months in advance of the installation date. If actual design data is not available, the standard was modified to allow for submittal of estimated or typical manufacturer's data.</p>	
Dominion John Loftis	<p>(1) In the Levels of Non-Compliance section, change R1 to Requirement 1 in sections 2.3 and 2.4.</p> <p>(2) Requirement R1.1 states: "Design data shall be provided for new or refurbished excitation systems at least one year prior to the in-service date with updated data provided once the unit is in service." The phrase "Design data" can be interpreted many different ways, e.g. "the system is capable of continuously supplying 105% of the nominal rated current to the generator rotor, and 150% ceiling current for a minimum of 30 seconds; Ceiling voltage is based on 1.6 x rated field voltage; the excitation system is rated for the operating conditions of 40°C maximum ambient temperature with 90% non-condensing humidity", etc. are all part of the "Design data". Also, there should be some time limit to provide the final data once in service. Suggest that Requirement R1.1 be reworded as follows: "Dynamic model(s) with preliminary data shall be provided for new or refurbished excitation systems at least one year prior to the in-service date. "As-built" field data shall be provided within 90 days from actual in-service date."</p>
<p>Response:</p> <p>1. The format used for cross references to requirements within a standard is the format established by the Director-Standards. The first reference within a standard to a requirement within that standard includes the use of the word, 'Requirement' – but all successive references to the same requirement use 'R' followed by the applicable requirement number.</p> <p>2. Providing the actual data is already addressed in R1.2 which is a Version 0 requirement – adding a time constraint to existing V0 requirements is outside the scope of the SARs assigned to this drafting team.</p>	
City Water, Light & Power Karl Kohlrus	None
Bonneville Power Administration Lynn Aspaas	None
Midwest Reliability Organization (G7)	None

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Commenter	Comment
Southern California Edison Mohan Kondragunta	None
PJM Interconnection, L.L.C. Mark Kuras	None
Salt River Project Michael Pfeister	None
Hydro-Québec TransEnergie Roger Champagne	No comment.
British Columbia Transmission Corp. Thomas Fung	None
WECC Reliability Subcommittee (G11)	None
We Energies Howard Rulf	None
NPCC CP9, Reliability Standards Working Group (G8)	No comment.
Comision Electricidad de Federale Jesus Moya Vazquez	None
Pepco Holdings, Inc. Affiliates (G9)	None

3. Please identify anything you believe needs to be modified before MOD-016 is balloted:

MOD-016-1 — Documentation of Data Reporting Requirements for Actual and Forecast Demands, Net Energy for Load, and Controllable Demand-Side Management (Modified Version 0)

Summary Consideration: The drafting team made some minor changes to improve the clarity of the requirements, but did not make any significant changes.

Commenter	Comment
Mid-Atlantic Area Coordinating Council John Horakh	The Future Development Plans table shows a Board Adoption Date of May 1, 2006 and a Proposed Effective Date of November 1, 2006, but I believe the intended dates are August 1, 2006 (Adoption) and February 1, 2007(Effective), as shown in other places.
Response: The dates have been modified so they are consistent within the standard. The implementation date was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed to November 1, 2006.	
Pepco Holdings, Inc. Affiliates (G9)	Implementation date in draft standard is inconsistent with date shown in Implementation Plan.
Response: The dates have been modified so they are consistent within the standard. The implementation date was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed to November 1, 2006.	
ISO New England, Inc. Kathleen Goodman	Drafting Team should match Proposed Effective Date in the standard with the Proposed Effective Date in the Implementation Plan. ISO NE recommends that R3 should read "The Planning Authority" instead of "regional reliability organization" to be consistent with M3.
Response: The dates have been modified so they are consistent within the standard. The implementation date was intended to be 6 months beyond the date of the BOT adoption. Because this standard was completed sooner than expected, the proposed implementation date has been changed to November 1, 2006. The drafting team believes your comment was in reference to the inconsistency between R1 and M1 and added 'Planning Authority' to M1 in support of your suggestion.	
FRCC (G12)	In the title, purpose and R1, the term "Controllable Demand-Side Management" is used and is not a defined term. Either change it to "Direct Control Load Management", which is a defined term or define "Controllable Demand-Side Management"
Response: R1 is a requirement that existed in Version 0 and making changes to this is outside the scope of the drafting team. Note that the term, 'controllable' is not capitalized where it is used in R1 and is not, as you suggested a defined term.	

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<p>ISO/RTO Council (G10)</p>	<ol style="list-style-type: none"> 1. The drafting team should remember that this Standard deals with energy data along with demand data. 2. Compliance elements need to be developed for all the requirements in this standard. Standards should not be revised piecemeal. These added requirements are in the right place in this Standard but the entire Standard should be revised rather than making a change to a small part of it. 3. Requirement R1.1 should be revised to exclude references to specific standards but identify that consistent data is to used for all standards associated with adequacy and transmission assessments. Otherwise the Standard will need to be revised anytime that one of these referenced Standards is revised? For example, the Phase III & IV Standard Drafting Team is proposing that MOD-013-0 be revised and renumbered MOD-013-1. 4. Suggest replacing R1.1 with..."The documentation required in R1 shall ensure that consistent data is supplied for all NERC Reliability Standards where such data is required to be submitted or used for resource and transmission adequacy assessments." 5. In R1.2 change ..."requirements"... to ..."documentation required in R1"... to align better with R1. 6. R3 should read ..."The planning authority shall distribute"... to be consistent to Measure M3. 7. In Section D, 2.3 change ..."evidence"... to ..."record that"... 8. R3 ..."regional reliability organization"... should probably be ..."planning authority"... 9. In R2 and R3, suggest deleting ..."for reporting customer demand data, and any changes to that documentation,"... and changing ..."of approval"... to ..."of review or change and approval"... 10. M1 should read ..."The regional reliability organization's documentation and the planning authority's documentation identified in Requirement 1 shall contain all items required." 11. M2 should read ..."The regional reliability organization shall have records that it provided the documentation required in R1 within 30 calendar days of review or change and approval to each planning authority that works within its region." 12. M3 should read ..."The planning authority shall have records that it provided the documentation required in R1 within 30 calendar days of review or change and approval to its transmission planners and load serving entities as required in requirement 3."
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Response:

1. The drafting team modified the standard to eliminate the use of the term, 'demand' as an adjective from R2, R3 and M1 through M3. This change recognizes that the standard is addressing all three types of data – as noted in the title and purpose.
2. Adding compliance elements for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.
3. R1.1 was updated as suggested to remove the 'version number' from the end of each standard number. This brings the format of this requirement into conformance with the latest format for cross references between standards.
4. Adding measures for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another

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<p>drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.</p> <p>5. The data submittal requirements are part of the documentation noted in R1.</p> <p>6. R3 was modified to use the language suggested.</p> <p>7. Most of the drafting teams have elected to use the word, 'evidence' since this is more open-ended than 'record'. The intent is to keep compliance as cost-effective as practical by allowing entities to use any form of evidence.</p> <p>8. Agree. The RRO was changed to Planning Authority.</p> <p>9. The phrase, 'for reporting customer demand data' was deleted as suggested but the other suggestions weren't adopted because they did not seem to improve the clarity of the requirement.</p> <p>10. M1 was modified as noted.</p> <p>11, 12. As noted above, the drafting team believes the word, 'evidence' is better than 'record'.</p>	
WECC Reliability Subcommittee (G11)	Please see comments submitted by the WECC Loads and Resources Subcommittee.
<p>Response: Please see the response to WECC Loads and Resources Subcommittee.</p>	
Southern California Edison Mohan Kondragunta	Please see comments submitted by the WECC Loads and Resources Subcommittee. (Jay Loock – WECC)
<p>Response: Please see the response to WECC Loads and Resources Subcommittee.</p>	
WECC Loads and Resources Subcommittee (G2)	<ol style="list-style-type: none"> 1. R1 uses the term controllable DSM, which is not in the NERC glossary of terms. A similar term – direct control load management – is in the NERC glossary, is this what is intended? 2. M2 uses term “evidence”. This term is used loosely and needs clarification on what would classify as evidence (registered mail, email, etc). 3. One issue that presents a problem is that the term "controllable DSM" is not identified in the NERC Glossary and should not appear in R1. The terms Direct Control Load Management and Interruptible Demand, which are in the NERC Glossary, should be inserted in R1 in place of the term "controllable DSM." 4. Purpose: Ensure that accurate, actual demand data is available to support assessments and validation of past events and databases. Forecast demand data is needed to perform future system assessments to identify the need for system reinforcements for continued reliability. In addition, to assist in proper real-time operating, best available load information related to controllable demand-side management (DSM) programs is needed. A clear definition of forecast demand is needed. Should the peak demand load forecasts include such factors as economic, demographic, and customer trends; conservation, improvements in the efficiency of electrical energy use, and other changes in the end uses of electricity; and weather effects? Should the peak demand load forecast have a 50% probability of not being exceeded (expected peak demand)? This load forecast is commonly referred to as the 1-in-2 peak load forecast. 5. R1. The planning authority and regional reliability organization shall have documentation identifying the scope and details of the actual and forecast (a) demand data, (b) net energy for load data, and (c) controllable DSM data to be

	<p>reported for system modeling and reliability analyses. Transmission providers who serve customers who have retail access may have difficulty obtaining documentation identifying the scope and details of actual and forecast data. These transmission providers' can provide the actual and forecast data using their own data sets, but they may not have access to an individual retail choice customer's documentation for historical and forecast data. Often concerns about loss of competitive advantage or confidentiality issues are expressed about providing the data to the transmission provider. What is your solution to this issue in this Standard?</p> <ol style="list-style-type: none">6. In R1, the definition of a load serving entity in the April 2005 NERC glossary seems to require that such entities make both generation and transmission services for end-use customers. Translating this to the version of LSE existing in California, it is not clear what is intended. Electricity service providers (ESP) make load forecasts and forward generation commitments for end-users, but they do not necessarily schedule load into the CAISO forward scheduling process. That function is performed by a scheduling coordinator. Given this institutional arrangement, would either of these be considered a load serving entity using the NERC definition?7. In R1, the definition of a planning authority is unclear. Is the planning authority one that used to be considered synonymous with a control area operator, or is the planning authority those entities that prepare resource plans, transmission plans, etc. Again, in the context of the CAISO and the participating transmission owners (PG&E, SCE, SDG&E and some larger POU's) in the CAISO control area, which is the planning authority?8. The proposed standard appears to make a change in current WECC L&R practices by dropping a requirement that non-firm load be identified. Is this intended? If so, why? If not, then the language of the requirement needs to be revised to also request projections of non-firm load.9. R1.2. The data submittal requirements shall stipulate that the load-serving entity count each customer demand within its service territory once and only once, on an aggregated and dispersed basis, in developing its actual and forecast customer demand values. Once again the type of forecast needs to be defined (see comment under Purpose).10. R1.2 should be revised to recognize that service territories may host multiple LSEs. <p>General Comments</p> <ol style="list-style-type: none">11. Even though the Planning Authorities and Regional Reliability Organizations are supposed to document load forecasts, which in many areas are performed by the Load Serving Entities, there is no requirement for LSEs to actually provide this data to PAs and RROs.12. In the West, WECC's Resource Adequacy Work Group, identified the disconnect between LSE load forecasting and planning and the control area reporting as a major issue in the reporting of quality load and resources data to WECC. Confidentiality issues and other communication issues have contributed to making this an issue of concern therefore the following are action needs:<ol style="list-style-type: none">a. Expand the applicability to include Load Serving Entities and Purchasing/Selling entitiesb. Explicitly state that LSEs are required to provide the documentation for actual and load forecast data for the loads they serve to the PAs and RROs.c. Where Purchasing/ Selling entities are retail access customers who perform load forecasts, specify that these entities also need to provide similar documentation to PAs and RROs.
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	<p>d. Include a provision for dealing with confidentiality of information.</p> <p>13. Assuming that the intent is to collect information about direct control load management, why is this one type the focus of the requirement? There are various types of demand response programs and tariffs, each with degrees of uncertainty. Knowledge of those programs which are classified as direct control load management is insufficient to know with certainty what quantity of load can be dropped at any specific moment since the underlying loads that are controlled are themselves fluctuating through time.</p> <p>14. To the extent that load serving entities are required to prepare and submit documentation about DSM, why would this not be extended to all forms of DSM (energy efficiency, onsite generation, etc.) rather than just one small component of DSM activities?</p> <p>15. What mechanisms exist or must be created to implement the layered set of requirements evidently intended by this standard? Are planning authorities able to compel load serving entities to prepare documentation and submit this documentation in forms that can be passed up to WECC?</p>
<p>Response:</p> <p>1. R1 is a requirement from V0. Modifying the requirements for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team.</p> <p>2. Most of the drafting teams have elected to use the word, 'evidence' since this is more open-ended than 'record'. The intent is to keep compliance as cost-effective as practical by allowing entities to use any form of evidence.</p> <p>3. R1 is a requirement that existed in Version 0 and making changes to this is outside the scope of the drafting team. Note that the term, 'controllable' is not capitalized where it is used in R1 and is not, as you suggested a defined term.</p> <p>4. The drafting team did not adopt the addition of 'best available' in the purpose statement because it does not seem to improve the purpose statement.</p> <p>The drafting team is only defining terms that have a unique definition when used in NERC standards. The term, 'forecast' does not have a unique definition when used in this standard. Demand is already a defined term.</p> <p>5, 6. R1 is an existing Version 0 requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26).</p> <p>7. The entity that registers to be recognized as the Planning Authority is the 'Planning Authority' as defined in the NERC Functional Model.</p> <p>8. The drafting team is charged with translating the Measures that were included in NERC's Phase III & IV Planning Standards – and these aren't necessarily the same as WECC practices.</p> <p>We aren't sure if you are suggesting that this be added to this standard, but if so, adding a requirement to the NERC standards for the inclusion of non-firm load would be an expansion of the approved SARs for this set of Phase III & IV measures and is outside the scope of this drafting team.</p> <p>9. See response above. We are only defining terms that are unique to NERC.</p> <p>10. The standard was revised to remove the reference to service territory because this is not practical.</p> <p>11. MOD-017 Requirement 1 requires the LSE to provide data to NERC, the RRO and other entities in accordance with requirements in MOD-016.</p>	

