

Consideration of Comments

Project 2013-04 Voltage & Reactive Control

The Voltage & Reactive Control Drafting Team thanks all commenters who submitted comments on the draft VAR-002-3. These standards were posted for a 45-day public comment period from February 27, 2014 through April 14, 2014. Stakeholders were asked to provide feedback on the standards and associated documents through a special electronic comment form. There were 25 sets of comments, including comments from approximately 112 different people from approximately 68 companies representing 8 of the 10 Industry Segments as shown in the table on the following pages.

All comments submitted may be reviewed in their original format on the standard's [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Mark Lauby, at 404-446-2560 or at mark.lauby@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

¹ The appeals process is in the Standard Processes Manual: http://www.nerc.com/comm/SC/Documents/Appendix_3A_StandardsProcessesManual.pdf

Index to Questions, Comments, and Responses

- 1. Please provide your comments on the proposed VAR-002-3 below:10**

The Industry Segments are:

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

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
1.	Group	Guy Zito	Northeast Power Coordinating Council										X
Additional Member		Additional Organization	Region	Segment Selection									
1.	Alan Adamson	New York State Reliability Council, LLC	NPCC	10									
2.	David Burke	Orange and Rockland Utilities Inc.	NPCC	3									
3.	Greg Campoli	New York Independent System Operator	NPCC	2									
4.	Sylvain Clermont	Hydro-Quebec TransEnergie	NPCC	1									
5.	Ben Wu	Orange and Rockland Utilities Inc.	NPCC	1									
6.	Gerry Dunbar	Northeast Power Coordinating Council	NPCC	10									
7.	Mike Garton	Dominion Resources Services, Inc.	NPCC	5									
8.	Kathleen Goodman	ISO - New England	NPCC	2									
9.	Michael Jones	National Grid	NPCC	1									

Group/Individual	Commenter	Organization	Registered Ballot Body Segment											
			1	2	3	4	5	6	7	8	9	10		
10. Mark Kenny	Northeast Utilities	NPCC 1												
11. Christina Koncz	PSEG Power LLC	NPCC 5												
12. Helen Lainis	Independent Electricity System Operator	NPCC 2												
13. Michael Lombardi	Northeast Power Coordinating Council	NPCC 10												
14. Alan MacNaughton	New Brunswick Power Corporation	NPCC 9												
15. Bruce Metruck	New York Power Authority	NPCC 6												
16. Silvia Parada Mitchell	NextEra Energy, LLC	NPCC 5												
17. Lee Pedowicz	Northeast Power Coordinating Council	NPCC 10												
18. Robert Pellegrini	The United Illuminating Company	NPCC 1												
19. Si Truc Phan	Hydro-Quebec TransEnergie	NPCC 1												
20. David Ramkalawan	Ontario Power Generation, Inc.	NPCC 5												
21. Brian Robinson	Utility Services	NPCC 8												
22. Ayesha Sabouba	Hydro One Networks Inc.	NPCC 1												
23. Brian Shanahan	National Grid	NPCC 1												
24. Wayne Sipperly	New York Power Authority	NPCC 5												
2. Group	Erika Doot	US Bureau of Reclamation	X					X						
No Additional Responses														
3. Group	Janet Smith	Arizona Public Service Company	X		X			X	X					
No Additional Responses														
4. Group	Kathleen Black	DTE Electric			X	X	X							
Additional Member		Additional Organization		Region		Segment Selection								
1.	Kent Kujala	NERC Compliance	RFC	3										
2.	Daniel Herring	NERC Training & Standards Development	RFC	4										
3.	Mark Stefaniak	Regulated Marketing	RFC	5										
5. Group	Louis Slade	Dominion	X		X			X	X					
Additional Member		Additional Organization		Region		Segment Selection								
1.	Mike Garton	NERC Compliance Policy	NA - Not Applicable	1, 3, 5, 6										
2.	Randi Heise	NERC Compliance Policy	NA - Not Applicable	1, 3, 5, 6										
3.	Connie Lowe	NERC Compliance Policy	NA - Not Applicable	1, 3, 5, 6										
4.	Chip Humphrey	Power Generation Compliance	NA - Not Applicable	5										
5.	Nancy Ashberry	Power Generation Compliance	RFC	5										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment											
			1	2	3	4	5	6	7	8	9	10		
6. Dan Goyne	Power Generation Compliance	NA - Not Applicable	5											
7. Jarad L Morton	Power Generation Compliance	NPCC	5											
8. Larry Whanger	Power Generation Compliance	SERC	5											
9. Larry Nash	Transmission Compliance	SERC	1, 3											
10. Angela Park	Electric Transmission Compliance	SERC	1, 3											
11. Candace L Marshall	Transmission Compliance	SERC	1, 3											
12. Larry W Bateman	Electric Transmission Compliance	SERC	1, 3											
13. John Calder	Electric Transmission Compliance	SERC	1, 3											
14. Jeffrey N Bailey	Nuclear Compliance	SERC	5											
15. Tom Huber	Nuclear Compliance	NPCC	5											
6. Group	Derrick Davis	Texas Reliability Entity, Inc.												X
No Additional Responses														
7. Group	Marcus Pelt	Southern Company: Southern Company Services, Inc.; Alabama Power Company; Georgia Power Company; Gulf Power Company; Mississippi Power Company; Southern Power Company; Southern Company generation; Southern Company Generation and Energy Marketing		X		X		X	X					
No Additional Responses														
8. Group	Shannon V. Mickens	SPP Standards Review Group		X										
	Additional Member	Additional Organization	Region	Segment Selection										
1.	John Allen	City Utilities of Springfield	SPP	1, 4										
2.	Louis Guidry	Cleco Power	SPP	1, 3, 5										
3.	Michael Jacobs	Camstex	NA - Not Applicable	NA										
4.	Mike Kidwell	Empire District Electric Company	SPP	1, 3, 5										
5.	Nick McCarty	Kansas City Power and Light	SPP	1, 3, 5, 6										
6.	James Nail	City of Independence Missouri	SPP	3										
7.	Steve Ricard	Sunflower Electric Power Corporation	SPP	1										
8.	Stephanie Johnson	Westar	SPP	1, 3, 5, 6										
9.	Mahmood Safi	Nebraska Public Power District	SPP	1, 3, 5										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment											
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10. J.Scott Williams	City Utilities of Springfield	SPP	1, 4											
11. Robert Rhodes	Southwest Power Pool	SPP	2											
9. Group	Matt Schebler	SERC OC Review Group		X		X		X	X					
Additional Member Additional Organization Region Segment Selection														
1. James Watson	Dynegy	SERC	5											
2. Ray Phillips	AMEA	SERC	4											
3. Tim Hattaway	PowerSouth	SERC	1, 5											
4. Richard Jackson	Alcoa Power Generating	SERC	5, 6, 7											
5. Scott Brame	NCEMC	SERC	1, 3, 4, 5											
10. Group	Stephen J. Berger	PPL Corporation NERC Registered Affiliates		X		X		X	X					
Additional Member Additional Organization Region Segment Selection														
1. Brenda L. Truhe	PPL Electric Utilities		RFC 1											
2. Brent Ingebrigtsen	LG&E and KU Services Company		SERC 3											
3. Annette M. Bannon	PPL Generation on behalf of its Supply NERC Registered Entities		RFC 5											
4.			WECC 5											
5. Elizabeth A. Davis	PPL EnergyPlus, LLC		MRO 6											
6.			NPCC 6											
7.			SERC 6											
8.			SPP 6											
9.			RFC 6											
10.			WECC 6											
11. Group	Frank Gaffney	Florida Municipal Power Agency		X		X	X	X	X					
Additional Member Additional Organization Region Segment Selection														
1. Tim Beyrle	City of New Smyrna Beach	FRCC	4											
2. Jim Howard	Lakeland Electric	FRCC	3											
3. Greg Woessner	Kissimmee Utility Authority	FRCC	3											
4. Lynne Mila	City of Clewiston	FRCC	3											
5. Cairo Vanegas	Fort Pierce Utility Authority	FRCC	4											
6. Randy Hahn	Ocala Utility Service	FRCC	3											
7. Stanley Rzad	Keys Energy Services	FRCC	1											