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<p>12. The drafting team is limited in its scope – please consider submitting a SAR to address the issues you feel need to be addressed.</p> <p>13, 14. These comments relate to language from the existing Version 0 requirements – this drafting team only added requirements that address double counting.</p> <p>15. The details you are seeking should be included in the RRO’s and PA’s requirements. We don’t know what agreements and requirements are in place within the WECC Region. MOD-016 is a Version 0 standard that is in effect as of April 1, 2005. The only requirement added by this drafting team is prevent double counting of a single customer load. Note that MOD-017 requires the LSE to provide data to NERC, the RRO and other entities as noted in MOD-016.</p>	
<p>Dominion John Loftis</p>	<p>(1) In R3 replace regional reliability organization with planning authority. This will make M3 consistent.</p> <p>(2) To be consistent with R1, M1 should refer to both the regional reliability organization and the planning authority.</p> <p>(3) In R1.2 delete the phrase "within its service territory" to accommodate load that is dynamically served from another area.</p> <p>(4) On the whole this standard is poorly written and will be difficult to achieve. In particular the requirement to count each customer once and only once in order to produce a forecast of demand needs to be revisited. Since the subject is producing forecasts, there will be a certain amount of error in the forecast no matter how counting is done. Avoiding double counting is part of minimizing forecast error, but a better standard would be to specify the accuracy expected of the forecast and then to list the components of a good forecast needed to accomplish this. As written, it seems to imply that accuracy may be achieved by simply counting once and only once rather than emphasizing all the aspects of an acceptable forecast. The standard should also refer to the need to coordinate customer loads between load serving entities, particularly where there is shared metering, which would insure that loads are accurately captured.</p>
<p>Response:</p> <ol style="list-style-type: none"> 1. R3 is assigned to the Planning Authority. 2. M1 is assigned to both the RRO and the PA. 3. The standard was revised to omit the reference to the LSE’s service territory. 4. The Region in its requirements can include whatever factors the Region feels are appropriate. 	
<p>City Water, Light & Power Karl Kohlrus</p>	<p>In R3 change R1 to Requirement 1 to be consistent with other sections. In Levels of Non-Compliance 2.4 change "required R1" to "Requirement 1".</p>
<p>Response: 'R1' was changed to 'Requirement 1' as suggested.</p>	
<p>SERC EC Planning Standards</p>	<p>(1) In R3 replace regional reliability organization with planning authority. This will make M3 consistent.</p> <p>(2) To be consistent with R1, M1 should refer to both the regional reliability organization and the planning authority.</p> <p>(3) In R1.2 delete the phrase (within its service territory) to accommodate load that is dynamically served from another area. The requirement needs to focus on counting of all loads only once, not on who or how it is accounted for.</p>
<p>Response: 1. R3 is assigned to the Planning Authority.</p> <ol style="list-style-type: none"> 2. M1 is assigned to both the RRO and the PA. 	

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<p>3. The standard was revised to omit the reference to the LSE's service territory.</p>	
<p>Bonneville Power Administration Lynn Aspaas</p>	<ol style="list-style-type: none"> 1. Requirement R1 - What is the reason for required reporting of "net energy for load data"? Computer simulation models used to validate past events and conduct future system reliability assessments use demand data. The requirement for "net energy for load data" should be omitted. 2. Requirement R1.2 - Replace "load serving entity" with "entities responsible for reporting customer demand." Small load serving entities may have some other entity reporting customer demand for them to other organizations. There are several places that state "... within 30 calendar days of approval." What is approval referring to? If it refers to the Standard or the referenced documentation this would only be a one time requirement, not a Standard that could be assessed on an ongoing basis. It would make more sense if this time frame were tied to when the documentation was requested by some other entity. 3. Requirements R2 and R3 appear redundant. 4. Please clarify the Measures and their relation to the Requirements. Does the RRO develop documentation as required in Requirement R1, make this available to the Planning Authority, then the Planning Authority makes this documentation available to Transmission Planners and LSE's? Or do the RRO and Planning Authority develop separate documentation as required in Requirement R1, and then make this available to the appropriate entities?
<p>Response:</p> <ol style="list-style-type: none"> 1. R1 is an existing Version 0 requirement. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26). 2. (Then this is a 'delegated' task and the LSE is still responsible for ensuring that the requirement is met.) 3. The 'approval' was intended to be the date the document was formally signed off by the authoring entity. 4. R3 had a typo and should have been assigned to the PA. This has been corrected and should eliminate the apparent redundancy. 5. This is a sequential set of requirements as suggested where the RRO develops and distributes its requirements to the PAs, and the PAs develop their requirements and distribute them to other entities . . . 	
<p>Midwest Reliability Organization (G7)</p>	<p>For R3 change Regional Reliability Organization to Planning Authority. For M1 add Planning Authority.</p>
<p>Response: R3 had a typo and should have been assigned to the PA. M1 was modified to add the Planning Authority.</p>	

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<p>PJM Interconnection, L.L.C. Mark Kuras</p>	<ol style="list-style-type: none"> 5. Drafting team should remember that this Standard deals with energy data along with demand data. 6. Compliance elements need to be developed for all the requirements in this standard. Standards should not be revised piecemeal. These added requirements are in the right place in this Standard but the entire Standard needs to be revised not just a small part added. 7. Concern about the references in R1.1. Will this Standard need to be revised anytime that one of these other Standards is revised? For example, the Phase III & IV Standard Drafting Team is proposing that MOD-013-0 be revised and renumbered MOD-013-1. Suggest deleting the present text of R1.1 and replacing it with...The documentation required in R1 shall ensure that consistent data is supplied for all NERC Reliability Standards where such data is required to be submitted. 8. In R1.2 change ...requirements... to ...documentation required in R1... to align better with R1. 9. R3 ...regional reliability organization... should probably be ...planning authority... 10. In R2 and R3, suggest deleting ...for reporting customer demand data, and any changes to that documentation,... and changing ...of approval... to ...of review or change and approval... 11. M1 should read ...The regional reliability organization’s documentation and the planning authority’s documentation identified in Requirement 1 shall contain all items required. 12. M2 should read ...The regional reliability organization shall have records that it provided the documentation required in R1 within 30 calendar days of review or change and approval to each planning authority that works within its region. 13. M3 should read ...The planning authority shall have records that it provided the documentation required in R1 within 30 calendar days of review or change and approval to its transmission planners and load serving entities as required in requirement 3. 14. In Section D, 2.3 change ...evidence... to ...record that...
<p>Response:</p> <ol style="list-style-type: none"> 1. The drafting team modified the standard to eliminate the use of the term, ‘demand’ as an adjective from R2, R3 and M1 through M3. This change recognizes that the standard is addressing all three types of data – as noted in the title and purpose. 2. Adding compliance elements for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements. 3. R1.1 was updated as suggested to remove the ‘version number’ from the end of each standard number. This brings the format of this requirement into conformance with the latest format for cross references between standards. 4. The data submittal requirements are part of the documentation noted in R1. 5. Agree The RRO was changed to Planning Authority. 6. The phrase, ‘for reporting customer demand data’ was deleted as suggested but the other suggestions weren’t adopted because they did not seem to improve the clarity of the requirement. 7. M1 was modified as noted. 	

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<p>8, 9, 10. The drafting team believes the word, 'evidence' is better than 'record'.</p>	
<p>NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<ol style="list-style-type: none"> 1. The SES recommends the SDT review the draft MOD-016-1 and capitalize all entity names such as: Regional Reliability Organization, Planning Authorities, Transmission Planners, etc. 2. The SES notes that in R1.1, the draft standard describes a list of standards by specific number such as MOD-013-0 that this standard is to supply data to. The SES is concerned that as the standards mentioned in R1.1 are modified, the number will change. For example, in this draft standard, data is to be supplied for MOD-013-0; however, in this Set 2, Phase III/IV proposal, we are considering a new MOD-013-1 for adoption. The SES would recommend the SDT either drop the suffix number, which signifies the version, and note this standard as simply MOD-13. 3. The proposed wording of R2 and R3 as currently proposed is confusing. The SES recommends the SDT revise R2 and R3 to be a single requirement R2 with consistent wording.
<p>Response:</p> <ol style="list-style-type: none"> 1. Capitalization errors have been corrected. 2. R1.1 was updated as suggested to remove the 'version number' from the end of each standard number. This brings the format of this requirement into conformance with the latest format for cross references between standards. 3. There was a typo in the last posted version of the standard – R2 is assigned to the RRO and R3 is assigned to the PA. 	
<p>American Transmission Co. Peter Burke</p>	<p>The standard has the same capitalization problems as were identified in EPO-005-01. In section R1.1 reference is made to MOD-016-1 which is a standard referencing itself. Is that what was intended?</p>
<p>Response: Capitalization errors have been corrected. The reference to MOD-016 is correct. The intent is to require that a consistent set of data be provided whenever it is requested.</p>	
<p>FirstEnergy Raymond Morella</p>	<p>It is suggested that the references to the Reliability Standards in R1.1. be removed and replaced with "...data is supplied for all Applicable Reliability Standards within the TPL and MOD modules." Otherwise, why keep reference to version 0 when version 1 is applicable in some cases. Again, proposed effective date should be reviewed as the date reference on the standard does not match the Implementation Plan document. The comments offered regarding Proposed Effect dates should be treated as a general comment for all of the Set 2 standards that the Team to review and adjust as needed.</p>
<p>Response: R1.1 was updated to remove the 'version number' from the end of each standard number. This brings the format of this requirement into conformance with the latest format for cross references between standards. Making more expansive changes is outside the scope of the drafting team. The dates were modified to be consistent within the standard and to match the dates in the implementation plan</p>	
<p>Independent Electricity System Operator Ron Falsetti</p>	<ol style="list-style-type: none"> 1. Requirement R1.1 should be revised to exclude references to specific standards but identify that consistent data is to used for all standards associated with adequacy and transmission assessments. Otherwise the Standard will need to be revised anytime that one of these referenced Standards is revised? For example, the Phase III & IV Standard Drafting Team is proposing that MOD-013-0 be revised and renumbered MOD-013-1. Suggest replacing R1.1 with...The documentation required in R1 shall ensure that consistent data is supplied for all NERC Reliability Standards where such data is required to be submitted or used for resource and transmission adequacy

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	<p>assessments.</p> <ol style="list-style-type: none"> 2. In R1.2 change ...requirements... to ...documentation required in R1... to align better with R1. 3. R3 should readThe planning authority shall distribute... to be consistent to Measure M3. 4. M2 should read ...The regional reliability organization shall have records that it provided the documentation required in R1 within 30 calendar days of review or change and approval to each planning authority that works within its region. 5. M3 should read ...The planning authority shall have records that it provided the documentation required in R1 within 30 calendar days of review or change and approval to its transmission planners and load serving entities as required in requirement 3. 6. In Section D, 2.3 change ...evidence... to ...record that...
<p>Response:</p> <ol style="list-style-type: none"> 1. R1.1 was updated as suggested to remove the 'version number' from the end of each standard number. This brings the format of this requirement into conformance with the latest format for cross references between standards. 2. The data submittal requirements are part of the documentation noted in R1. 3. There was a typo in the last posting and R3 is assigned to the PA. 4. 5. 6. The drafting team believes the word, 'evidence' is better than 'record'. 	
Salt River Project Michael Pfeister	None
Bonneville Power Admin. – PBL Rebecca Berdahl	None
Hydro-Québec TransEnergie Roger Champagne	No comment.
Southern Co Generation (G6)	None
Southern Co Services (G5)	None
U.S Bureau of Reclamation Jay Seitz	None
Comision Electricidad de Federale	None

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Jesus Moya Vazquez	
Ameren John Sullivan	None
U.S. Army Corps of Engineers Karl Bryan	None
British Columbia Transmission Corp. Thomas Fung	None
NERC Wind Generator Task force Mahendra Patel	The WGTF has no comments.
NPCC CP9, Reliability Standards Working Group (G8)	No comment.
Tennessee Valley Authority (G1)	None
Dynegy Generation Greg Mason	None
We Energies Howard Rulf	None

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4. MOD-026 – Some commenters raised a question about the existence of accurate models for excitation system response. These commenters suggested that, if no IEEE standard or PSSE or PSLF/PSDS standard library model adequately represents excitation system response, the Generator Owner should be required to have a user-defined model written and validated and provide documentation to the user community. Do you think this requirement should be added to MOD-026?

Summary Consideration: Most commenters agreed that the standard should be modified to require the Generator Owner to have a user-defined model written and validated. The drafting team will ask field test volunteers to address this issue as they attempt to meet the requirements of the standard. This shall serve as a single response to all comments submitted except for the comment that suggested a specific language modification outside the scope of this question.

Commenter	Yes	No	Comment
Dynegy Generation Greg Mason		✓	1. This requirement is not needed as there should be existing models which are "close" and can be used. 2. If the requirement is added, it is the applicable ISO and Transmission Operators who need this data. It will be more efficient and economical for the applicable ISO and Transmission Owners to group all excitation systems requiring new models together and arrange for the development of any needed new models.
We Energies Howard Rulf		✓	This requirement would be onerous for companies like We Energies because we do not have personnel familiar with or available to develop planning models for excitation systems. This expertise resides with the transmission owner/operator in our case.
U.S Bureau of Reclamation Jay Seitz		✓	We believe this is the role of the RRO
Mid-Atlantic Area Coordinating Council John Horakh		✓	This could be onerous for small generators with new or different excitation systems. There should be a means for the cost of such software enhancements to be shared among all generators, if absolutely required.
BPA (1, 3, 5, 6) Lynn Aspaas BPA – PBL (3, 5, 6) Rebecca Berdahl		✓	All models in the data base should utilize standard library models. If user defined models are used, the data is not convertible between programs. Not all transmission planners use the same computer programs (e.g. PSSE, PSLF). If there are not adequate standard excitation models available, the Generator Owner should be responsible for working with the vendors to develop the required standard models.
ISO/RTO Council (G10) Independent Electricity System Operator Ron Falsetti	✓ ✓		The reliability need exists to ensure an accurate model is available for reliability studies and the generation owner seems like logical entity to be responsible for the provision of such information.

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Commenter	Yes	No	Comment
FRCC (G12)	✓		A valid model is necessary for proper simulation. In addition, R1.2 should be re-written to make sure that manufacturer data is only used during the initial stages of development. This data should be replaced by actual field data when it is available.
Pepco Holdings, Inc. Affiliates (G9)	✓		A Generator Owner who has obtained a new design excitation system should be able to work with the vendor to develop a model.
Dominion John Loftis	✓		Dominion - Electric Transmission endorses the requirement that generator owners develop user written models if no standard model exists in the dynamic software currently being used. Someone has to be responsible for making an accurate model available for reliability studies and the generation owner seems like the right entity to be responsible. Also, even when IEEE has developed (after a time lag) a model for a new excitation system, there is an additional time lag of as much as 2 - 3 years before the dynamic software developers make it available as a standard model. Ideally, the equipment manufacturer (Alstom, GE, etc.), the generator owner, and the software developer (Siemens/PTI, GE, etc.), IEEE (and perhaps IDWG?), should work together to develop an accurate model for any new system.
SERC EC Planning Standards (G3)	✓		If this is not added the excitation system may not be adequately represented.
Midwest Reliability Organization (G7)	✓		If this requirement is not added it will shift the burden and liability to the Planning Authority and Transmission Planner to translate non-standard models to industry standard models.
PJM Interconnection, L.L.C. Mark Kuras	✓		Someone has to be responsible for making an accurate model available for reliability studies and the generation owner seems like the right entity to be responsible.
American Transmission Co. Peter Burke	✓		The requirement should be added and language should also be included to require the use of the latest IEEE standard, or PSSE, or PSLF/PSDS standard library model to represent the excitation response. It should be the generator owner's responsibility to validate and document the non-standard model so the onus to do this doesn't pass to the Planning Authority and/or Transmission Planner.
FirstEnergy Raymond Morella	✓		However, there should be some minimum MVA size used so that it does not become too onerous for small generator owner projects.
WECC Reliability Subcommittee (G11)	✓		We agree with the concern raised about the accuracy of models for excitation system response but believe that new models should be developed by having the generator owner work with the program vendors to develop the model. The models should be included in the program model libraries.
Southern California Edison	✓		WECC requires that the models be part of the standard programs and that the data provided by the generator owner be consistent with the models contained in the standard programs. WECC does not accept user-defined models as such models may not have been adequately checked and verified. In addition, user-

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Commenter	Yes	No	Comment
Mohan Kondragunta			defined models in one program are difficult, if not impossible to convert to other programs It is important that generator owners and generator vendors work together with program vendors to develop models that are industry accepted and shared. Models must not be proprietary. There must be a way to transfer/convert data between programs.
NERC Wind Generator Task force Mahendra Patel	✓		Does the standard drafting team agree that MOD-026 does not apply to wind generator plants?
Response: MOD-026 does apply to wind generators. Each RRO is required to identify, in its requirements, whether there are any generators exempt from its requirements.			
Tennessee Valley Authority (G1)	✓		None
Comision Electricidad de Federale Jesus Moya Vazquez	✓		None
NPCC CP9, Reliability Standards Working Group (G8)	✓		
Ameren John Sullivan	✓		
U.S. Army Corps of Engineers Karl Bryan	✓		
City Water, Light & Power Karl Kohlrus	✓		
ISO New England, Inc. Kathleen	✓		

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Commenter	Yes	No	Comment
Goodman			
NERC Standards Evaluation Subcommittee Bill Bjorquez – ERCOT	✓		
Hydro-Québec TransEnergie Roger Champagne	✓		
Southern Co Generation (G6)	✓		
Southern Co Services (G5)	✓		
Tennessee Valley Authority (G1)	✓		

5. Please identify anything you believe needs to be modified before MOD-026 and MOD-027 are field tested:

MOD-026-1 — Verification of Generator Excitation Systems and Voltage Control Model Data

MOD-027-1 — Verification and Status of Generating Unit Frequency Response

Summary Consideration: The drafting team modified both MOD-026 and MOD-027 to include a requirement that the RRO's procedures include a list of recipients so that the Generator Owner will know what entities must receive a copy of the generator verifications. Other changes were very minor. The drafting team will field test both MOD-026 and MOD-027 and will make additional changes to the standards following the field test.

Commenter	Comment
FirstEnergy Raymond Morella	We agree with the drafting team's recommendation to field test the standards prior to balloting.
Response: Thank you for your support of the field testing recommendation.	
Pepco Holdings, Inc. Affiliates (G9)	MOD-026 -1: See response to Question 4. PHI agrees that MOD-026 and MOD-027 should be field tested before they are submitted for ballot
Response: Thank you for your support of the field testing recommendation.	
Southern Co Generation (G6)	We support Field Testing of MOD-026-1 and MOD-027. We agree that the Levels of Non-Compliance should be developed as part of the Field Testing process, and will provide our recommendations at that time. For MOD-027, we do not believe there is industry agreement on the specific information to be reported related to generator unit frequency response as spelled out in R1.4. Therefore, the Field Testing process should specifically include refinement of R1.4 as this is worked out.
Response: Thank you for your support of the field testing recommendation.	
Mid-Atlantic Area Coordinating Council John Horakh	Adding the RRO's requirements into these Standards is logical and a good idea. Moving the design data requirements to MOD-013 is a good idea Field testing for these Standards before proceeding further is the right way to go. There are a lot of concerns and uncertainties that need to be resolved.
Response: Thank you for your support.	
NERC Wind Generator Task force Mahendra Patel	Does the standard drafting team agree that MOD-026 and MOD-027 do not apply to wind generator plants?
Response: MOD-026 and MOD-027 do apply to wind generators. Each RRO is required to identify, in its requirements, whether there are any generators exempt from its requirements.	
ISO New England,	The above Standards should each be broken into RRO requirements and GO requirements similar to PRC-002-1 &

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Commenter	Comment
Inc. Kathleen Goodman	PRC-018-1. In addition the timeline for implementation should be staggered, taking an approach similar to PRC-018-1, to allow the Areas and the Generator Owners sufficient time to assimilate the details contained in what may be a set of newly established RRO procedures and criteria that would otherwise require immediate compliance.
<p>Response: MOD-026 and MOD-027 used to contain requirements for just the Generator Owners – and MOD-023 used to contain just the RRO’s requirements. To keep related requirements together, the drafting team came up with the current sort of requirements, and most commenters seem to support this arrangement.</p> <p>The implementation plan for these standards will show a staggered implementation – but the details will not be finalized until after the standards are field tested.</p>	
Bonneville Power Administration Lynn Aspaas	There are several places in both MOD-026 and MOD-027 that state "... within 30 calendar days of approval." What is approval referring to? If it refers to the Standard or the referenced documentation this would only be a one time requirement, not a Standard that could be assessed on an ongoing basis. It would make more sense if this time frame were tied to when the documentation was requested by some other entity.
<p>Response: The reference is to within 30 days of the approval of the subject procedures. The procedures are expected to be ‘living’ documents and will need to be updated and re-approved.</p>	
Midwest Reliability Organization (G7)	<p>For the R1 procedures in MOD-026 add language requiring the use of the latest standard IEEE or PSS/E excitation system and governor models or a validated user-defined model in absence of an appropriate standard model. Not requiring the use of industry standard models will shift the burden and liability to the Planning Authority and Transmission Planner to translate non-industry standard models to industry standard models.</p> <p>Generation Owners should be allowed additional transition time for updating models as required to meet compliance.</p>
<p>Response: The standard will be revised to adopt this suggestion based on the responses to question # 4 in this document.</p> <p>The standard will be field tested, and one of the things that will be reviewed is feasibility of meeting compliance.</p>	
Hydro-Québec TransEnergie Roger Champagne	We suggest that in MOD-026-1 R1, the procedures includes the necessity for testing of generator excitation system functions and generator unit frequency response. We feel that manufacturer data only is not sufficient.
<p>Response: The RRO needs to determine if manufacturer data is sufficient. There may be situations where this is the best data available and the data may be accurate enough to meet the RRO’s needs.</p>	
FRCC (G12)	<ol style="list-style-type: none"> 1. MOD-026-1 R1 should be modified to include the phrase "if applicable" after the words "power system stablizers" in the first sentence. 2. R1.4 should include a requirement to provide information under an appropriate generation level, in addition to R1.4.5 Open Circuit Test. 3. Compliance D1.1.3 Data Retention - RRO requirement - Remove "and previous" from the 1st sentence - There is no need for and no benefit in the RRO retaining "previous" procedures. This requirement could lead to confusion about which procedure is in effect.
<p>Response:</p>	

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Commenter	Comment
	<ol style="list-style-type: none"> 1. The standard requires the RRO to address power system stabilizers, but doesn't demand the RRO to require verification of models and data for power system stabilizers. 2. The requirements listed are minimums that seem possible to achieve, given the high threshold for approving new standards. Doing the test under specified outputs puts the generator at risk and may not be needed because there may be other acceptable methods of getting the required information. The field test may show that some of the requirements and measures need additional definition. 3. The data retention is only requiring the RRO to keep the latest version and the previous version – not all previous versions. This data retention is merely for compliance.
<p>NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<ol style="list-style-type: none"> 1. The SES recommends the SDT review the draft MOD-026-1 and MOD-027-1 and capitalize all entity names such as: Regional Reliability Organization, Generation Owner, Transmission Planners, etc. 2. MOD-026-1: This standard appears to apply only to synchronous generators. Because other technologies of generation may become large enough to require appropriate modeling, the SES recommends the SDT add a new requirement (R4) that "Owners of non-synchronous generation that is not exempt from these procedures per R1.1 shall furnish data equivalent to that required in R1.4, as needed to support the data requirements of the Regional Reliability Organization's analysis models." 3. For R1.2, the SES believes the proposed standard should state that field testing is the preferred method of data verification. Analysis of blackouts indicates consistently that the accuracy of generator data is not reliable. While commissioning data may be a reliable source of data initially, data can change over time. 4. The SES agrees with the SDT that both MOD-026 and MOD-027 should be field tested prior to final drafting and submission for balloting.
<p>Response:</p> <ol style="list-style-type: none"> 1. Capitalization errors have been corrected. 2. As written, the standard is intended to require the RRO to develop requirements applicable to all generators, but the RRO can identify exemptions. 3. The standard allows for alternate methods beside field testing to verify the accuracy of models. <p>Although the blackout simulations showed that generator data is not accurate, this was not supported with specific information to determine if the data being used for simulation was the same as the data provided by the Generator Owner.</p> <ol style="list-style-type: none"> 4. Thank you for your support of the field testing recommendation. 	

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<p>Dynegy Generation Greg Mason</p>	<p>MOD-026-1</p> <ol style="list-style-type: none"> 1. R1.2 Wording similar to that included in R1.2.1 from MOD-013-01 needs to be inserted between R1.2 and R1.3. This suggested wording makes clear the proper use of unit specific data versus generic data for older units installed in 1990 or before. 2.R1.4. To be consistent with R1.2.1 from MOD-013-01, comment #1 above and the impracticality of obtaining some of the data listed under R1.4 for the excitation system of older units, the wording of this requirement needs to be changed to read as follows:" Specific information to be reported related to those generator excitation systems installed in 1990 or before (if available) and for those systems installed after 1990 and their related functions:" 3. R1.4.7 As written, the phrase "...with the voltage regulator in the automatic voltage control mode." implies testing is the only acceptable method of verification(contrary to the provisions of R1.2). Suggest either deleting this phrase or moving it up to R1.2 to follow the word "testing." 4 R3 This section should include a reasonable time for compliance following issuance of the RRO procedures.Since compliance efforts will likely need to occur during a unit outage,suggest compliance deadline of 24 months following issuance of RRO procedures. 5.M3 The Generation Owner is not going to know all the entities that are applicable TP's and PA's. M3 needs to be revised so that the Generation Owner is only required to routinely send its verification of the models associated with its generator excitation system functions to one entity-the RRO.The TP or PA can receive the data from the RRO.This approach will also minimize the risk of creating mutiple sets of the same data.
<p>Response:</p> <ol style="list-style-type: none"> 1, 2. This standard includes a requirement for the RRO to identify exemption criteria for generators that may not need to comply with a portion or all of the RRO's procedures. 3. Testing is not the only way to validate generator excitation system functions "...with the voltage regulator in the automatic voltage control mode." This verification could also be done with simulation or other methods. 4. Agree. The implementation plan is expected to allow several years for meeting compliance – this won't be finalized until after the field test is completed. 5. The standard was revised so the RRO must identify report recipients in its procedures – and the Generator must provide the report to those recipients identified by the RRO's procedure. 	
<p>PJM Interconnection, L.L.C. Mark Kuras</p>	<p>MOD-026-1</p> <ol style="list-style-type: none"> 1. in R1.4.1 add ...for example... before text in parentheses. 2. In R1.4.7 drop everything after the comma. Some methods of verification may require the voltage regulator to be in other modes or out of service. 3. In R2 suggest deleting ...and any changes to those procedures... and changing ...of approval... to ...of review or change and approval... 4. In M2 and M3 change ...evidence... to ...records... 5. In M3 change ...provide verification... to ...provide records of verification...