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8. Don Cuevas		Beaches Energy Services	FRCC 1										
9. Mark Schultz		City of Green Cove Springs	FRCC 3										
12.	Group	Ben Engelby	ACES Standards Collaborators						X				
Additional Member		Additional Organization		Region	Segment Selection								
1.	John Shaver	Arizona Electric Power Cooperative/Southwest Transmission Cooperative, Inc.		WECC	1, 4, 5								
2.	Shari Heino	Brazos Electric Power Cooperative, Inc.		ERCOT	1, 5								
3.	Paul Jackson	Buckeye Power, Inc.		RFC	3, 4								
4.	Amber Skillern	East Kentucky Power Cooperative		SERC	1, 3, 5								
5.	Michael Brytowski	Great River Energy		MRO	1, 3, 5, 6								
6.	Scott Brame	North Carolina Electric Membership Corporation		SERC	1, 3, 4, 5								
7.	Mark Ringhausen	Old Dominion Electric Cooperative		RFC	3, 4								
8.	Bill Hutchison	Southern Illinois Power Cooperative		SERC	1								
9.	Steve Ricard	Sunflower Electric Power Corporation		SPP	1								
10.	Clem Cassmeyer	Western Farmers Electric Cooperative		SPP	1, 5								
13.	Group	Mike O'Neil	Florida Power & Light	X									
No Additional Responses													
14.	Group	Richard Hoag	FirstEnergy Corp	X		X	X	X	X				
Additional Member		Additional Organization		Region	Segment Selection								
1.	William Smith	FirstEnergy Corp		RFC	1								
2.	Larry Raczkowski	FirstEnergy Corp		RFC	3								
3.	Doug Hohlbaugh	Ohio		RFC	4								
4.	Ken Dresner	FirstEnergy Solutions		RFC	5								
5.	Kevin Query	FirstEnergy Solutions		RFC	6								
6.	Richard Hoag	FirstEnergy Corp			NA								
15.	Individual	John Falsey	Invenenergy LLC					X					
16.	Individual	Nazra Gladu	Manitoba Hydro	X		X		X	X				
17.	Individual	Chris Scanlon	Exelon	X		X	X	X	X				
18.	Individual	Thomas Foltz	American Electric Power	X		X		X	X				

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19.	Individual	John Seelke	Public Service Enterprise Group	X		X		X	X				
20.	Individual	Venona Greaff	Occidental Chemical Corporation							X			
21.	Individual	Michelle R D'Antuono	Ingleside Cogeneration LP					X					
22.	Individual	Barbara Kedrowski	Wisconsin Electric Power Co			X	X	X					
23.	Individual	Bill Fowler	City of Tallahassee			X							
24.	Individual	Bernard Johnson	Oglethorpe Power Corporation					X	X				
25.	Individual	Sergio Banuelos	Tri-State Generation and Transmission Association, Inc.	X		X		X					
26.	Individual	Karen Webb	City of Tallahassee					X					
27.	Individual	Keith Morisette	Tacoma Power	X		X	X	X	X				
28.	Individual	Don Schmit	Nebraska Public Power District	X		X		X					
29.	Individual	RoLynda Shumpert	South Carolina Electric and Gas	X		X		X	X				

If you support the comments submitted by another entity and would like to indicate you agree with their comments, please select "agree" below and enter the entity's name in the comment section (please provide the name of the organization, trade association, group, or committee, rather than the name of the individual submitter).

Organization	Agree	Supporting Comments of "Entity Name"
Invenergy LLC	Agree	PSEG Public Service Enterprise Group
Occidental Chemical Corporation	Agree	Ingleside Cogeneration, LP
Oglethorpe Power Corporation	Agree	ACES
South Carolina Electric and Gas	Agree	SERC OC

1. Please provide your comments on the proposed VAR-002-3 below:

Organization	Question 1 Comment
<p>Northeast Power Coordinating Council</p>	<p>Section M1. Add the word "in" to the following sentence: "The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode or in a difference control mode"Footnote 3: suggest rewording the sentence to "The generator voltage or Reactive Power schedule is a target value with a tolerance band or a voltage or a Reactive Power range communicated by the Transmission Operator to the Generator Operator."Footnote 4: suggest rewording the sentence to "A generating Facility's capability may be established by tests or other means, and may not be sufficient at times to return the system voltage within the schedule tolerance band...."Section M2, part 2.3: suggest rewording the sentence to "Generator Operators that do not monitor the voltage at the location specified on the voltage schedule shall document or be able to demonstrate the methodology for converting the scheduled voltage specified by the Transmission Operator to the voltage point being monitored by the Generator Operator."R3: While we agree with the 30 minute window to allow a GOP time to resolve an issue before having to notify the TOP of a status or capability change, the second part of the sentence seems to negate the first. The GOP has to notify the TOP of a status change within 30 minutes but if the status has been restored within 30 minutes then the GOP is not required to notify the TOP of the status change.Rationale for R4: typo in the version number of the standard VAR-002-2b.Section R4: remove the word "then" and "to" in the sentence. Suggest rewording the sentence to "Each Generator Operator shall notify its associated Transmission Operator within 30 minutes of becoming aware of a change in reactive capability due to factors other than a status change described in Requirement R3. If the capability has been restored within the first 30 minutes of such change, the Generator Operator is not required to notify the Transmission Operator of the change in reactive capability".R1 Severe VSL: for consistency with the wording of the requirement, suggest rewording to "Unless exempted, the Generator Operator did not operate each generator connected to the interconnected transmission system in the automatic voltage</p>

Organization	Question 1 Comment
	<p>control mode"R2 Severe VSL: for consistency with the wording of the requirement, suggest adding the word "the" to the sentence: "The Generator Operator did not maintain the voltage or Reactive Power schedule" And "The Generator Operator did not modify the voltage when directed".R5 High VSL and Severe VSL: the requirement on page 9 applies to the Generator Owner yet the responsible entity for the VSL is the Generator Operator. The word " Generator Operator" needs to be changed to "Generator Owner".</p>
<p>Response: Thank you for your comments. Several of the clarifying changes were made to the wording in the standard based on your feedback. VSLs for R5 and rationales were also corrected. However, the intent behind R3 was to allow GOPs 30 minutes to address or correct an issue before having to notify the TOP of the status change. Currently, if the AVR goes in and out of service multiple times within a short timeframe, the GOP is obligated to make multiple notifications to the TOP, even if the AVR is corrected in less than a few minutes. The drafting team concluded the other suggested changes did not provide additional clarify.</p>	
<p>US Bureau of Reclamation</p>	<p>The US Bureau of Reclamation (Reclamation) reiterates that the VSLs for VAR-002-3 R3 and R4 should reflect a range of noncompliance like in VAR-002-2. A failure to notify the Transmission Operator of an AVR, power system stabilizer, or reactive capability change for 35 minutes should not be treated as severely as a failure to notify the Transmission Operator of a status change for 75 minutes or longer. Reclamation recommends that R4 be updated to specify a threshold of reactive capability change that requires notification (e.g., 20 MVAR). As written, R4 would require GOPs to notify TOPs of a change in reactive capability of as little as 1 MVAR. Reclamation also requests clarification on types of “changes in reactive capability” that could trigger the notification requirement in R4.Reclamation suggests that the time horizon for R6 should be changed from “Real-time Operations” to “Operations Planning” to match VAR-001-4 R6 and reflect that tap setting changes are agreed upon in advance rather than in real-time. If the drafting team intends only to refer to tap settings that can be adjusted in real-time (e.g., On Load Tap Changers), the requirement should be more specific.Reclamation appreciates the drafting team’s efforts and recognizes that the proposed revisions include a number of improvements to VAR-001 and VAR-002. However, Reclamation disagrees with the drafting team’s approach to responding to all</p>

Organization	Question 1 Comment
	<p>November 2013 comments on VAR-002 with the statement, “Thank you for your comments. VAR-002 did not pass the last ballot, and the VAR SDT will consider this during the next successive ballot.” By responding in this way to all VAR-002 comments, the drafting team provided no responses to the technical issues raised by commenters.</p>
<p>Response: Thank you for your response. The drafting team determined that the best way to ensure reliability was to allow the TOP to provide guidance on when to make notifications based on system needs. This is reflected in VAR-001-4 where the TOP may exempt GOPs from making certain notifications. Further, the drafting team determined that it was not possible to set a reactive capability change threshold that could apply continent-wide. Such a threshold will have to vary based on the entity’s size and location of the entity. The drafting team did not change the time horizon for R6 because the currently enforceable standard that previously passed industry comment and ballot used “Real-time operations.”</p>	
<p>Arizona Public Service Company</p>	<p>R3 & R4: Please provide the technical justification for the 30 minute time limit. Also, please provide an example of a specific action taken by the Transmission Operator in response to a notification of status change of AVR or PSS. In order to allow the GO time to fix minor problems before reporting, a minimum of 60 minutes should be allowed. This will eliminate unnecessary reporting and limit the impact of reporting on the Transmission Operator. We recommend that all time periods in these requirements be changed to 60 minutes. R5.1: copied below for discussion: For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage: The above language implies that if my GSU primary voltage is rated less than the generator primary voltage, this requirement will not apply. Hopefully, that is not the intent. There are examples of GSU transformers that have the primary voltage intentionally specified to be 5% less than the generator rated voltage to provide a voltage boost. R6: This requirement implies that an action is required whether there is a need for tap change or not. It should be clarified that it applies only when either a GO or a TO is planning a tap change.</p>

Organization	Question 1 Comment
<p>Response: Thank you for your comments. The 30 minutes was selected for two reasons: 1) an IROL T_v must be corrected within 30 minutes in accordance with the NERC Glossary, and 2) the industry consensus was that 30 minutes was appropriate for R3 and R4.</p>	
DTE Electric	<p>Positive improvements!Two minor grammar changes:Second sentence of R3 and R4 - remove "to" before "the Generator Operator"If the capability has been restored within 30 minutes of such change, then to the Generator Operator...</p>
<p>Response: Thank you for your comments. The word “to” was removed from the requirements R3 and R4.</p>	
Dominion	<p>Dominion has the following comments. o While we do not strongly oppose inclusion of the last sentence in requirements 3 and 4, we do not believe they are necessary. We are slightly concerned that such inclusion in this standard could infer that notification is required under similar circumstances in other standards o If the SDT choses to keep the last sentence in R3 and R4, Dominion suggests removing the first ‘to’ to read “....then the Generator Operator is not required to....”.</p>
<p>Response: Thank you for your comments. The last sentences in R3 and R4 are necessary to avoid the situations where multiple entities are notifying TOPs of an issue being addressed/corrected thereby diverting the TOP from their primary objective of system reliability. The drafting team also removed the word “to” from both requirements R3 and R4.</p>	
Texas Reliability Entity, Inc.	<p>We would suggest rewording R2.2 to say “When instructed to modify voltage, the Generator Operator shall comply unless such action would violate safety, an equipment rating, a regulatory requirement, or a statutory requirement. If the Generator Operator cannot comply with the Transmission Operator’s instructions, the Generator Operator shall provide an explanation why the instruction cannot be met.”In R4, does the “reactive capability” include static capacitive or reactive devices that are behind the fence (for example, static capacitors and reactors installed on the low voltage feeders at wind plants). Would this requirement apply to such devices if they are not included in the Bulk Electric System per the new BES definition?The status and capability notifications in R3 and R4 may be directly or indirectly in conflict with IRO-005-3.1a, R1.1, TOP-005-2a,</p>

Organization	Question 1 Comment
	Attachment 1, Item 1.2.4, and TOP-006-2, R2. These requirements require monitoring the status of generation and/or AVR status by the RC and BA, as well as the TOP. Will the TOP and RC be able to satisfy their obligations under these other standards in view of the proposed GOP reporting parameters?
<p>Response: Thank you for your comments. The drafting team did not adopt the suggested changes in Part 2.2 because it is outside the scope of what was being addressed in this project. With regard to R4, the TOP may provide the GOP with an exemption for certain notifications under VAR-001-4, and the BES definition will apply with regard to the applicability of this standard.</p>	
<p>Southern Company: Southern Company Services, Inc.; Alabama Power Company; Georgia Power Company; Gulf Power Company; Mississippi Power Company; Southern Power Company; Southern Company generation; Southern Company Generation and Energy Marketing</p>	<p>Southern Company has the following general comments that are meant to provide non-substantial changes to parts of the standard:1. In the second sentence of the “Rational for R3” box, add “of this type of status change” between “notifications” and “provide”. This provides emphasis that the scenario described in the first sentence is one type of status change that may occur. 2. In the third sentence of the “Rational for R3” box, delete “or capability”. R3 deals with status changes and R4 deals with capability changes.3. In R4, delete the unneeded word “to” in the second sentence that appears between “then” and “the”: “,,, change, then to the Generator Operator is not required”4. It is noted that TOP-003-2, R5 and MOD-032-1, R2 (both currently filed with FERC for approval) contain requirements for the GO to provide data to the TOP and the TP similar to that found in VAR-002-3 R5. Duplication of identical requirements for the GO may occur if all three standards are ratified.</p>
<p>Response: Thank you for your comments. The drafting team adopted most of the changes based on your feedback. However, the drafting team retained R5 because the TOP standards are currently being revised. Additionally, MOD-032-1, which is currently pending before FERC, addresses a different time horizon.</p>	
<p>SPP Standards Review Group</p>	<p>Standard:In Requirement R3 second sentence, we would suggest the removal of ‘to’ from the phrase ‘ then to the Generator’ and have it to read as followed: ‘then the Generator Operator’. In Requirement R 4 we would like to suggest the second sentence to be revised and to read as followed; “If the capability has been restored within 30 minutes of</p>

Organization	Question 1 Comment
	<p>becoming aware of such change, then the Generator Operator is not required to notify the Transmission Operator of the change in reactive capability. In Requirement R4 second sentence, we would suggest the removal of 'to' from the phrase ' then to the Generator' and have it to read as followed: 'then the Generator Operator'. In the last line of the 2nd bullet of R1, insert space between 'Operator' and 'for'.Capitalize Part whenever it is referencing a Requirement. For example, in the Rationale Box for R2, the last sentence in the 1st paragraph would read 'Additionally, a new Part 2.3 has been...' Do this throughout the standard.In the Rationale Box for R4, correct the reference to VAR-002-2b.In the Rationale Box for R5, the 3rd sentence should read 'The prior version of VAR-002-2b, Part 4.1.4 (the +/- voltage range...'In the High VSL for R2, insert an 'a' between 'have' and 'conversion'.Replace 'cannot' with 'could not' in the Severe VSL for R6.RSAWIn the RSAW R5 (page 11) under Evidence Requested11, we would like to suggest changing 'M4' to 'M5'....then it would read 'Evidence as outlined in M5'.Similar to the standard, Part should be capitalized when referenced in conjunction with a requirement.In the 3rd row of the table under the Compliance Assessment Approach Specific to VAR-002-3, R2 heading, delete the 'in' in the last line in the cell. In the 5th line in the 1st paragraph in the Note to Auditor section, insert a comma between 'sound' and 'only' such that it reads '...documentation review, are sound, only limited audit...'. In the last line of the same paragraph, insert a 'the' between 'that' and 'entity'.In the 3rd row of the table under the Compliance Assessment Approach Specific to VAR-002-3, R3 heading, insert a 'the' between 'if' and 'entity'. In the 5th line in the 1st paragraph in the Note to Auditor section, insert a comma between 'sound' and 'only' such that it reads '...documentation review, are sound, only limited audit...'. In the last line of the same paragraph, insert a 'the' between 'that' and 'entity'.In the Evidence Requested table for R4, insert a 'the' in front of 'entity' or 'entity's' in the 2nd and 3rd line of the 2nd row and the 1st line of the 3rd row. In the 1st line of the 3rd row of the table under the Compliance Assessment Approach Specific to VAR-002-3, R4 heading, insert a 'the' between 'if' and 'entity'.In the Evidence Requested table for R5, change the reference to M5 in the 2nd row to M4.In the 1st line of the 2nd row of the table under the Compliance Assessment Approach Specific to VAR-002-3, R5 heading, insert a 'the' between 'if' and 'entity'.In the 1st line of the 2nd</p>