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<p>Response:</p> <ol style="list-style-type: none"> 1. Your suggestion was adopted and the phrase, 'for example' was added before the text in parentheses. 2. Testing is not the only way to validate generator excitation system functions "...with the voltage regulator in the automatic voltage control mode." This verification could also be done with simulation or other methods. 3. The existing language clarifies that entities must distribute the original as well as any approved revisions. 4, 5. The drafting team believes the word, 'evidence' is better than 'record'. 	
<p>ISO/RTO Council (G10)</p> <p>Independent Electricity System Operator</p> <p>Ron Falsetti</p>	<p>MOD-026-1</p> <ol style="list-style-type: none"> 1. R1.2 -The IRC suggests an appropriate definition or guidelines be added to explain what constitutes "Acceptable methods". 2. R1.3 -The same comment applies regarding "periodicity" . It is the IRC view periodicity should be standardized and not Regional specific. Regions could review more frequently if they desired to do so. 3. R1.4 - is this the complete list or is it an example of the type of items to be reported? 4. R1.4.1 add ..."for example"... before text in parentheses. 5. R1.4.7 drop everything after the second comma. Some methods of verification may require the voltage regulator to be in other modes or out of service. 6. R2 suggest deleting ..."and any changes to those procedures"... and changing ..."of approval"... to ..."of review or change and approval"... 7. In M2 and M3 change ..."evidence"... to ..."records"... In M3 change ..."provide verification"... to ..."provide records of verification"...
<p>Response:</p> <ol style="list-style-type: none"> 1. As intended, the RRO can identify acceptable methods. 2. As intended, the RRO can identify periodicity. 3. This is a minimum list. 4. Your suggestion was adopted and the phrase, 'for example' was added before the text in parentheses. 5. Testing is not the only way to validate generator excitation system functions "...with the voltage regulator in the automatic voltage control mode." This verification could also be done with simulation or other methods. 6. The existing language clarifies that entities must distribute the original as well as any approved revisions. 7. The drafting team believes the word, 'evidence' is better than 'record'. 	
<p>U.S Bureau of Reclamation</p> <p>Jay Seitz</p>	<p>MOD-026</p> <ol style="list-style-type: none"> 1. This standard should also be applicable to the transmission planner whose role should include performing a quality check on modeling data before it is incorporated into system-wide models. 2. The RRO procedures should include a reasonable implementation period. This will also allow generator owners with many units to spread out the periodicity of re-validating models. 3. R1.4.5 requires open circuit test response data. We believe this requirement should be expanded to allow the RRO to include alternate methods of determining machine response such as monitors that capture and record the

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	<p>generator response to real system events.</p> <ol style="list-style-type: none"> 4. Each measure should state which requirement it assesses. 5. M3 - We believe the generator owner should provide model verification data only to the transmission planner with the understanding that the modeling data is incorporated into the RRO system-wide model. All eligible entities may then make use of the system-wide models provided by the RRO. Providing the data to more entities increases the risk of incorporating wrong data and confusing the chain of responsibility.
<p>Response:</p> <ol style="list-style-type: none"> 1. This is a translation of the measures that were included in the Phase III & IV Planning Standards – and your suggestion goes beyond those measures. You can develop a SAR to add these requirements. 2. The implementation period is expected to be phased over several years – but won't be finalized until after the standard is field tested. 3. An open circuit test is required. This was presented to stakeholders in the last draft, and most commenters agreed with its inclusion. 4. The standard is in the most recently approved format for reliability standards. If the SAC directs the drafting team to modify the standard to include associated requirements, then the drafting team will comply with the SAC's directive. . 5. The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients. 	
<p>Dominion John Loftis</p>	<ol style="list-style-type: none"> (1) In M3 of MOD-026 delete "to the regional reliability organization, and appropriate transmission planner and planning authority" to make it consistent with R3. A similar change needs to be made to M3 of MOD-027 for the same reason. (2) On a general note, why is each regional reliability organization being delegated responsibility for developing regional methods to verify models and data vs. the development of global requirements that would be applicable to all RROs on a consistent basis?
<p>Response: The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients.</p> <p>This was intended to be a 'first step' in developing a set of requirements. At some future time, RRO requirements may be merged into a single NERC Standard.</p>	
<p>Ameren John Sullivan</p>	<p>MOD-026-1 :</p> <ol style="list-style-type: none"> (1) Requirement R1.2 should place greater weight on testing and field verification of equipment as installed, rather than use of typical manufacturer's data for the generator excitation systems. Typical manufacturer data may be adequate for early phases of study work, but would need to be updated with model data based on the actual equipment to be installed. (2) R1.3 should specify a maximum time period for verification (five years), rather than leave the periodicity completely open.
<p>Response: The RRO needs to identify the methods of verification that are acceptable.</p> <p>As proposed, each RRO must specify how often verification will be required. Field testing may show that this requirement needs to be modified.</p>	
<p>SERC EC Planning Standards (G3)</p>	<p>In M3 of MOD-026 delete (to the regional reliability organization, and appropriate transmission planner and planning authority) to make it consistent with R3. A similar change needs to be made to M3 of MOD-027 for the same reason.</p>
<p>Response: The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients.</p>	

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We Energies Howard Rulf	MOD-026-1 Verification of Models & Data for Generator Excitation System Functions C. M3: The generator owner is required to show verification to the RRO and "appropriate transmission planner and planning authority". This requirement should be revised. It should be sufficient to report this information to the RRO, which should be responsible to transfer necessary data to the transmission planner or other entities.
<p>Response: The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients.</p>	
U.S. Army Corps of Engineers Karl Bryan	<ol style="list-style-type: none"> 1. MOD-026-1, the transmission service provider should have a QC role in the verification of the model data provided. The TSP needs to use the modelling data in their planning studies and it makes sense for them to be the primary reviewer of the generator owner/operator's model data prior to the model data being forwarded to the RRO. The RRO should perform a QA role on reviewing the data by performing a spot check. The other transmission planning groups within the RRO would also play into the QA process. The main player in the review and validation of the useability of the generator owner/operator's model data should be the transmission service provider for that facility. 2. The RRO should provide an acceptable list of models and it should be the generator owner/operator responsibility to match their equipment to the acceptable models. The RRO should not have to accept models that their power simulation programs do not recognize or use. 3. The standard should recognize that after the initial testing of the generator has been performed, the use of continuous online monitoring equipment can be used to meet the requirement of periodic reverification of the machine parameters. The cost of the online monitors is far less than the cost of retesting the generators. An added benefit of utilizing continuous online monitors for capturing the generators response to a system disturbance is the information from these online monitors can also provide more information for analyzing the system disturbance. More eyes and ears on the power system can help improve the system models.
<p>Response:</p> <ol style="list-style-type: none"> 1. Adding requirements for quality control is outside the scope of the SARs assigned to this drafting team for development. 2. The generator owner/operator doesn't necessarily have the expertise to match the models to the equipment. Ideally, the manufacturer should provide the model to the generator owner with the delivery of the equipment purchased. The standard is intended to support your comment that the RRO should not have to accept modelst that their power system simulation programs do not recognize or use. 3. The standard indicates that performance tracking is an acceptable method of verification. 	
WECC Reliability Subcommittee (G11) Southern California Edison Mohan Kondragunta	MOD-026-1 The R1.4 subrequirements are too prescriptive and request information that is not applicable to all generators. Suggest deleting R1.4.
<p>Response: The field test should identify whether the information in R1.4 is too prescriptive.</p>	
Tennessee Valley Authority (G1)	MOD-027-1: Nuclear Plants should be exempt from this Std. due to their inability to exceed 100% Reactor Power per NRC Commitments.
<p>Response: Each RRO can identify exemption criteria.</p>	

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<p>American Transmission Co. Peter Burke</p>	<p>The standard has the same capitalization problems as were identified in EPO-005-01. This standard doesn't address how generator data is shared between RROs and if this isn't addressed in another standard then a provision for cross region data sharing should be added.</p>
<p>Response: Capitalization errors have been corrected. Addressing the sharing of data between RRO's is beyond the scope of these SARs.</p>	
<p>Midwest Reliability Organization (G7)</p>	<p>For the R1 procedures in MOD-027 add language requiring the use of the latest standard IEEE or PSS/E excitation system and governor models or a validated user-defined model in absence of an appropriate standard model. Not requiring the use of industry standard models will shift the burden and liability to the Planning Authority and Transmission Planner to translate non-industry standard models to industry standard models. Generation Owners should be allowed additional transition time for updating models as required to meet compliance.</p>
<p>Response: Most commenters indicated this language should be added, and the drafting team will make this change.</p>	
<p>WECC Reliability Subcommittee (G11) Southern California Edison Mohan Kondragunta</p>	<p>MOD-027-1 R1 should set the minimum requirement and the RRO can set something more stringent. For example "up to 30 seconds" should be changed to "minimum of 30 seconds" as a RRO may require more than 30 seconds for post-transient simulations. The R1.4 subrequirements are too proscriptive and request information that is not applicable to all generators. Suggest deleting R1.4</p>
<p>Response: The drafting team adopted your suggestion and modified the requirement to indicate that the RRO must specify response periods and to allow the RRO to specify different response periods for different types of units. If the requirements are too prescriptive for some generators, then the RRO can list these as exemptions in its criteria.</p>	
<p>U.S Bureau of Reclamation Jay Seitz</p>	<p>MOD-027 R1 – 30 seconds may not be long enough to capture the response of slower units; recommend it be changed to 60 seconds.</p>
<p>Response: The drafting team adopted your suggestion and modified the requirement to indicate that the RRO must specify response periods and to allow the RRO to specify different response periods for different types of units.</p>	
<p>U.S. Army Corps of Engineers Karl Bryan</p>	<p>MOD-027-1, I agree with the requirement for verifying generating unit frequency response. I do think the time frame should be extended to 1 minute, that way you will capture the quick response and decay of response that a thermal machine exhibits in the 0-40 second range and you will capture the slow response but sustained response that a hydro machine exhibits in the 25 second and beyond range. I think the goal is to better capture what generators are capable of performing and sustaining and the present 0-30 second range is too short a time frame.</p>
<p>Response: The drafting team adopted your suggestion and modified the requirement to indicate that the RRO must specify response periods and to allow the RRO to specify different response periods for different types of units.</p>	
<p>Dynegy Generation Greg Mason</p>	<p>MOD-027-1 1. R1.2 Wording similar to that included in R1.2.1 from MOD-013-01 needs to be inserted between R1.2 and R1.3. This</p>

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	<p>suggested wording makes clear the proper use of unit specific data versus generic data for older units installed in 1990 or before.</p> <p>2.R3 This section should include a reasonable time for compliance following issuance of the RRO procedures. Since compliance efforts will likely need to occur during a unit outage, suggest compliance deadline of 24 months following issuance of RRO procedures.</p> <p>3. M3 The Generation Owner is not going to know all the entities that are applicable TP's and PA's. M3 needs to be revised so that the Generation Owner is only required to routinely send its generator frequency response data to one entity-the RRO. The TP or PA can receive the data from the RRO. This approach will also minimize the risk of creating multiple sets of the same data.</p>
<p>Response:</p> <p>1. MOD-013 is asking for the data you have, not for verification of models and data. MOD-027 is asking for verified models and data. The quality of data that would be derived from use of estimated data would not be acceptable in achieving the MOD-027's objectives.</p> <p>2. The implementation plan will be finalized after field testing is completed, but it is expected to allow several years for entities to meet compliance.</p> <p>3. The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients.</p>	
<p>PJM Interconnection, L.L.C. Mark Kuras</p>	<p>MOD-027-1 In R2 suggest deleting ...and any changes to those procedures... and changing ...of approval... to ...</p>
<p>Response: The existing language clarifies that entities must distribute the original as well as any approved revisions.</p>	
<p>NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<p>MOD-027-1: This standard appears to apply only to synchronous generators. Because other technologies of generation may become large enough to require appropriate modeling, the SES recommends the SDT add a new requirement (R4) that "Owners of non-synchronous generation that is not exempt from these procedures per R1.1 shall furnish data equivalent to that required in R1.4, as needed to support the data requirements of the Regional Reliability Organization's analysis models."</p> <p>For R1.2, the SES believes the proposed standard should state that field testing is the preferred method of data verification. Analysis of blackouts indicates consistently that the accuracy of generator data is not reliable. While commissioning data may be a reliable source of data initially, data can change over time.</p>
<p>Response: The standard applies to all generators except as exempted by the RRO.</p> <p>The standard allows for alternate methods beside field testing to verify the accuracy of models.</p> <p>Although the blackout simulations showed that generator data is not accurate, this was not supported with specific information to determine if the data being used for simulation was the same as the data provided by the Generator Owner.</p>	
<p>Hydro-Québec TransEnergie Roger Champagne</p>	<ol style="list-style-type: none"> 1. We suggest that in MOD-027-1 R1, the procedures includes the necessity for testing of generator excitation system functions and generator unit frequency response. We feel that manufacturer data only is not sufficient. 2. In MOD-027-1, in the title and purpose, the words "and status" are crossed although we still find them in R1 and M1, correction to make it consistent is needed. In MOD-027-1R1, to make it consistent with M1, the procedure should