Organization	Question 1 Comment
	row of the table under the Compliance Assessment Approach Specific to VAR-002-3, R6 heading, insert a 'the' between 'if' and 'entity'.
<p>Response: Thank you for your comments. The drafting team was able make most of the recommended changes to the standard. The drafting team will forward your recommendations for the RSAW to NERC Compliance staff for their consideration.</p>	
SERC OC Review Group	<p>Requirement R1:The OC Review Group believes that R1 would be strengthened with further report timing clarification is required in the case where the AVR changes state unexpectedly. The OC Review Group respectfully recommends adding a bullet to R1 which reads "In cases where the AVR changes state unexpectedly the Generator Operator will notify the Transmission Operator within 30 minutes."Current R1: The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (with its automatic voltage regulator (AVR) in service and controlling voltage) or in a different control mode, as instructed by the Transmission Operator unless: 1) the generator is exempted by the Transmission Operator, or 2) the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o That the generator is being operated in start-up,1 shutdown,2 or testing mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or o That the generator is not being operated in the control mode that was instructed by the Transmission Operator for a reason other than start-up, shutdown, or testing. Proposed R1: The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (with its automatic voltage regulator (AVR) in service and controlling voltage) or in a different control mode, as instructed by the Transmission Operator unless: 1) the generator is exempted by the Transmission Operator, or 2) the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o That the generator is being operated in start-up,1 shutdown,2 or testing mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or o That the generator is not</p>

Organization	Question 1 Comment
	<p>being operated in the control mode that was instructed by the Transmission Operator for a reason other than start-up, shutdown, or testing. o In cases where the AVR changes state unexpectedly the Generator Operator will notify the Transmission Operator within 30 minutes only if reactive capability is not restored. Measure 1: The OC Review Group recommends that Measure 1 be modified to specifically include that SCADA alarming may be used for real-time notification. Current Measure 1: The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode or a different control mode as specified in Requirement R1. If a generator is being started up or shut down with the automatic voltage control off, or is being tested, and no notification of the AVR status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode as required in Requirement R1. Such evidence may include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. If a generator is exempted, the Generator Operator shall also have evidence that the generator is exempted from being in automatic voltage control mode (with its AVR in service and controlling voltage). Proposed Measure 1: The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode or a different control mode as specified in Requirement R1. If a generator is being started up or shut down with the automatic voltage control off, or is being tested, and no notification of the AVR status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode as required in Requirement R1. Such evidence may include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. SCADA alarming may be used for real-time notification. If a generator is exempted, the Generator Operator shall also have evidence that the generator is exempted from being in automatic voltage control mode (with its AVR in service and controlling voltage). Requirement 2: The OC Review</p>

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	<p>Group believes and recommends that the phrase “or other control capabilities” to provide further clarification to the Requirement. Current R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule capabilities⁴) provided by the Transmission Operator, or otherwise shall meet the conditions of notification for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] Proposed R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage, Reactive Power schedule, or other control capabilities provided by the Transmission Operator, or otherwise shall meet the conditions of notification for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] Measure 2: The OC Review Group believes and recommends that the phrase “or other control capabilities” to provide further clarification to the Measure. Current M2, paragraph 1: M2. In order to identify when a generator is deviating from its schedule, the Generator Operator will monitor voltage based on existing equipment at its Facility. The Generator Operator shall have evidence to show that the generator maintained the voltage or Reactive Power schedule provided by the Transmission Operator, or shall have evidence of meeting the conditions of notification for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator. Evidence may include, but is not limited to, operator logs, SCADA data, phone logs, and any other notifications that would alert the Transmission Operator or otherwise demonstrate that the Generator Operator complied with the Transmission Operator’s instructions for addressing deviations from the voltage or Reactive Power schedule. Proposed M2, paragraph 1: M2. In order to identify when a generator is deviating from its schedule, the Generator Operator will monitor voltage based on existing equipment at its Facility. The Generator Operator shall have evidence to show that the generator maintained the voltage, Reactive Power schedule or other control capabilities, provided by the Transmission Operator, or shall have evidence of meeting the conditions of notification for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator. Evidence may include, but is not limited to, operator logs, SCADA</p>

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	<p>data, phone logs, and any other notifications that would alert the Transmission Operator or otherwise demonstrate that the Generator Operator complied with the Transmission Operator’s instructions for addressing deviations from the voltage or Reactive Power schedule. Requirement 3: The OC Review Group believes that R3 would be strengthened with further report timing. The OC Review Group respectfully recommends adding a bullet to R3 which reads “The Generator Operator is not required to notify the Transmission Operator of the status change if the change is expected as part of a startup, shutdown, or testing procedure previously provided to the Transmission Operator per Requirement 1.”</p> <p>Current R3. Each Generator Operator shall notify its associated Transmission Operator of a status change on the AVR, power system stabilizer, or alternative voltage controlling device within 30 minutes of the change. If the status has been restored within 30 minutes of such change, then to the Generator Operator is not required to notify the Transmission Operator of the status change [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>Proposed R3: Each Generator Operator shall notify its associated Transmission Operator of a status change on the AVR, power system stabilizer, or alternative voltage controlling device within 30 minutes of the change. If the status has been restored within 30 minutes of such change, then to the Generator Operator is not required to notify the Transmission Operator of the status change [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>o The Generator Operator is not required to notify the Transmission Operator of the status change if the change is expected as part of a startup, shutdown, or testing procedure previously provided to the Transmission Operator per Requirement 1.</p> <p>Measure 3: The OC Review Group recommends that Measure 3 be modified to specifically include that SCADA alarming may be used for real-time notification.</p> <p>Current Measure 3: The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any status change identified in Requirement R3. If the status has been restored within the first 30 minutes, no notification is necessary.</p> <p>Proposed Measure 3: The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any status change identified in Requirement R3. SCADA alarming may be used for real-time notification. If the status has been restored within the first 30 minutes, no notification is</p>

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	<p>necessary. Requirement 4:Current R4. Each Generator Operator shall notify its associated Transmission Operator within 30 minutes of becoming aware of a change in reactive capability due to factors other than a status change described in Requirement R3. If the capability has been restored within 30 minutes of such change, then to the Generator Operator is not required to notify the Transmission Operator of the change in reactive capability. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] The SERC OC Review Group respectfully requests further clarification for the phrase “becoming aware of a change in reactive capability”. Without clarifying the size “of a change in reactive capability” it is possible that the TOP will receive numerous calls reporting extremely small changes in reactive capability.Violation Severity Levels:Requirement 1: The SERC OC Review Group proposed change does not require VSL modifications.Requirement 2: The SERC OC Review Group proposes the following change to the VSL to reflect the modification to Requirement 2. Current R2 Severe VSL: The Generator Operator did not maintain voltage or Reactive Power schedule as directed by the Transmission Operator and did not make the necessary notifications required by the Transmission Operator. OR The Generator Operator did not have an operating AVR, and the responsible entity did not use an alternative method for controlling voltage. OR The Generator Operator did not modify voltage when directed, and the responsible entity did not provide any explanation. Proposed R2 Severe VSL: The Generator Operator did not maintain voltage, Reactive Power schedule, or other control capabilities as directed by the Transmission Operator and did not make the necessary notifications required by the Transmission Operator. OR The Generator Operator did not have an operating AVR, and the responsible entity did not use an alternative method for controlling voltage. OR The Generator Operator did not modify voltage when directed, and the responsible entity did not provide any explanation. The comments expressed herein represent a consensus of the views of the above named members of the SERC OC Review Group only and should not be construed as the position of the SERC Reliability Corporation, or its board or its officers.</p>
<p>Response: Thank you for your comments. The drafting team did not make the suggested change to R1 because it would create a conflict with R3. The measure for R3 does not prevent SCADA alarms/data from serving as evidence of compliance, and the</p>	

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	<p>standard does not explicitly list all the forms of compliance. With regard to R4, the TOP can provide notification exemptions under VAR-001-4. This will allow the TOP to tailor notifications based on size of reactive capability if necessary. For the R2 VSL, the language was not modified because the GOP must maintain the voltage or Reactive Power schedules, regardless of the method of control.</p>
<p>PPL Corporation NERC Registered Affiliates</p>	<p>1. The PPL NERC Registered Affiliates agree with R2 stating that GOPs shall maintain the voltage/MVAR schedule or meet the TOP’s deviation notification criteria; however, there is no explicit requirement for TOPs to issue any such notification criteria. We request that the standard be revised to require TOPs to issue reasonable notification criteria for deviations from the TOP-provided voltage or reactive power schedule. Such criteria can enhance reliability by reducing the number of repetitive, unnecessary telephone calls to TOP system operators that could distract from other reliability tasks. 2.We recommend that the first sentence of VAR-002-3 R6 be changed from, “After consultation with the Transmission Operator regarding necessary step-up transformer tap changes,” to, “After consultation with the Transmission Operator regarding necessary step-up transformer tap changes and the implementation schedule,” to mirror the language in R6 of VAR-001-3.3. We wish to point-out also that the low side-to-high side ratio of a transformer is fixed only for an ideal (no losses) device, and for actual equipment it changes with load (termed “regulation”), and this effect is not trivial in magnitude. The “Rationale for R2” section of VAR-002-3 explicitly permits “straight ratio conversion,” however; so, if the standard passes in its present form, GOPs using this method can be officially compliant yet factually operating well outside the voltage schedule bandwidth. The term, “straight ratio conversion,” should be replaced with “nominal ratio conversion compensated for transformer regulation.”3. We recommend that Measures M1 and M3 include language that would allow for SCADA alarms to count as evidence of notification to the TOP from the GOP. We suggest adding the language, “SCADA alarming, or some other electronic automatic system, may be used for real-time notification.”</p>
	<p>Response: Thank you for your comments. VAR-001-4 does address TOP notification requirements, and VAR-001-4 allows the TOP to tailor the notifications based on their system needs. For R6, the consultation with the TOP can encompass the implementation schedule. R2 rationale was not modified because the standard allows each entity to select the conversion</p>

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<p>methodology that best suits their needs. For M1 and M3, SCADA alarms are not precluded as evidence of compliance, but the drafting team did not want to provide an exhaustive list of all forms of compliance.</p>	
<p>Florida Municipal Power Agency</p>	<p>There are grammar issues with R1 including a ambiguous references. There are at least two ways to read R1: (i) does R1 mean that the AVR is put into automatic voltage control mode as a default with the ability to operate in a different control modes only at the instruction of a TOP - in other words, there is no instruction from a TOP if the AVR is operating in automatic voltage control mode; or (ii) a TOP instruction is required to determine in which control mode to operate, including automatic voltage control mode? Also, does the "... unless ..." and the ensuing two bullets apply only to alternative control modes or also to automatic voltage control mode? Another ambiguity is the use of the word "notified" in R1. "Notify" as used in R3 allows the GOP a 30 minute (after the fact) window. Does R1 allow the same after the fact notification period? R1, R2, R3 and R4 all include notification provisions that in some ways overlap and cause confusion. If the Generator Operator needs to take immediate or emergency actions and transfer the automatic voltage controller from "auto" to "manual", it is not clear in the requirements (especially requirement R1) that the Generator Operator is allowed to perform this action without obtaining prior instruction from the Transmisison Operator or giving prior notification to the Transmission Operator. FMPA believes it would be clearer to re-write R1, R2, R3 and R4 into two requirements: R1 for desired performance and R2 for notifications of when that performance cannot be maintained.FMPA offers the following re-write of R1, R2, R3 and R4 into two proposed requirements that we believe reflects the intent of the SDT while clarifying:"R1 The Generator Operator shall operate each generator connected to the interconnected transmission system with its automatic voltage regulator (AVR): (i) in service; (ii) in the control mode instructed by the Transmission Operator; and (iii) maintaining the generator voltage or Reactive Power schedule (within each generating Facility's capabilities) provided by the Transmission Operator, unless: (a) the generator is exempted by the Transmission Operator; (b) the generator does not have an AVR; or (c) the Generator Operator has notified the Transmission Operator in accordance with R2 of an inability to meet these performance requirements:1.1 When a generator's AVR is out of service or the generator does not have</p>

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	<p>an AVR, the Generator Operator shall use an alternative method to control the generator reactive output to meet the voltage or Reactive Power schedule provided by the Transmission Operator.1.2 Generator Operators that do not monitor the voltage at the location specified in their voltage schedule shall have a methodology for converting the scheduled voltage specified by the Transmission Operator to the voltage point being monitored by the Generator Operator.R2 Each Generator Operator shall notify its associated Transmission Operator prior to or within 30 minutes of becoming aware of any of the following, unless the performance requirements of R1 are restored within 30 minutes:</p> <ul style="list-style-type: none"> o That the generator is not being operated in the control mode that was instructed by the Transmission Operator; o A status change of the AVR, power system stabilizer, or alternative voltage controlling device o A change in reactive capability of a generator due to factors other than those described above <p>A procedure previously provided by the Generator Operator to the Transmission Operator that includes a description of AVR, power system stabilizer or alterantive voltage controlling device status changes or control mode changes during start-up, shutdown or testing acts as standing notification such that the Real-time communication of start-up, shutdown, or testing also fulfills the required notification.”FMPA is aware that this offered language removes the SDTs proposed R2 bullet 2.2 that requires the GOP to modify voltage when instructed to do so by the TOP; however, this bullet is duplicative of the parent requirement (e.g., if a TOP instructs the GOP to modify voltage, is that not a new voltage schedule, albeit maybe a temporary schedule?) and TOP-001-1, R3 that requires GOPs to comply with directives from a TOP. FMPA believes that this offered alterantive language simplifies and clarifies the SDT’s intent.</p>
	<p>Response: Thank you for your comments. R1 has been modified to provide clarity with regard to AVR settings. R1 clearly states that the AVR must be run in either controlling voltage mode or the mode instructed by the TOP. The only time that the GOP can run in a different mode or in manual is if the GOP has been exempted or the GOP has notified the TOP of one of the bulleted items. Both bullets for R1 still apply to the entire body of R1. Further, the timing for the second bullet of R1 must work in tandem with the new R3.</p>

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<p>ACES Standards Collaborators</p>	<p>(1) VAR-002-3 R1 is confusing. Please clarify the second bullet in R1 so it ties into the previous part of the sentence. Read literally, R1 states, “The GOP shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (with its automatic voltage regulator (AVR) in service and controlling voltage) or in a different control mode, as instructed by the TOP unless... 2) the GOP has notified the TOP of one of the following: [second bullet] That the generator is not being operated in the control mode that was instructed by the TOP for a reason other than start-up, shutdown, or testing.” This exception is circular and needs to be revised.(2) The RSAW for R1 does not provide any additional details for compliance beyond the language in the requirement and corresponding measure. We would like to see additional compliance statements in the RSAWs, especially considering that the compliance input document contained several relevant issues with VAR-002-3.(3) VAR-002-3 R2 and Part 2.1 need to be modified so that the GOP is only required to follow the voltage schedule if provided by the TOP. It is not desirable for the TOP to provide all generators voltage schedules. As an example, the TOP may determine it does not need to provide a voltage schedule to a small generator. To consider this situation, the clause “if a voltage schedule is provided by the TOP” could be added to both Part 2.1 and the main requirement. (4) VAR-002-3 R2 will be problematic for some GOPs because it does not reflect the characteristics of the voltage schedule provided by some TOPs. For example, some TOPs provide an hourly average voltage schedule to avoid the need for notification for every time the GOP drifts out of schedule. How would R2 be applicable in this situation? Would it only apply for the first 15 minutes of each hour looking back at the last hour? Please modify the requirement accordingly to address this issue.(5) The RSAW for R2 contains ambiguous language, stating that the auditor should “select a sample of timeframes” to verify compliance. The evidence retention section (section C.1.2.) of VAR-002-3 states that the Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers and maintain all other evidence for the current and previous calendar year. The RSAW should be revised to “review instances when a generator deviates from its schedule” for time periods applicable to the evidence retention section of the standard. (6) VAR-002-3 R3 is improved by expanding the time from 15 to 30 minutes before a GOP must notify the</p>