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	<p>address "verification and reporting".</p> <p>3. In MOD-027-1R1.4, provision should be made to include model of turbine / prime mover.</p>
<p>Response:</p> <p>1. This standard is a good faith effort at developing a standard to require verification of models and data for generator unit frequency response. While manufacturer data is not ideal, it is better than no data and is a 'first step.'</p> <p>2. Removed from R1 and M1 and M2 as suggested.</p> <p>3. MOD-027 requires verification of the turbine/prime mover data relative to frequency response. Going beyond what is contained in MOD-027 would be an expansion of the measures from Phase III & IV and is beyond the scope of the SARs for this drafting team.</p>	
SERC EC Planning Standards (G3)	<p><i>In M3 of MOD-026 delete (to the regional reliability organization, and appropriate transmission planner and planning authority) to make it consistent with R3.</i></p> <p>A similar change needs to be made to M3 of MOD-027 for the same reason.</p>
<p>Response: The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients.</p>	
ISO/RTO Council (G10) Independent Electricity System Operator Ron Falsetti	<p>MOD-027-1</p> <p>R2 suggest deleting ...and any changes to those procedures... and changing ...of approval... to ...of review or change and approval...</p> <p>M2 and M3 change ...evidence... to ...records...</p> <p>Where it has been changed from the previous draft (ie under R3 and M1), prefer to see Requirement R1 or R2 as this is what they are actually labelled as.</p>
<p>Response: The existing language clarifies that entities must distribute the original as well as any approved revisions. The drafting team believes the word, 'evidence' is better than 'record'.</p> <p>The format established for cross referencing requirements within a standard calls for the first reference to include the entire word, 'Requirement n' with all successive references to the same requirement in the same standard using just 'Rn'.</p>	
We Energies Howard Rulf	<p>MOD-027-1 Verification of Generator Unit Frequency Response</p> <p>C. M3: Similar to above comment. The generator owner is required to show evidence it provided frequency response data to the RRO and "transmission planner and transmission operator". This requirement should be revised. It should be sufficient to report this information to the RRO, which should be responsible to transfer necessary data to the transmission entities.</p>
<p>Response: The revised standard requires the Generator Owner to follow its RRO's procedures. The RRO's procedures must include a list of recipients.</p>	
FRCC (G12)	<p>MOD-27-1 Compliance D1.1.3 Data Retention - RRO requirement - Remove "and previous" from the 1st sentence - There is no need for and no benefit in the RRO retaining "previous" procedures. This requirement could lead to confusion about which procedure is in effect.</p>
<p>Response: The data retention is only requiring the RRO to keep the latest version and the previous version – not all previous versions. This data retention is merely for compliance.</p>	

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City Water, Light & Power Karl Kohlrus	None
Comision Electricidad de Federale Jesus Moya Vazquez	None
Salt River Project Michael Pfeister	None
Bonneville Power Admin. – PBL Rebecca Berdahl	None
NPCC CP9, Reliability Standards Working Group (G8)	No comment.
Southern Co Services (G5)	None
British Columbia Transmission Corp. Thomas Fung	None

6. Please identify anything you believe needs to be modified before VAR-001 through VAR-003 are balloted:

VAR-001-1 — Voltage and Reactive Control

VAR-002-1 — Generator Operation for Maintaining Network Voltage Schedules

VAR-003-1 — Assessment of Reactive Power Resources

Summary Consideration: The drafting team made some significant changes to VAR-001 and VAR-002 to improve the practicality of measuring compliance without requiring entities to develop or install new systems. The drafting team will re-post VAR-001 and VAR-002 for additional comments. The drafting team will re-post VAR-001 and VAR-002 for additional comments; several commenters indicated VAR-003 is duplicating requirements in TPL-001, TPL-002 and TPL-003 and should be removed from this set of Phase III & IV Standards. The drafting team will ask stakeholders to comment on the elimination of VAR-003 as a separate standard.

Comments on VAR-001

Commenter	Comment
U.S. Army Corps of Engineers Karl Bryan	<ol style="list-style-type: none"> 1. The references to "synchronous generators" should be removed from this standard. The standard should apply to all generators connected to the bulk electric system. 2. Each requirement should also have a measure associated with it, otherwise how will you be able to determine if the requirement is being met. 3. VAR-001-1, I don't see any requirement for verifying that the reactive resources are truly available. Performing a survey is not the same as actually testing to see if the reported reactive resource can operate at the maximum and minimum levels of the device. Recommend an annual testing of reactive resources be implemented so that the reactive capability on the system is truly available.
<p>Response:</p> <ol style="list-style-type: none"> 1. The word, 'synchronous' was removed as suggested. 2. Adding measures for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team. 3. Requiring a real-time verification of available reactive resources is beyond the scope of the Phase III & IV measures associated with these SARs. MOD-025 requires verification of reactive capability. 	

<p>U.S Bureau of Reclamation Jay Seitz</p>	<p>VAR-001 - Definitions</p> <ol style="list-style-type: none"> 1. No new definitions are proposed by this standard; however, the draft standard refers to “voltage schedule” and “reactive power schedule” in several of the requirements. We believe there is widespread difference of opinion or confusion throughout the industry as to what these terms mean. We believe that if “voltage schedule” and “reactive power schedule” are used in the standard, then precise definitions are needed. This further leads to the question of the purpose of the standard including both “voltage schedule” and “reactive power schedule”. If reactive power schedule equates to machines operating in VAR control those machines will not be responding automatically to voltage fluctuations or disruptions on the system. This seems counterproductive to our reliability goals. We make a general recommendation that the standard be targeted to voltage control and voltage schedules and not address reactive power schedules. In addition, voltage schedules should include a tolerance band. <p>Requirements</p> <ol style="list-style-type: none"> 2. There are 13 requirements listed for this standard, some with sub-requirements. Only 4 measures are defined; there should be a clear measurement for each requirement. Without a specific measurement paired to each requirement (or sub-requirement) we do not believe compliance can be determined. 3. Requirement R2 concerns exemptions to requirements R5 and R7. We believe the standard would be more readable if it were listed after R5 and R7 or incorporated into each of those requirements. 4. Requirement R3 may be the most important in the entire standard yet there is no discernable measure to detect and gauge compliance. The phrase “acquire sufficient reactive resources” is very important for maintaining reliability of the bulk power system; but it has presupposed that there has been a determination as to what reactive margin is required. Of course the devil is in the details and how a Transmission Operator demonstrates and documents that they have accomplished this needs to be somehow defined. This may point to the need for the methods and metrics to be fleshed out at a regional level. 5. Requirement R5 obligates the Transmission Operator to specify a schedule for each synchronous generator. In addition the requirement has targeted the individual unit level. We recommend the voltage schedule be applicable at the facility or plant level. It is not practical or desirable especially for facilities that include multiple units such as hydro plants or wind farms, to schedule voltage and watts (not vars) at the individual generator level. 6. The voltage schedule should also include a tolerance band. 7. We believe this voltage requirement should apply to all generation, not just synchronous. The way this requirement is drafted it appears to exempt wind farms and other non-synchronous generators from participating in maintaining system voltages. 8. Requirement R7 obligates Transmission Operators to know the status of all reactive power sources including AVRs and PSSs. This provision needs to clarify that it means generator is available and if dispatched will operate in
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	<p>voltage control mode and with the PSS active. As written the standard may be interpreted as requiring real time data for each generator's AVR and PSS status. For the Western Interconnection the Western Electricity Coordinating Council (WECC) requires generators to operating in voltage control mode and for those units with PSS to operate with the PSS active. Generation owners report compliance with this policy to WECC on a quarterly basis.</p> <p>9. Requirements R8 and R9 appear to overlap significantly. We recommend the drafting team consider consolidating them. We also recommend the language be restricted to maintaining voltage levels rather than reactive flow.</p>
<p>Response:</p> <ol style="list-style-type: none"> 1. Most commenters seemed to understand the terms, 'voltage schedule' and 'reactive power schedule' without additional clarification. 2. Adding measures for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team. 3. Most commenters accepted the sequence of requirements R2, R5 and R7 and the drafting team did not make a change to this sequence. 4. R3 is a Version 0 Requirement. Modifying the requirements for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team. 5. Leaving the voltage schedule at the unit level is more appropriate because the issue is that a plant may have multiple generator outlet voltages. 6. The standard doesn't prevent the TOP from including a tolerance band in your schedule. 7. The word 'synchronous' was removed as suggested. 8. R7 is a V0 requirement and expanding or clarifying this requirement is beyond the scope of the SARs assigned to this drafting team. 9. R8 and R9 are V0 requirements and modifying these is beyond the scope of the SARs assigned to this drafting team. 	
<p>NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<ol style="list-style-type: none"> 1. The SES recommends the SDT review the drafts VAR-001-1, VAR-002-1, and VAR-003-1 and capitalize all entity names such as: Transmission Operators, Generation Owner, Generation Operators, Planning Authorities, Transmission Planners, etc. 2. VAR-001-1: The SES believes the SDT should include a Measure that will require the Transmission Operator to provide evidence that it made its formal policies and procedures documentation regarding voltage and reactive control available to the Regional Reliability Organization. 3. Overall, the SES is concerned that this proposed standard has requirements beyond the control of the responsible entity noted. For example, in R3, the Transmission Operator only has the reactive resources that exist in the area-- how does the TO "acquire sufficient reactive resources" if existing resources are not adequate? The SES questions if R3 is not more appropriately addressed to the Transmission Planner? Or in the alternative, should the word "acquire" in R3 be replaced with the word "operate"? Similarly, R6 and R10.1 presumes that sufficient reactive resources are available. 4. The SES also questions should the Regional Reliability Organization be included in the Applicability section? 5. M2 and M4: The SES questions should these measures have corresponding levels of Non-Compliance proposed?

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	6. M4: Requirement 11 referenced in M4 should be Requirement 12.
<p>Response:</p> <ol style="list-style-type: none"> Capitalization errors have been corrected. The requirement to develop policies and procedures is a V0 requirement – expanding on this to require distribution of these to the RRO goes beyond the scope of the Phase III & IV SARs assigned to this drafting team. In addition, the RRO is the compliance monitor and can request this information. R3 is a Version 0 Requirement. Modifying the requirements for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team. There are no requirements assigned to the RRO, so the RRO does not belong in the applicability section. M2 is addressed in Level One – M4 is addressed in Level Two. M4 should have referenced Requirement 12 – this was corrected as suggested. 	
Bonneville Power Admin. – PBL Rebecca Berdahl	<p>VAR-001</p> <p>The references that note "synchronous generators" should be removed so that it is clear that these standards are applicable to all generators.</p> <p>Requirement R6: What measure is applied to the purchasing-selling entity?</p>
<p>Response: References to 'synchronous' were removed as suggested.</p> <p>The requirements for the PSE are from Version 0 – there are no measures and adding them is beyond the scope of the drafting team.</p>	
NERC Wind Generator Task force Mahendra Patel	<p>VAR-001-1</p> <p>R4 should also include a list of exempt wind generator plants (not individual wind generators).</p> <p>R5 should incorporate wind generator plants (not individual wind generators) that are not exempt from the requirement.</p>
<p>Response: The word, 'synchronous' was removed from R4 and R5.</p> <p>Individual units can be exempted per R2.</p>	
Hydro-Québec TransEnergie Roger Champagne	<p>In VAR-001-1 R5, voltage schedule should be the normal setting with reactive schedule being the exception.</p>
<p>Response: This is up to the TOP to determine.</p>	
Bonneville Power Administration Lynn Aspaas	<p>VAR-001 –</p> <ol style="list-style-type: none"> All generators, synchronous and non-synchronous, should make every effort to provide system voltage support. The references that note "synchronous generators" should be removed so that it is clear that these standards are applicable to all generators connected to the grid. Requirement R6, Should there be some measure that applies to the purchasing-selling entity that ensures this requirement was carried out? Requirement R7, There should be a measure for this requirement that specifies how this information is to be documented and how often.