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	<p>TOP of a status or capability change. We thank the drafting team for providing additional flexibility.(7) The RSAW for R3 states that the auditor may select certain instances where an entity had a status change on AVR. Is the intent of the drafting team to require an entity to maintain a list of all status changes? This does not appear to align with the requirement, especially considering that the rationale for R3 clarifies that the requirement was modified to limit notifications for quick status changes, as these provide little to no benefit to reliability. Having to maintain a list of status changes for an auditor verify also provides little to no benefit to reliability. We recommend revising the RSAW to state that the auditor may select “evidence of GOP status change notifications to its TOP.”(8) Requirement R4 in the RSAW is inconsistent with the requirement in the proposed standards. It still contains 15 minutes which has been updated to 30 minutes in the latest proposed standard.(9) VAR-002-3 R4 could be clarified further in the second sentence to account for awareness. We recommend modifying the language to state, “If the capability has been restored within 30 minutes of [becoming aware] of such change...” This revision will align both sentences in R4.(10) We are concerned about the statement in the “Note to Auditor” section that the auditor will look for instances “where it is likely that an entity was made aware of the change in reactive capability” such as when a unit trips or an AVR fails. The statement is problematic for two reasons. First, the requirement is clear that the GOP must be aware of the change before they are required to communicate it. The auditor should not be looking for evidence such as when an AVR fails but rather for log book entries and similar information that the GOP was aware of the change. They should not be looking for when the AVR went offline. Second, a unit trip is a bad example because the TOP will have telemetry necessary to observe when a unit is forced off-line. Is it really necessary to have a compliance requirement for the GOP to notify the TOP when the TOP will already know of the unit’s off-line status? We agree that communication between the GOP and the TOP should take place following such an event, but we do not think it rises to a compliance level for this specific example.(11) VAR-002-3 R5 meets multiple P81 criteria and should be removed. It meets Criterion A because it does little, if anything, to benefit or protect the reliable operation of the BES. It also meets Criterion B2 - Data Collection/Data Retention and Criterion B4 - Reporting because</p>

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	<p>it requires the GOP to gather their tap setting information and report it to a third party (i.e. its TOP), which is unnecessary to implement, as a reliability requirement. A GOP is not going to refuse to provide data to its TOP on its generator step-up transformer in a compliance-driven world. In fact, making this data subject to compliance slows down the free exchange of the information because of all the extra checking that goes into managing (i.e. verifying, checking, storing) compliance documentation. This requirement also meets B7 - Redundant because the TOP can specify this data in its data specification per TOP-003-2 R1, distribute it to the GO per TOP-003-2 R3, and then have the GO respond per TOP-003-2 R5. We do not support the VSLs for R5 because it meets P81 criteria and should be removed. (12) The RSAW for R5 should specify the evidence auditors will verify, including tap settings, available fixed tap ranges, and impedance data. The current RSAW refers to “evidence as outlined in M4.” This is an incorrect reference to the wrong measure and needs to be updated.(13) VAR-002-3 Part 6.1 meets a P81 criterion and should be removed. It meets Criterion A because it does little, if anything, to benefit or protect the reliable operation of the BES. It also meets Criterion B4 - Reporting because it requires the GO to report a technical justification for not implementing tap changes. This technical justification simply does not support reliability. The TOP can make adjustments to other voltage schedules to account for the GO’s inability to implement the tap changes. What is the purpose of the GO providing the TOP a technical justification? Is it to provide the TOP some assurance there is a technical reason for failing to implement the tap changes? In a compliance-driven world, the TOP can reasonably expect the GOP to implement the tap changes unless the changes would violate safety, equipment limits, or regulatory and statutory requirements since these are the only deviations allowed by the main requirement. The threat of sanctions assures this. Furthermore, the GOP may legitimately not have a “technical” justification because a regulatory requirement is a legal justification, not a technical justification. (14) The RSAW for R6 needs to be developed. It is currently incomplete and does not list any evidence or any additional guidance beyond what is listed in the measure.(15) Thank you for the opportunity to comment.</p>
<p>Response: Thank you for your comments. R1 has been modified to provide clarity with regard to AVR settings. R1 clearly states that the AVR must be run in either controlling voltage mode or the mode instructed by the TOP. The only time that the</p>	

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	<p>GOP can run in a different mode or in manual is if the GOP has been exempted or the GOP has notified the TOP of one of the bulleted items. Both bullets for R1 still apply to the entire body of R1. The RSAW was concurrently developed with the standard so the intent of the drafting team is reflected in how compliance is assessed, but the RSAW is a NERC Compliance document that the drafting team does edits. However, these comments will be forwarded to the appropriate individuals for review. The drafting team could not remove the requirements to make tap setting changes and provide tap data under P81 because the TOP standards are being currently revised, and FERC has not approved the most recent MOD filing. Further, the data requirements are important for TOP studies which impact tap setting/max VAR output. With regard to the technical justification for a tap setting, the TOP will need to understand why the GOP cannot make a tap setting modification. Changing a tap will impact reactive support from a generating unit, and this will impact reliability. Finally, the requirement to provide a technical justification is an existing requirement in the currently enforceable VAR-002-2b.</p>
<p>Florida Power & Light</p>	<p>For R4, the loss of an individual wind turbine should not be considered a reactive capability change, since the real power capability would change incrementally along with the reactive capability change and in most cases other turbines would compensate for the reactive capability loss. In general, these requirements should all be applied on the aggregate level for dispersed generating resource facilities. Clarification on R5 is needed to better understand applicability of tap settings changes and request on dispersed generating resources as these typically are designed with a smaller padmount transformer or similar for each individual generating resource, along with a larger aggregating GSU to collect the aggregate generation. Intent would be to include the GSU, but exclude the smaller individual padmount transformers.</p>
	<p>Response: Thank you for your comments. With regard to R4, the TOP may provide the GOP with an exemption for certain notifications under VAR-001-4, and the BES definition will apply with regard to the applicability of this standard.</p>
<p>FirstEnergy Corp</p>	<p>FirstEnergy would like to offer the following comments:1. With regards to clarifying that the Generation Operator will follow the condition of notification of the Transmission Operator. We offered the following two options, where option 1 modifies the current red line version of the Requirement 2 and option 2 adds a sub Requirement to explicitly specify the situational required action of the Generator Operator for the Transmission Operator.OPTION 1:R2. Unless exempted by the Transmission Operator, each Generator</p>

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	<p>Operator shall maintain the generator voltage or Reactive Power schedule (within each generating Facility’s capabilities) provided by the Transmission Operator, or otherwise shall meet the conditions of notification provided by the Transmission Operator for deviations from the voltage or Reactive Power schedule. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]OPTION 2:R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule³ (within each generating Facility’s capabilities⁴) provided by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]2.1 The Generator Operator shall meet the conditions of notification provided by the Transmission Operator for deviations from the voltage or Reactive Power schedule. Then renumber remaining sub Requirement as needed.Pertaining to Measure 2:Remove the first sentence (“In order to identify when a unit generator is deviating from its schedule, the Generator Operator will monitor voltage based on existing equipment at its Facility”) from measure 2. This sentence does not apply to requirement 2 since it only requires the Generator Operator to maintain the generator voltage or Reactive Power schedule that is provided by the Transmission Operator. The inclusion of this sentence could be interpreted that the Generator Operator will need to provide evidence of “monitoring” activities which is not a performance based requirement.</p>
<p>Response: Thank you for your comments. The requirement and measure language was selected very carefully. The first and second sentences of M2 provide GOPs with the ability to monitor and maintain voltage based on existing equipment, and it does not require GOPs to install new metering.</p>	
Manitoba Hydro	<p>(1) R1 - R1 appears to be such a lax requirement that it is arguably unnecessary. Under the second bullet, the only step that a GO has to take in order to avoid compliance is to notify the TO that it is not complying and provide any reason whatsoever. This leads one to question how important the requirement is to reliability. (2) R3 - It appears that the two sentences in R3 conflict with each other. Based on the second sentence, the GOP is not required to notify the TOP if the status has been restored within 30 minutes. However, the first sentence requires the GOP to notify the TOP within 30 minutes of the change. If at the 30th minute, the GOP realizes that the status is not restored, there will not be enough</p>