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	<p>4. Measure M4 seems to refer to Requirement 12 not Requirement R11.</p> <p>5. There are many requirements in this Standard which do not have associated measures. Perhaps this Standard is not ready for balloting.</p>
<p>Response:</p> <p>1. References to 'synchronous' were removed as suggested.</p> <p>2, 3, 5. R6, and R7 are Version 0 Requirements. Adding measures for these Version 0 requirements is outside the scope of the SARs assigned to this drafting team.</p> <p>4. Measure 4 should have referenced Requirement 12 – this has been corrected as suggested.</p>	
<p>Ameren John Sullivan</p>	<p>VAR-001-1 :</p> <p>(1) In R1, the first sentence mentions the development of policies and procedures, while in Reliability Standard VAR-003-1, Requirement R1, the first sentence mentions the establishment of a method and criteria for assessing reactive power requirements. Do the terms 'policies and procedures' and 'method and criteria' have the same meaning in these standards or is something different meant for each set of these terms?</p> <p>(2) Will this standard apply to wind generation? If not, will a separate standard be developed for wind generation?</p> <p>(3) Requirement R3 covers normal and contingency conditions, while R10 mentions only first contingency conditions. Is there a reason for this difference? Also, it is not clear what is meant in the second sentence in R3 by the phrase 'transmission operator's share of the reactive requirements of interconnecting transmission circuits'. What would be the reactive requirements of transmission circuits?</p> <p>(4) Will R6 also apply to wind generation absorbing reactive power at the point of interconnection?</p> <p>(5) In R10.1, does 'disperse and locate' mean the same as 'dispatch'? If so, changing the wording to 'dispatch' would make the meaning clearer.</p> <p>(6) Requirement R12, the corresponding measurement M4, and corresponding Compliance section 2.1.2, which cover generator step-up transformer tap changes and related documentation, would be better located within Reliability Standard VAR-003-1. Reliability Standard VAR-001-1 deals with voltage and reactive control in real time, while Reliability Standard VAR-003-1 deals with reactive power resource assessment in the planning time frame.</p>
<p>Response:</p> <p>1. VAR-001 is an 'operations-oriented' standard and VAR-003 is a 'planning-oriented' standard. The terms have similar meanings.</p> <p>2. This standard does apply to wind generation – unless the wind generators are exempt by the TOP.</p> <p>3, 4, 5. R3, R10, and R6 are Version 0 requirements and were not developed by the drafting team that is addressing the translation of Phase III & IV Measures. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26).</p> <p>6. The TOP needs to have the tap change information in real-time. VAR-001 addresses requirements in the operating horizon, while VAR-003 addresses the planning horizon.</p>	
<p>Dominion</p>	<p>On VAR-001 not all of the requirements are captured in the measurements.</p>

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John Loftis	In VAR-001, R10 remove "first" so as not to limit this requirement to first contingency conditions. As written with or without removing "first", R10 provides no additional information not already required in R3. This requirement would read better if the current R10.1 was relabeled R10 and the current R10's repeat of R3's requirement be removed.
<p>Response: Adding measures for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team. R3 and R10 are Version 0 requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	
PJM Interconnection, L.L.C. Mark Kuras	VAR-001-1, R4 should be a subbullet of R2. In R12, second line, first ...the... should be lower case.
<p>Response: moved as suggested The capitalization error in R12 was fixed.</p>	
SERC EC Planning Standards (G3)	On VAR-001 not all of the requirements are captured in the measurements. In VAR-001, R10 remove "first" so as not to limit this requirement to first contingency conditions. As written with or without removing "first", R10 provides no additional information not already required in R3. This requirement would read better if the current R10.1 was relabeled R10 and the current R10's repeat of R3's requirement be removed.
<p>Response: Adding measures for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team. R3 and R10 are Version 0 requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p>	
ISO/RTO Council (G10) Independent Electricity System Operator Ron Falsetti	<p>VAR-001-1</p> <ol style="list-style-type: none"> 1. R3 Suggest changing the phrase... "to protect the voltage"... to "maintain the voltage" 2. R4 should be a subbullet of R2.. 3. R5, R7.1 & M1 A clarification is requested to define what constitutes a voltage or reactive power schedule in the context of a market based system that operates the system to pre-defined bus voltage operating limits and requiring all generators to operate their AVR's in auto voltage control maintaining its terminal voltage within predefined voltage performance criterion and/or follow any specific VAR dispatch instruction issued by the TOP. 4. R11 Remove reference to 30 minutes, TOP-007 - IORL/SOS reporting requirements includes the timeline for violations reporting and should be referenced in this standard rather than included again here. 5. R12 Line above appears to be part of R12, if so then second line, first ..."the"... should be lower case. 6. It is the IRC's view the standard needs to be developed to incorporate measures/compliance elements for all requirements within the standard and NERC should avoid evolving / developing standards piecemeal.
<p>Response: 1, 4. R3 and R11 are existing Version 0 requirements. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team. 2. R4 was moved to be a sub-bullet of R2 as suggested.</p>	

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<p>3. The TOP will define the voltage or reactive power schedule.</p> <p>4. R11 is an existing Version 0 requirement.</p> <p>5. The capitalization error was corrected in R12.</p> <p>6. The drafting team has been advised that adding measures for the existing Version 0 standards is outside the scope of the SARs assigned to this drafting team.</p>	
<p>Dynegy Generation Greg Mason</p>	<p>VAR-001-1</p> <p>1.R5 This requirement needs to be modified to state that a voltage schedule must be a range of voltage(not a specific point voltage) and that voltage schedule should take into account voltage measuring accuracy and the dynamics of system voltage.The voltage schedule must be a range of voltage(and not a specific point voltage) in order to comply with the R3 provisions of VAR-002-1.</p> <p>2.R11 There is one sentence left over from the former R17 that needs to be moved or deleted.</p> <p>3.R12 As redrafted,this section deletes the prior requirement for a transmission operator and generation owner to "mutually agree" on tap changes for generator step up transformers at a plant and now allows a transmission operator to require the generation owner to make changes to these tap settings in a specified timeframe. These tap settings need to balance system requirements such as reactive output and plant requirements such as generator and auxiliary voltages that impact reliable plant operation.Also, changes to these tap settings could result in additional plant expenditures and they would need to be made during a plant outage(not at a time specified by the transmission operator). This new wording that allows a transmission operator to dictate these tap settings is bad for overall system reliability,discourages cooperation between the entities and needs to be removed. The prior wording that required "mutual agreement" between the transmission operator and generation owner on these tap setting changes should be reinstated.</p> <p>4.M1 This measure references a "criteria specified in Requirement R5". As drafted,R5 does not have any "criteria".However, R5 does need to be revised to include criteria such as in my comment #1 above on R5.</p>
<p>Response:</p> <p>1. The TOP defines the voltage schedule. The standard doesn't preclude the inclusion of a dead band.</p> <p>2. There was no R17 in any prior posting of VAR-001.</p> <p>3. VAR-001 and VAR-002 both include 'cooperative' requirements that require the TOP and Generator Owner to consult with one another on tap setting changes.</p> <p>4. M1 was modified to align with associated requirement. The TOP sets the criteria.</p>	
<p>Midwest Reliability Organization (G7)</p>	<p>VAR-001-1: For M4 and D2.1.2 change R11 to R12.</p>
<p>Response: This typographical error was corrected as suggested.</p>	
<p>FRCC (G12)</p>	<p>VAR-001-1 Add a new measure - M5. The Purchasing-Selling Entities shall have evidence to show that they arranged for reactive resources to satisfy their reactive requirements as identified by their transmission service provider.</p>
<p>Response: Adding a new measure for the Purchasing-selling entities is outside the scope of the SARs assigned to this drafting team.</p>	
<p>WECC Reliability</p>	<p>VAR-001-1:</p>

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Subcommittee (G11) Southern California Edison Mohan Kondragunta	<ol style="list-style-type: none">1. R4 and R5 should be applicable to all generators. Therefore, delete the word "synchronous" from both requirements.2. R8: How does a transmission operator demonstrate compliance with this requirement?3. R11: Delete "and complete the required IROL or SOL violation reporting.' This is redundant with the requirements of TOP-007. Is it not appropriate for one standard to require compliance with another approved standard.4. M2: Which requirement does this measure apply to?
<p>Response: 1. The word, 'synchronous' was removed from both requirements.</p> <p>2. R8 is a Version 0 requirement and was not developed by the drafting team that is translating the Phase III & IV Measures. For an interpretation of an already approved standard, please follow the process in the Reliability Standards Process Manual for Interpretations (pages 25-26).</p> <p>3. R11 is an existing Version 0 requirement. Modifying the existing Version 0 requirements that are unrelated to the Phase III & IV measures associated with the SARs assigned to this drafting team is outside the scope of this drafting team.</p> <p>4. M2 is associated with what is now R2.2.</p>	

Comments on VAR-002

American Transmission Co. Peter Burke	VAR-002 The standard has the same capitalization problems as were identified in EPO-005-01.
<p>Response: The capitalization errors have been corrected.</p>	
NERC Wind Generator Task force Mahendra Patel	VAR-002-1 The standard drafting team should consider incorporating requirements that parallel R1 and R2 for wind generator plants (not individual wind generators) that have dynamic reactive capabilities.
<p>Response: The standard applies to all Generator Owners unless specifically exempted. VAR-001 was revised to require the TOP to identify aggregated generating units required to comply as a plant rather than as individual generators</p>	
FRCC (G12)	VAR-002-1 R1 & R2 should address non-synchronous generators.
<p>Response: The word, 'synchronous' was removed as suggested.</p>	
Bonneville Power Administration Lynn Aspaas	VAR-002, - All generators, synchronous and non-synchronous, should make every effort to provide system voltage support. The references that note "synchronous generators" should be removed so that it is clear that these standards are applicable to all generators connected to the
<p>Response: The word, 'synchronous' was removed as suggested.</p>	
Dynegy Generation Greg Mason	VAR-002-1 1.R1 and M1 To be consistent with R3 and the practicalities of system operation, the last phrase "...unless otherwise approved by the transmission operator" needs to be deleted from R1 and M1 needs to be eliminated.. 2. R3.1 requires the generation operator to notify the transmission operator of any change in the status of the voltage regulator. Obtaining "approval" of the transmission operator before the voltage regulator is taken off automatic voltage control mode may not always be possible given equipment failures and priorities of real time operations. 3. R3 Given the operational interface between transmission operators and Reliability Coordinators, suggest changing the entity receiving the notification from transmission operator to Reliability Coordinator. This change will allow the generation operator to notify one entity (the Reliability Coordinator) and the Reliability Coordinator can then coordinate this information with the transmission operator. 4.R3.3,M2 and D2 These requirements only make practical sense if the voltage schedule is a voltage range and not a specific point voltage. See my comment #1 on R5 of VAR-001-1. 5.R5 Either change this section to coordinate with recommended change to R12 of VAR-001-1 (see my comment #3 on VAR-001-1) or leave alone. 6.M5 The sentence needs to be modified as follows to fully comply with R5: "The generation owner shall have evidence that its step-up transformer taps were modified per the transmission operator's documentation or the reason why these changes could not be made as required in Requirement 5."

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	<p>7.D2.1.1,D2.2.1,D2.3.1 and D2.4.1 The terms used in these non-compliance levels need to be better defined.Do any violations within the 30 minute notification period not "count"?</p> <p>8.Is the term "accumulated time of xxx unit hours" referring to consecutive hours for a unit outside the voltage range?</p> <p>9. When does a new period for judging compliance begin---immediately after the period in which the voltage schedule is met again?</p> <p>10. Is the voltage being measured the integrated transmission voltage over an hour rather than instantaneous values?</p> <p>11. For a multiple unit plant, isn't compliance measured on a plant rather than unit basis?</p> <p>12.D2.1.1,D2.2.1,D2.3.1 and D2.4.1 With regard to not holding voltage schedules, why should a Generation Owner be considered non-compliant in the instance where a unit/plant was generating or absorbing maximum MVARs but still could not maintain the voltage schedule due to system conditions? These non compliance levels need to take into account this type of possible occurrence.</p> <p>13.D2.1.2.D2.2.2,D2.3.2 and D2.4.2 These levels of non compliance need to be eliminated to coordinate with my above comment #1 on VAR-002-1 and since D2.1.3,etc. covers inadequate notification occurrences.</p>
<p>Response:</p>	<ol style="list-style-type: none"> 1. The 'chain of command' for operating on the interconnected Bulk Electric System gives the TOP the authority to direct the Generator Operator. 2. The standard accommodates notification after the fact for forced outages. 3. The proposed standard only requires notification of one entity – the TOP. 4, 5. See the response to your comment on VAR-001. 6. This is already addressed – M5 references R5, which includes R5.1 7. No violations for notifications made within 30 minutes. 8. This is total time, which is not the same as consecutive. 9. The performance reset period is one calendar year. 10. The requirement to notify the TOP of instances of not adhering to the voltage schedule was removed 11. VAR-001 was modified to require the TOP to identify aggregated generating units required to comply as a plant rather than as individual generators. Unless identified by the TOP, then compliance is measured on a generator basis. 12. R2 indicates that you aren't required to operate outside the Facility Ratings. 13. The 'chain of command' for operating on the interconnected Bulk Electric System gives the TOP the authority to direct the Generator Operator. The requirement to notify the TOP of instances of operating outside the schedule has been removed from the standard.
<p>ISO/RTO Council (G10)</p>	<p>VAR-002-1</p> <ol style="list-style-type: none"> 1. R3 This requirement should be reworded to states that the generator shall notify its associated transmission operator "asap" to allow the transmission operator to re-prepare the system for the next contingency within 30 minutes. 2. M4 should be Requirement 12 instead of Requirement R11. 3. VAR-002-1 in R5 last line remove the first ..."or"... 4. In all Measurements and in Compliance section 1.3, change ..."evidence"... to ..."records"...