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	<p>time for the GOP to notify the TOP. If the 30 minute notification time could be extended to 45 or 60 minutes, there will be enough time for the GOP to notify the TOP. (3) M3 - For consistency with that in R3, “the first” in the second sentence should be deleted. (4) R4 - Similar to that in R3, if the 30 minute notification time could be extended to 45 or 60 minutes, there will be enough time for the GOP to notify the TOP. (5) M4 - For consistency with that in R4, “the first” in the second sentence should be deleted. (6) Based on the Standards Process manual, “Time Horizon: The time period an entity has to mitigate an instance of violating the associated requirement.” the Time Horizon for R5 and R6 should be changed from “Real-time Operations” to “Operations Planning” because in R5 the GO is required to provide the information within 30 days and in R6 the tap changes should be scheduled during an outage after consultation with the TOP.</p>
<p>Response: Thank you for your comments. R1 is important because it requires a notification to the TOP when the generator is not in AVR or the instructed control mode. It also provides flexibility for the GOP in case the AVR switches modes. The coordination is necessary in order to provide the TOP with the opportunity to plan for other reactive resources. The 30 minutes is similar to the requirement to correct T_v issues within 30 minutes. The 30 minutes did not exist in VAR-002-2b, and now the 30 minutes provide GOPs with the time to address issues before having to notify the TOPs. The time horizons for R5 and R6 exist in the currently enforceable standard, and were not modified by this drafting team.</p>	
<p>Exelon</p>	<p>1. VAR-002 Effective Dates The Implementation Plan for VAR-001-4 and VAR-002 requires the new Standard revisions to be implemented the first day of the first calendar quarter after applicable regulatory approval, allowing for a situation in which the standard could receive regulatory approval towards the end of the calendar quarter, resulting in an effective date with little or no implementation time, e.g., if regulatory approval is received on March 30, the standard would need to be implemented on April 1. IN addition, although the Implementation Plan justification states that the VAR-002 standard “cannot go into effect without the new TOP schedules and notification requirements” it does not address the implementation associated with changes to VAR-002 with respect to status notifications. There is not sufficient time to allow generating units to implement training of operators and procedural changes necessary to implement the proposed changes to notification requirements associated</p>

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	<p>with the AVR, PSS or alternative voltage controlling device. In the VAR-002 Directives Project Implementation Plan, the NERC SDT acknowledges that the TOPs will "need some time" to adjust to providing data and therefore the TOPs are provided a quarter to prepare documentation. The GO/GOPs should be afforded at least that amount of time for implementation. We suggest a 6 month implementation period following regulatory approval.</p> <p>2. Dispersed Generation This version does not account for dispersed generation (such as wind or solar as found in the new BES definition). These generators may not have a traditional AVR, may only provide limited reactive resources and the individual elements may not have AVR or be capable of operating in voltage control mode. We understand Project 2014-04 is addressing standards changes for dispersed resources and recognize there are parallel efforts that may be difficult to reconcile. Given that, we request the Drafting Team consider how best to acknowledge that VAR-002-4 may have limited applicability to dispersed generation resources and that it is likely to be revised based on the work of Project 2014-04.</p> <p>3. VAR-002-3 R2.3 Exelon believes it is reasonable to allow the GOP to monitor the voltage specified in their TOP issued voltage schedule by allowing the GOP to monitor at a different location by applying a methodology for converting the voltage monitored; however, the conversion method should be specifically communicated to the TOP. There is not a one for one conversion between grid voltage and terminal voltage and therefore the conversion method and monitoring point should be clearly communicated to the TOP to avoid any future compliance audit or implementation issues.</p> <p>4. VSLs Exelon understands that R3 and R4 are binary requirements as outlined in Guideline 2 of the "Violation Risk Factor and Violation Severity Level Justifications" associated with VAR-002-3, (e.g., did or did not notify in 30 minutes), it is however unreasonable that a complete failure to notify would have the same VSL as a notification that is one minute late versus one that is days or weeks late. We urge NERC to address this issue from reliability, not a strict compliance perspective; in instances such as this, there should be levels of severity not simply binary requirements.</p>
<p>Response: Thank you for your comments. The implementation schedule is shorter than other projects, but that date was selected originally because industry provided feedback that VAR-002-2b changes should be implemented quickly to avoid unnecessary notifications to the TOP. FERC has not historically approved standards within one quarter of filing. Further, the</p>	

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<p>Dispersed Generation project has released its whitepaper, and no changes are being recommended for VAR-002-2b. The standard does not require the GOPs to provide TOPs with the methodology for conversion because the TOPs provided feedback that their primary concern was that the voltage schedule was maintained. The VSLs were simplified to remove the gradation in the currently enforceable requirement. If a large unit reports later than a small unit, then the severity will vary between the two. Therefore, the timing elements were removed since the requirements are binary in nature.</p>	
<p>American Electric Power</p>	<p>AEP would like to thank the drafting team for their efforts on this project. Their willingness to incorporate industry’s input into the draft standard is very much appreciated.VSL Table: The High and Severe VSL entries for R5 should indicate Generator Owner rather than Generator Operator.</p>
<p>Response: Thank you for your comments. The VSL table has been updated.</p>	
<p>Public Service Enterprise Group</p>	<p>PSEG appreciates the SDT’s hard work on this standard and we have only one comment.In R2, subpart 2.3 uses the words “monitor” and “monitored.” These words have unintended implications in two respects:1. There was never an obligation in the prior version of VAR-002 that the GOP “monitor” its voltage. The objective in this standard, as in its predecessor, is to require the GOP to maintain a voltage or Reactive Power schedule specified by the TOP. (Under VAR-001-4, R5.3, a TOP’s schedule must have tolerance bands, which is an improvement over the R4 in the current VAR-001-3.) While “monitoring” the TOP-specified schedule in an activity that may be related to maintaining such a schedule, is not the results-based purpose of the standard. 2. What would constitute acceptable monitoring? As written, this is an open question that an auditor must answer. It’s possible that a GOP could be in violation of subpart 2.3 if its “monitoring” was deemed unacceptable by an auditor even though the GOP maintained the TOP’s schedule within the tolerance bands 100% of the time!We therefore recommend that the SDT replace prescribed activities of “monitor” and “monitored,” respectively in subpart 2.3, with the performance requirement of “maintain” and “maintained.” This would preserve the requirement that the GOP have a conversion methodology if it does not maintain the voltage schedule at the location specified by in TOP’s schedule, without also prescribing that GOPs monitor voltage to do so. To</p>

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	<p>implement this change, subpart 2.3 would read: "Generator Operators that do not maintain the voltage at the location specified in their voltage schedule shall have a methodology for converting the scheduled voltage specified by the Transmission Operator to the voltage point being maintained by the Generator Operator."</p>
<p>Response: Thank you for your comments. The intent behind Part 2.3 is to require a methodology for a conversion, and the drafting team chose the word "monitor" and "monitored" to specifically alleviate concerns that an auditor will take issue with monitoring equipment and where it is located. The drafting team used the word monitor to convey where the GOP has visibility of the voltage. The words "maintain" and "maintained" may introduce ambiguity in Part 2.3 because the industry was concerned that an auditor would question how voltage is maintained if the GOP and TOP are not metering the same point. The drafting team selected "monitor" and "monitoring" based on input from many GOPs that they did not want their monitoring systems questioned, nor did they want to be required to install new monitoring systems for this standard.</p>	
<p>Ingleside Cogeneration LP</p>	<p>Ingleside Cogeneration LP (ICLP) believes that VAR-002-3 Draft 3 adds much needed flexibility in the manner that GOP supports voltage at the transmission interconnection. Combined with the updates to VAR-001-4, we agree that close coordination with the TOP is inherent in the process - which is a key reliability need. A primary example is the allowance for the TOP to determine how the GOP may communicate changes in AVR and PSS status. Those of less intrinsic importance to BES reliability may be required to notify a status change through telemetry; high-impact generation facilities may need to call the TOP as well. The result is that distracting calls are eliminated - which can otherwise pose a threat to the BES in as of themselves. In fact, our only concerns are related to the draft RSAW that was posted concurrently with the standard. First, a further description in the RSAW under R1 and R2 which directs how the CEAs must react to a TOP voltage control strategy that goes against today's model. For example, if exemptions are given, it must be clear that it is not up to the auditor to question their technical veracity. Their only focus must be how well the Generator Operator adhered to the TOP's voltage/Reactive schedule. In addition, the auditor instructions for R2 needs to include a line item addressing footnote 4 which allows capability exceptions for adherence to the TOP's voltage/Reactive schedule. This may take two forms - first, if the external system attempts to force the generator past its Facility Rating limits. Such a condition may persist</p>