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<p>Response:</p> <ol style="list-style-type: none"> 1. The drafting team modified the requirement to indicate that the notification shall be made as soon as practical, but within 30 minutes. 2. The reference in M4 should have been to Requirement 12 and this has been fixed. 3. The extra, 'or' was removed from R5 as suggested. 4. Most of the drafting teams have elected to use the word, 'evidence' since this is more open-ended than 'record'. The intent is to keep compliance as cost-effective as practical by allowing entities to use any form of evidence. 	
<p>U.S Bureau of Reclamation Jay Seitz</p>	<p>VAR-002</p> <ol style="list-style-type: none"> 1. We believe the purpose of this standard would more clear if it dealt only with voltage control and voltage levels. We think including reactive power resources and reactive flow only complicates the objective. 2. Requirement R2 and corresponding measure M2 require that the generator follow the voltage schedule and be able to prove it. The compliance process requires that generators retain this evidence for a rolling 12 months. We think some more detail needs to be provided at to how this is to be accomplished. We believe this concept has been worked out within WECC; generator owners are required to operate in the voltage control mode and report compliance on a periodic (quarterly) basis. This process works. However; if the drafters are contemplating some sort of recording device to continually monitor voltage settings and AVR and PSS status and storing that data for 12 months, we think that approach is not needed or cost effective.
<p>Response:</p> <ol style="list-style-type: none"> 1. Comments from the industry appear to support the combination of requirements in the proposed standard. 2. The drafting team did not make any assumptions about the use of recording devices. The data retention requirement for the Generator Operator was modified to replace the rolling 12 month retention period to a retention period of the previous and current year. 	
<p>PJM Interconnection, L.L.C. Mark Kuras</p>	<p>VAR-002-1 in R5 last line remove the first ...or...</p> <p>In all Measurements and in Compliance section 1.3, change ...evidence... to ...records...</p>
<p>Response: The word, 'or' was removed from F5 as suggested.</p> <p>Most of the drafting teams have elected to use the word, 'evidence' since this is more open-ended than 'record'. The intent is to keep compliance as cost-effective as practical by allowing entities to use any form of evidence.</p>	
<p>Dominion John Loftis</p>	<ol style="list-style-type: none"> 1. The requirements of VAR-002 are confusing. The requirement seems to be for a cumulative total over a rolling 12-month period, but the compliance reset timeframe is shown as one calendar year. It would seem that the reset period should be shown as one month. Also, it is assumed that compliance is cumulative, that is, that incidents of noncompliance within the rolling 12 months are additive. These requirements should be reworded to be clearer. 2. Since deviation from schedules will constitute the basis for noncompliance, and that the allowable magnitude of this deviation will be established by the transmission operator alone, it seems that VAR-001 should spell this out more specifically in the duties of the TO. 3. There seems to be nothing written in the levels of Non-Compliance about the Generator Operator being out of compliance for not maintaining records, so if the generator operator does not keep any evidence of being out of compliance is he meeting the standard or is this only implied?

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<p>Response:</p> <ol style="list-style-type: none"> 1. The performance measurement period is one calendar year. The measurement is cumulative over the course of the calendar year. 2. The requirements were modified and this is no longer an issue. 3. The recordkeeping requirements were removed from the standard. The existing measures do require that you retain evidence and if you don't have the evidence you will be non-compliant. 	
<p>U.S. Army Corps of Engineers Karl Bryan</p>	<ol style="list-style-type: none"> 1. VAR-002-1, recognition of the use of Automatic Generation Control links for dynamically communicating real-time voltage schedules should be mentioned in the Measures section. Some of our generators receive voltage schedule information from the transmission service provider as well as information on voltage schedule compliance. This information is available from the transmission service provider and it doesn't make sense for the generation owner/operator to archive this information when it is also archived by the TSP. 2. An additional requirement, "R6. The generator owner will annually test the static reactive capabilities of each of their generators and shall submit the information to the transmission operator." A good example of the type of static reactive testing would be the WECC Synchronous Machine Reactive Limits Verification that was required after the 1996 Aug West Coast system disturbance. Please note that the annual testing should be performed on all generators connected to the bulk electric system and not just synchronous machines. The testing is easily performed by the generator operators and it does give the generator operators experience in operating the generators to the extremes of the reactive limits of the machine capability curve. A few of the benefits of performing this testing is the operators learn more about the generators capabilities, find limiters and protective devices that would limit the machine from operating at max/min VARS, discover equipment deficiencies and deal with them prior to having these deficiencies add to the problems of a major system disturbance. 3. Along with the additional requirement is the following recommended measure, "M6. The generator owner shall have evidence that it has performed the annual static reactive capability testing and has submitted the information to its transmission operator."
<p>Response:</p> <ol style="list-style-type: none"> 1. However schedules are dictated and received, they should be maintained. The schedules addressed in this standard are not Interchange Schedules, they are voltage schedules. We assume your comment should have said, TOP rather than TSP. 2, 3. The requirement and measure you've suggested are addressed in MOD-025. 	
<p>Bonneville Power Administration Lynn Aspaas</p>	<p>VAR-002</p> <p>Requirement R5.1 states "... the generator operator shall notify the transmission operator and shall provide the associated reason." This statement does not allow for partially meeting the transmission operators specifications. There may be cases where transformer taps can be changed to provide some benefit, but cannot be changed in the full range to meet the specification. Rather than the requirement to give an associated reason not to change transformer taps, there should be flexibility to be able to change some taps in conjunction with other options.</p>
<p>Response: If the Generator Operator can't meet the TOP's requirements (either partially or completely), the Generator Operator is required to notify the TOP.</p>	
<p>Midwest Reliability Organization (G7)</p>	<p>VAR-002-1: For R2.1 please clarify what is meant by alternative method, what alternative methods are acceptable and that manual control is acceptable.</p> <p>For R4 in addition to the Transmission Operator and Transmission Planner, add Planning Authority and Reliability</p>

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	<p>Coordinator as being able to request data from the Generator Owner. For R5.1 change "associated reason" to "technical justification" to match the wording in VAR-001-1 R12 or vice versa.</p>
	<p>Response: The most common alternate method is manual control as designated by the TOP and this is acceptable. The standard doesn't preclude the Generator Owner or Generator Operator from providing data to other entities – but there isn't a reliability need for the other entities to be provided with this data. The suggestion to line up the wording was adopted</p>
<p>WECC Reliability Subcommittee (G11) Southern California Edison Mohan Kondragunta</p>	<p>VAR-002-1 R2 and R3: Is it required that generator owners store the data requested in R2 and R3? How should they provide evidence that they have complied with these requirements. R2: This requirement should be applicable to both synchronous and induction generators. WECC requires that Induction generators provide reactive support (SVC)</p>
	<p>Response: The measures require that the Generator Owner and Generator Operator have evidence of compliance. Evidence can be whatever an entity has that can be used to show compliance – operating logs, audio tapes, strip charts, etc. Synch was removed</p>
<p>NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<p>VAR-002-1: The SES recommends the SDT change the notification requirement in R3 (M3 and subsequent Levels of Non-Compliance) for Generating Operators to notify its Transmission Operator regarding changes in the status of the generating unit's reactive capabilities to allow each Region to set its own notification (time) requirement, but in no instances should the time limit exceed 30 minutes.</p>
	<p>Response: There doesn't seem to be a need to have this qualification set by the RRO. The timing is a practicality issue, when the Generator Operator has a system failure that needs immediate attention at the same time the TOP needs to be notified – the Generator Operator needs time to get organized, take care of the immediate problem – and notify the TOP. The standard was revised to indicate the information should be provided as soon as practical, but within 30 minutes.</p>
<p>Bonneville Power Admin. – PBL Rebecca Berdahl</p>	<p>VAR-002 R2 and R3: Clarify whether data storage becomes necessary for compliance.</p>
	<p>Response: The Generator Operator has to have 'evidence' – and stored data is one type of evidence, but not necessarily the only type of evidence.</p>
<p>Independent Electricity System Operator Ron Falsetti</p>	<p>VAR-002-1 R3 This requirement should be reworded to states that the generator shall notify its associated transmission operator "asap" to allow the transmission operator to reprepare the system for the next contingency within 30 minutes. M4 should be Requirement 12 instead of Requirement R11.</p>
	<p>Response: When there is an equipment malfunction the Generator Operator has many actions he may need to take to protect the equipment under his control from additional damage. The TOP should have monitoring capability that will let him know if the equipment malfunction results in an immediate significant change to the generator's output. The call from the Generator Operator will provide additional information to the TOP.</p>

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<p>Southern Co Generation (G6)</p>	<p>We have a number of comments on VAR-002-1:</p> <ol style="list-style-type: none"> 1. R2.1: We have concerns about the wording of R2.1 and how this could be interpreted (implies strict adherence to the voltage/reactive schedule even if operating in manual regulator). Our experience supports a joint effort between the Generator Operator and the Transmission Operator to define reasonable operating limits when operating in this mode. For example, operation in the under excited region of the generator capability curve is not desired since the URAL is not active when in manual regulator mode and a single contingency event (example: loss of the strongest source) could result in exceeding the steady state stability limit and loss of synchronism. Thus, if strict adherence to the voltage schedule by the affected generator requires operation in the under excited region, this could set up a condition that is detrimental to the generator and system stability/reliability. 2. M2: Measurement of compliance with R2 is actually covered (and more easily measured) by compliance with R3 as addressed in M3. Thus, M2 is not needed and can be deleted. 3. M3: We recommend revising the end of the sentence to say: changes identified in Requirement 3. (i.e., instead of Requirements R3.1 through R3.3) This wording encompasses the main requirement plus all three sub-requirements. Levels of Non-Compliance: We understand the need to have defined levels of non-compliance. However, it is anticipated that the implementation of the reporting requirements and assessments of compliance for this standard will be difficult to accomplish in practice. 4. We recommend a Field Test Period be established to develop more practical Levels of Non-Compliance and to allow time for Generator Owners and Operators to develop appropriate training and reporting procedures to help ensure operation that complies with the requirements. Southern Company Generation supports the standard drafting team's decision to provide the Generator Operator the chance to provide documentation in support of their reasons for not responding in the 30 minute window. For instance, during emergencies, it is possible that the Generator Operator will not have the opportunity to respond within the 30 minutes due to their efforts with stabilizing the generator and, therefore, would be agreeable to providing the documentation.
<p>Response:</p> <ol style="list-style-type: none"> 1. The drafting team added the following footnote for clarification: When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this will lead to a change in the associated Facility Ratings. 2. The requirement to notify the TOP within 30 minutes of violating a voltage schedule was removed from the standard, but the requirement to operate within the schedule was retained, so M2 is still needed. 3. Your suggestion for rewording M3 was adopted. 4. The requirement to develop this documentation was dropped because it does not add to reliability. 	
<p>Southern Co Services (G5)</p>	<p>Under VAR-002, we feel that the provisions under R.3 seem very reasonable.</p>
<p>Response: The drafting team appreciates your support.</p>	

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Comments on VAR-003

Bonneville Power Administration Lynn Aspaas	VAR-003, - All generators, synchronous and non-synchronous, should make every effort to provide system voltage support. The references that note "synchronous generators" should be removed so that it is clear that these standards are applicable to all generators connected to the
Response: The term wasn't in VAR-003.	
Bonneville Power Admin. – PBL Rebecca Berdahl	VAR-003 The terms "static and dynamic" should be removed from the Standard or further defined. In general, reactive power requirements and voltage issues are specific to both the location and cause of a voltage stability problem (e.g. local load reactive demand, transmission line reactive losses) and need to be assessed on a case by case basis, i.e., area specific. Consider developing a measurement that would support/demonstrate the ability of a reactive power source(s) provide the necessary reactive support to an area based on the location of the source relative to the voltage problem.
Response: This is terminology that is used in other standards and appears to be understood by other commenters without the need for definition.	
Bonneville Power Administration Lynn Aspaas	VAR-003 We believe the contents of this Standard should be included in the TPL series of Standards. Having all Standards associated with assessing transmission system performance consolidated in one place saves time and helps ensure that transmission planners include all the necessary studies required to show compliance. The terms "static and dynamic" should be removed from the Standard. In general, reactive power requirements and voltage issues are specific to both the location and cause of a voltage stability problem (e.g. local load reactive demand, transmission line reactive losses) and need to be assessed on a case by case basis. The mix of static and dynamic reactive power requirements is very different for different areas. Also, having a specific requirement for dynamic reactive power for an area does not ensure the reactive power source will provide the reactive support necessary based on the location of the source relative to the voltage problem. If the terms "static and dynamic" are to be included in this Standard there needs to be definitions for static and dynamic reactive power sources. For example, dynamic reactive power sources could include 1) shunt capacitors or reactors that switch automatically on voltage control or as part of an SPS, 2) static VAR compensator, 3) synchronous condenser, or 4) synchronous generator. A static reactive power source could be shunt capacitors or reactors that are switched manually or with some time delay.
Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.	
Pepco Holdings, Inc. Affiliates (G9)	VAR-003 appears to duplicate the requirements of TPL-001-0.
Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.	
NERC Standards	VAR-003-1: The assessment of reactive power is inherent in the assessment required by the TPL series of standards--

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<p>Evaluation Subcommittee Bill BJORQUEZ – ERCOT</p>	<p>therefore the SES questions the value of this standard as proposed. A standard defining reactive margin may be more appropriate. However, should the SDT believe this standard as proposed is appropriate, the SES offers the following additional comments:</p> <p>R1: This requirement should establish the method and criteria for assessing adequate static and dynamic reactive power. The SES believes that leaving this to the discretion of the Transmission Planner and Planning Authority will result in inconsistent requirements. The SES asks the SDT if they are aware of any existing methods and criteria currently used in the industry.</p> <p>R2: This requirement is duplicative of the TPL standards.</p> <p>R2.1: As drafted, this requirement is very general and vague in nature. The SES recommends the SDT be more specific with respect to the objective of the requirement. For example, is the SDT looking for sensitivity studies to changing power factor, etc.?</p>
<p>Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.</p>	
<p>Ameren John Sullivan</p>	<p>VAR-003-1 : Requirement R1 states that the transmission planner and planning authority shall each establish a method and criteria for assessing reactive power requirements. Why would both entities need to do this?</p>
<p>Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.</p>	
<p>PJM Interconnection, L.L.C. Mark Kuras</p>	<p>VAR-003-1</p> <ol style="list-style-type: none"> 5. in R2.1 change ...known... to ...common... 6. The first sentence in R2.2 is very difficult to determine compliance for. The first sentence of R2.2 should be deleted unless criteria is supplied. 7. In all Measurements, change ...evidence... to ...records... 8. No mention of Measurement 3 in Levels of Non-Compliance. 9. In Section D 2.2 change ...known... to ...common...
<p>Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.</p>	
<p>ISO New England, Inc. Kathleen Goodman NPCC CP9, Reliability Standards Working Group (G8)</p>	<p>In VAR-003 Section R 2.2, the assessment should be optionally conducted "jointly" instead of specifically conducting "separate" annual Reactive Resource assessments.</p>
<p>Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.</p>	
<p>Hydro-Québec TransEnergie</p>	<p>In VAR-003 Section R 2 . 2 the assessment should be optionally conducted "jointly" by planning authority and transmission planner instead of specifically conducting "separate" annual Reactive Resource assessments.</p>

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Roger Champagne	
Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.	
ISO/RTO Council (G10)	<ol style="list-style-type: none"> 1. VAR-003-1 in R2.1 change ..."known"... to ..."common"... 2. The first sentence in R2.2 is very difficult to determine compliance for. The first sentence of R2.2 should be deleted unless criteria is supplied. 3. In all Measurements, change ..."evidence"... to ..."records"... 4. No mention of Measurement 3 in Levels of Non-Compliance. 5. In Section D 2.2 change ..."known"... to ..."common"...
Response: Several commenters suggested that VAR-003 duplicates the requirements of the TPL series of standards, and the drafting team is recommending that VAR-003 be removed from Phase III & IV.	
We Energies Howard Rulf	None
City Water, Light & Power Karl Kohlrus	None
British Columbia Transmission Corp. Thomas Fung	None
Tennessee Valley Authority (G1)	None
Comision Electricidad de Federale Jesus Moya Vazquez	None
Mid-Atlantic Area Coordinating Council John Horakh	Looks ok.
Tennessee Valley Authority (G1)	None
Salt River Project	None

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Michael Pfeister	
FirstEnergy Raymond Morella	None

7. Do you agree with the proposed implementation plan? If no, please identify specifically what you feel needs to be modified.

Summary Consideration: Most commenters agreed with the implementation plan – several commenters suggested that the date for implementing the change to TOP-002 should be specified more clearly in the implementation plan, and this modification was made. In addition, since most commenters seemed to agree with EOP-005, MOD-013 and MOD-016, the drafting team is recommending that the Standards Authorization Committee authorize posting these for ballot rather than for an additional comment period. This advances the implementation date for these standards by three months – and this change is reflected in the revised implementation plan.

Commenter	Yes	No	Comment
Dynegy Generation Greg Mason		✓	MOD 13 - The effective date needs to be extended from 2/1/07 to 2/1/08 to give entities the necessary time to locate and search through historical records to verify the required generator data.
Response: MOD-013 only includes requirements for the RRO.			
Comision Electricidad de Federale Jesus Moya Vazquez WECC Reliability Subcommittee (G11) Southern California Edison Mohan Kondragunta		✓	Implementation dates of August 1, 2007 make it difficult to include in 2007's compliance enforcement program. It is proposed that the implementaion date for these standards be moved out to January 1, 2008.
Response: The Compliance Program may begin to audit compliance later than the implementation date. The implementation date is the earliest date that an entity is expected to be fully compliant.			
ISO New England, Inc. Kathleen Goodman		✓	The proposed effective date for TOP-002-1 is not shown in the implementation plan. The drafting team needs to better match the effective dates with those shown either for Anticipated Actions or Proposed Effective Date. Please refer to the previous comments.
Response: The proposed effective date should have been shown – this has been corrected and is August 1, 2007. The effective dates in this set of standards have all been reviewed and updated to be consistent within each document and to match the dates in the implementation plan.			

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Commenter	Yes	No	Comment
Mid-Atlantic Area Coordinating Council John Horakh	✓		The reference to May 1, 2006 in the last sentence before the table is misleading. I believe the projected Board Adoption Date is August 1, 2006. The six months or one year allowance before the Effective Date is needed to insure that compliance can be achieved.
Response: The effective dates in this set of standards have all been reviewed and updated to be consistent within each document and to match the dates in the implementation plan.			
FirstEnergy Raymond Morella	✓		However, the reference to May 1, 2006 in the last sentence before the table is confusing based on the dates/comments in the table.
Response: The effective dates in this set of standards have all been reviewed and updated to be consistent within each document and to match the dates in the implementation plan.			
U.S. Army Corps of Engineers Karl Bryan	✓		The implementation plan for TOP-002-1 is fine, but the layout of the regulation is not very concise. Recommend the regulation be broken down into subparts where the subparts only deal with the requirements and metrics for a specific entity.
Response: The drafting team is limited to only modifying the requirements that need to be changed as a result of the Phase III & IV Measures. Other modifications to existing Version 0 requirements are outside the scope of the SARs assigned to this drafting team.			
FRCC (G12)	✓		No additional comments.
Southern Co Generation (G6)		✓	We agree with the proposed plan with one exception - We recommend Field Testing of VAR-002-1. (See our response to Question 6 on VAR-002-1 Levels of Non-Compliance for details.)
Response: Please see the response to your comments on Question 6. With the modifications made to the standard, field testing should not be necessary.			
Southern Co Services (G5)		✓	Under VAR-002, we feel that the provisions under R.3 seem very reasonable.
Response: The drafting team appreciates your support of this requirement.			
Tennessee Valley Authority (G1)	✓		None
ISO/RTO Council (G10)	✓		
NPCC CP9, Reliability Standards Working Group (G8)	✓		
U.S Bureau of Reclamation	✓		

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Commenter	Yes	No	Comment
Jay Seitz			
Pepco Holdings, Inc. Affiliates (G9)	✓		
Dominion John Loftis	✓		
Ameren John Sullivan	✓		
City Water, Light & Power Karl Kohlrus	✓		
SERC EC Planning Standards (G3)	✓		
Bonneville Power Administration Lynn Aspaas	✓		
Midwest Reliability Organization (G7)	✓		
PJM Interconnection, L.L.C. Mark Kuras	✓		
NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT	✓		
American Transmission Co. Peter Burke	✓		
Salt River Project Michael Pfeister	✓		
Hydro-Québec	✓		

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Commenter	Yes	No	Comment
TransEnergie Roger Champagne			
Independent Electricity System Operator Ron Falsetti	✓		
Tennessee Valley Authority (G1)	✓		
Bonneville Power Admin. – PBL Rebecca Berdahl			None
We Energies Howard Rulf			None
British Columbia Transmission Corp. Thomas Fung			None
NERC Wind Generator Task force Mahendra Patel			None

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8. Please provide any other comments on this set of standards that you haven't already provided, including any comments you have on any of the issues highlighted in the associated Background Information for Set Two of the Phase III & IV Standards.

Summary Consideration:

Commenter	Comment
Tennessee Valley Authority (G1)	TVA concurs with the drafting teams recommendation to allow field testing of MOD-026-1 & MOD-027-1.
Response: The drafting team appreciates your support.	
Mid-Atlantic Area Coordinating Council John Horakh	Good job overall by the Drafting Team.
Response: The drafting team appreciates your support.	
NERC Standards Evaluation Subcommittee Bill BJORQUEZ – ERCOT	The SES commends the Set 2 Phase III/IV Drafting Team for its efforts and stands ready to support these standards with the consideration of the previous comments.
Response: The drafting team appreciates your support. Please see the responses to your comments.	
Tennessee Valley Authority (G1)	TVA concurs with the drafting teams recommendation to allow field testing of MOD-026-1 & MOD-027-1.
Response: The drafting team appreciates your support.	
Dynegy Generation Greg Mason	1. With regard to field testing of MOD-026, each Generation Owner should have the option of doing a field test on a unit but not be required to complete a field test for at least one unit. Such a requirement for a field test seems to conflict with R1.2 of MOD-026-1 which allows multiple verification methods, of which field testing is one of those methods.
Response: The field test being proposed is voluntary – no generator owners will be required to participate. The field test being proposed will be conducted before the standard is finalized – the intent of the field test is to determine if the standard contains requirements and measures that are feasible and practical.	
SERC EC Planning Standards (G3)	References in a standard to another standard should not include the Revision number.
Response: Agree. The cross references were updated to omit the version number.	
U.S. Army Corps of Engineers Karl Bryan	For any requirement in a reliability standard, there should be at least one measurement. This would make the job of complying with the reliability standard easier for the entity as well as make the job of the compliance team easier.
Response: Adding measures for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is	

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Commenter	Comment
	another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.
City Water, Light & Power Karl Kohlrus	For TP-002-1 in R15 capitalize "Generator".
	Response: Capitalization errors have been corrected.
WECC Reliability Subcommittee (G11) Southern California Edison Mohan Kondragunta	TOP-002 Before any requirement can be implemented, there needs to be a measure. For example, VAR-001-1 has 13 requirements but only 4 measures.
	Response: Adding measures for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.
FRCC (G12)	TOP-002-1 is incomplete and should be modified and posted for comments. It needs to have Measures and Compliance items added.
	Response: Adding measures and compliance elements for the existing Version 0 requirements is outside the scope of the SARs assigned to this drafting team. There is another drafting team that is adding measures and compliance elements to those Version 0 Standards that were missing these elements.
FirstEnergy Raymond Morella	It is unclear why the Drafting Team added TOP-002-1 to the Draft 2, Set 2 issue of the Phase III-IV Standards. It is our understanding that the TOP-002-1 standard was not included in any prior release of the draft Phase III-IV Standards. It is recommended that this be removed from the Phase III-IV group and move through the NERC Standard Development process on its own. Also, there is no reference to the TOP-002-1 standard in your questioning above. Furthermore, the TOP-002-1 recommended changes for R14 are NOT agreed to.
	Response: The same requirement for the Generator Operator was in two standards – the new standard had more detail – to eliminate double jeopardy, the drafting team recommended, and most commenters supported, removing the duplicate requirement from TOP-002.
Bonneville Power Admin. – PBL Rebecca Berdahl	Each requirement must be supported by a measurement. Those standards that have requirements without measurements need revising. TOP-002 is not included as one of the standards set for comment in this comment form. Please clarify.
	Response: The same requirement for the Generator Operator was in two standards – the new standard had more detail – to eliminate double jeopardy, the drafting team recommended, and most commenters supported, removing the duplicate requirement from TOP-002. The recommended change to TOP-002 was highlighted in the implementation plan and the drafting team did solicit comments on the implementation plan.
Bonneville Power Administration Lynn Aspaas	TOP-002 Requirement R8 states "... shall plan to meet voltage and/or reactive limits, ..." It would make more sense for this sentence to refer to "requirements" rather than "limits".

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Commenter	Comment
	Requirement R16.2 - It seems an example that would better reflect system operations would be "system operating limits" rather than "transmission facility ratings."
<p>Response: TOP-002 is a Version 0 standard. The drafting team is limited to modifying only requirements or measures that must be modified as a result of the inclusion of Phase III & IV Measures. The requirements noted do not need to be changed as a result of the Phase III & IV measures.</p>	
Ameren John Sullivan	TOP-002-1: At present, a number of system studies are performed at the regional level. Therefore, the first sentence of Requirement R11 should read: The transmission operator or designee shall perform seasonal, next-day, and current-day bulk electric system studies to determine SOLs.
<p>Response: TOP-002 is a Version 0 standard. The drafting team is limited to modifying only requirements or measures that must be modified as a result of the inclusion of Phase III & IV Measures. Requirement 11 does not need to be changed as a result of the Phase III & IV measures.</p>	
ISO New England, Inc. Kathleen Goodman	ISO NE agrees with the premise to have design data for new or refurbished excitation systems provided at least one year prior to the in-service date with updated data provided within 2 weeks of the unit being in-service. There should also be a requirement to provide updated data within 2 weeks of changes.
<p>Response: The requirement to provide updated data is addressed in another standard. Note that the drafting team did modify the requirement to provide design data a year in advance – several commenters indicated that this is not practical and some systems aren't ordered a year in advance. The requirement was changed to 3 months in advance of the installation, and allows the use of estimated data.</p>	
Midwest Reliability Organization (G7)	<p>EOP-005: the MRO does not see the need to move IV.A.M2 and M3 into a new version 1 standard.</p> <p>MOD-026 and MOD-027 Levels of Non-Compliance: Failure to comply on the administrative details listed in M1, M2 and M3 should not invoke a high non-compliance level, i.e., greater than level 2. However, the RRO not having a model verification process or the Generator Owner not providing verified models should invoke a high non-compliance level. Also, since the RRO is providing the verification process perhaps it should be involved in determining acceptability of the models and a related compliance level.</p> <p>VAR-003: as per the MRO draft 1 comments the MRO recommends that VAR-003 be merged with the TPL set of standards.</p>
<p>Response:</p> <p>Most commenters indicated a preference for leaving the measures from IVAM2 and M3 in EOP-005 so they were not moved into a separate standard.</p> <p>The levels of non-compliance for MOD-026 and MOD-027 will not be finalized until after the standards are field tested.</p> <p>The drafting team will ask stakeholders if they agree that VAR-003 should be merged into the existing TPL series of standards.</p>	
NERC Wind Generator Task force Mahendra Patel	When wind generation is incorporated into NERC standards, the standards should generally refer to wind generator plants, rather than individual wind generators. Wind generator plants comprise a complete system, rather than individual units.
<p>Response: This set of standards was modified to ensure that wind generators will be able to determine whether they need to comply with the</p>	

Consideration of Comments on Second Posting of Set Two of Phase III & IV Standards

Commenter	Comment
	requirements. The Wind Generator Task Force may wish to consider submitting a SAR to review Version 0 Standards and submit a SAR to modify standards where it isn't clear if the plants must comply, and to clarify which requirements are applicable to individual wind generators and which requirements are applicable to generator plants.