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	<p>indefinitely, and can damage the unit if compliance is forced. Second, a rapid change in loading will create Reactive-power spikes that can easily exceed the TOP’s specified range. These typically last for under a minute and must also be accepted as compliant by the CEA. In both cases, a notification to the TOP is unnecessary as it will serve only as a nuisance call.</p>
<p>Response: Thank you for your comments. The RSAW was concurrently developed with the standard so the intent of the drafting team is reflected in how compliance is assessed, but the RSAW is a NERC Compliance document that the drafting team does not edit. However, these comments will be forwarded to the appropriate individuals for review.</p>	
<p>Wisconsin Electric Power Co</p>	<p>R1 As written, the requirement is difficult to interpret (four different actions or qualifications for one requirement). The draft language allows the Transmission Operator to instruct the Generator Operator to operate a generator in any number of undefined control modes without prior agreements in place between the TO and GO. Prior versions of the draft standard allowed for unusual circumstances to be addressed via the, “unless the Generator Operator is exempted by the Transmission Operator” language. The rationale for keeping the Requirement 1 language as is in the July 18th draft is to avoid allowing Transmission Operators from determining the mode in which AVR is to be operated without the need for the process of exempting the generator from operating in AVR in the voltage control mode prior to making the request to the Generator Operator. The new Rationale for R1 does not address the change, but merely includes the proposed changes within the rationale. This is unacceptable and the Standard Drafting Team is asked to expand the rationale for inserting, “or in a different mode, as instructed by the Transmission Operator” into the VAR-002-3 Draft Standard should the request to use the July 18th 2014 draft version of VAR-002-3 not be returned. R2 The requirement references “conditions of notification for deviations from the voltage or Reactive Power schedule.” Where are the conditions defined relative to voltage or Reactive Power? R3: The redline version includes an extra “to” in the following sentence, “If the status has been restored within 30 minutes of such change, then to the Generator Operator is not required to notify the Transmission Operator of the status change. Additionally, as currently written the requirement incents a delay in reporting changes in status. Entities should be</p>

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	<p>required to report status changes as soon as possible. Allowing entities to not report status changes that reverse within 30 minutes creates a mixed message. Entities may be incented to report status changes at 29 minues and 59 seconds in a hope that the status has been restored.</p>
	<p>Response: Thank you for your comments. R1 has been modified to provide clarity with regard to AVR settings. R1 clearly states that the AVR must be run in either controlling voltage mode or the mode instructed by the TOP. The only time that the GOP can run in a different mode or in manual is if the GOP has been exempted or the GOP has notified the TOP of one of the bulleted items. Both bullets for R1 still apply to the entire body of R1. The notification conditions will come from the TOP under VAR-001-4. Also the extra words were removed from R3 and R4. The timing in R3 was added to improve reliability by allowing the GOP to address issues and correct them within the 30 minutes. This would alleviate the TOP from receiving numerous unnecessary notifications.</p>
<p>City of Tallahassee</p>	<p>1. R3 & R4 - Need to delete the inserted “to” in front of the inserted “the Generator Operator is required to”. (see redline to last posted)2. Table of Compliance Elements (pg 12 of 16, redline to last posted) for R2 under severe VSL, the last paragraph “ The Generator Operator did not modify voltage when directed, and the responsible entity did not provide an explanation” should be modified to be “The Generator Operator did not modify voltage as instructed, and the responsible entity did not provide an explanation” to match the requirement language.</p>
	<p>Response: Thank you for your comments. The extra words were removed from R3 and R4. The VS for R2 has also been modified.</p>
<p>Tri-State Generation and Transmission Association, Inc.</p>	<p>The VRF chart in the standard contradicts the language in the requirements. Requirement R5 has the GO as the applicable entity but in the VRF chart it refers to the GOP as the applicable entity. Tri-State believes the GOP should be the applicable entity for requirement R5. Tri-State also believes R5 and R6 should match up and be applicable to the same entities. Thus Tri-State believes the GOP should be the applicable entity for R6. There are also minor edits needed to the requirements below: In R3... If the status has been restored within 30 minutes of such change, then the GOP is not required to notify</p>

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	<p>the TOP of the status change.In R4... If the capability has been restored within 30 minutes of such change, then the GOP is not required to notify the TOP of the change in reactive capability.</p>
<p>Response: Thank you for your comments. The VSL for R5 has been corrected, and the extra words have been removed from R3 and R4. For R5 and R6, the GO was selected because the owner of the asset is the entity that should have the ultimate responsibility for making those tap changes. The GO will work with the GOP to ensure those change are made.</p>	
<p>Tacoma Power</p>	<p>Tacoma Power submits the following comments: Requirement R4. There is no requirement for GOPs to calculate the baseline reactive capability, so it makes no sense to have R4 require GOPs to notify TOPs when the reactive capability deviates from the baseline reactive capability. Furthermore, the reactive capability of plants can vary in Real-time based on real power output, system voltage, or weather conditions. Per MOD-11 and 12, GOs/GOPs must provide modeling data to the that the TOP can use to evaluate reactive capability. Any notifications under R4 should be limited changes resulting equipment malfunctions. Revise R4 to state “Each Generator Operator shall notify its associated Transmission Operator within 30 minutes of becoming aware of a change in reactive capability due to equipment malfunctions other than those malfunctions requiring notification under Requirement R3. If the capability has been restored within 30 minutes of such change, then to the Generator Operator is not required to notify the Transmission Operator of the change in reactive capability.”Requirement R5 is redundant to MOD-011 R1.4 and should therefore be removed from VAR-002-3. Requirement R5.1 does need to include auxiliary transformers because typically system powerflow models do not include unit auxiliary transformers or excitation transformers. If R5.1 is retained, please clarify that auxiliary transformer does not include PTs or CTs.</p>
<p>Response: Thank you for your comments. The standard does not require a baseline calculation, and the currently enforceable VAR-002-2b requires a notification to the TOP as soon as a reactive capability change occurs. Also, the MOD standards are in different time horizons from the VAR standards. R5.1 states “auxiliary transformers with primary voltages equal to or greater</p>	

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	<p>than the generator terminal voltage.” The drafting team does not believe this encompasses PTs or CTs or excitation transformers.</p>
<p>Nebraska Public Power District</p>	<p>In Requirement R3 and R4 second sentence, we would suggest the removal of ‘to’ from the phrase ‘ then to the Generator’ and have it to read as followed: ‘then the Generator Operator’. In the last line of the 2nd bullet of R1, insert space between ‘Operator’ and ‘for’.Second bullet of R1 reads: “That the generator is not being operated in the control mode that was instructed by the Transmission Operator for a reason other than start-up, shutdown, or testing.” The language lends itself to the Generator Operator to not operate in control mode for any reason. We would suggest that the language be tightened up and we suggest the following: “that the generator is not capable of operating in control mode as instructed by the Transmission Operator other than start-up, shutdown, or testing”. R4 second sentence: add the words “becoming aware of” between the words “of” and “such”.M6: after “Requirment 6” add “and shall have evidence of technical justification as provided in Part 6.1”.VSL’s R3: add at the end “...of the status change”.</p>
	<p>Response: Thank you for your comments. The standard has been revised for R2-R4, and the second bullet for R1 has been modified for clarity. R4 has been modified to add the phrase “becoming aware of.” The VSLs have also been updated to incorporate your feedback.</p>

Additional comments received from Doug Hils – Duke Energy:

Duke Energy suggests the following revision to R1 for added clarity on the instants when a GOP can have its AVR in another mode other than controlling voltage:

“ The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (with its automatic voltage regulator (AVR) in service and controlling voltage unless: 1) the generator is exempted by the Transmission Operator 2) the GOP is instructed by the Transmission Operator to operate in a different control mode or 3) the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up,¹ shutdown,² or testing mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the control mode that was instructed by the Transmission Operator for a reason other than start-up, shutdown, or testing. “

We believe that without this rewording, ambiguity exists of the instances when a GOPs AVR can be different than in service and controlling voltage.

Response: Thank you for your comments. R1 has been modified to provide clarity with regard to AVR settings. R1 clearly states that the AVR must be run in either controlling voltage mode or the mode instructed by the TOP. The only time that the GOP can run in a different mode or in manual is if the GOP has been exempted or the GOP has notified the TOP of one of the bulleted items. Both bullets for R1 still apply to the entire body of R1.

END OF REPORT