

**Individual or group. (59 Responses)**

**Name (39 Responses)**

**Organization (39 Responses)**

**Group Name (20 Responses)**

**Lead Contact (20 Responses)**

**IF YOU WISH TO EXPRESS SUPPORT FOR ANOTHER ENTITY'S COMMENTS WITHOUT ENTERING ANY ADDITIONAL COMMENTS, YOU MAY DO SO HERE. (12 Responses)**

**Comments (59 Responses)**

**Question 1 (34 Responses)**

**Question 1 Comments (47 Responses)**

**Question 2 (43 Responses)**

**Question 2 Comments (47 Responses)**

**Question 3 (0 Responses)**

**Question 3 Comments (47 Responses)**

**Question 3 (0 Responses)**

**Question 3 Comments (47 Responses)**

Group
MRO NSRF
Russel Mountjoy
Yes
<p>In requirement 5.1 a Transmission Operator is required direct a Generator Operator to “comply with the schedule” provided by the Transmission Operator. In 5.2, however, the potential for deviations from the schedule is implied. To avoid conflict between these two, the following change to 5.1 is recommended: “The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode unless notification of deviation is provided in accordance with 5.2.” For consistency M2 should be reworded as follows: “For the operational planning time horizon, Transmission Operators shall have evidence of assessments used as the basis for how resources were scheduled” The current wording of “shall provide copies” imposes an action that is not included in the associated requirement. In previous comments regarding voltage schedules issued by a Transmission Operator a mechanism for a Generator Operator to provide explanations if a proposed schedule could not reasonably be met based on specific equipment limitations and to get a revised schedule or exemption was suggested. In this version the Transmission Operator is obligated to provide additional information about the schedule, but is not obligated to respond to Generator Operator concerns regarding the schedule. Under VAR-002 a Generator Operator is required to comply with the schedule provide by the Transmission Operator unless notification is provided. There then is the potential situation where a schedule issued by a Transmission Operator cannot be met due to equipment or system conditions and the only action available is for a Generator Operator to provide multiple notifications. A better solution it seems would be to include some sort of feedback process</p>

between Generator Operators and Transmission Operations in the VAR-001 standard that would result in an agreed-upon schedule that could reasonably be met without burdensome periodic notifications. As recommended in previous comments a process of reaching “mutual agreement” on the schedule for making transformer tap changes is suggested . The SDT responded in the consideration of comments that they did not chose to include the suggested agreement language but did add a requirement for the transmission operator to provide an “implementation schedule”. While this change is an improvement it does not completely solve the concern presented. The objective should be that a tap change schedule is agreed upon that would meet the reasonable needs of both the Transmission Operator and Generator Operator. The following from requirement R2: “Transmission Operators can provide sufficient reactive resources through various means including, but not limited to, reactive generation scheduling, transmission line and reactive resource switching, and using controllable load” implies that all of the items listed need to be considered. If the intent is that the items are intended to be examples it is suggested that the words “including , but not limited to” be replaced by “such as”. It is recommended that R5.1 be modified as recommended by the NERC IGVT report of September 2012: 5.1. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (the AVR or plant-level volt/var regulator is in service and controlling voltage). The standard should be reviewed and where AVR is referred to, the plant-level volt/var regulator should be added in a similar way to this recommended change to R5.1. The referenced NERC report provides the technical basis for this recommendation.

The revised VAR-002 R2.1 removes the 15 minute deviation criteria for notification by Generator Operators to Transmission Operators. The revised VAR-001-4 requires Transmission Operators to provide notification requirements. The drafting team in the consideration of comments explained “In an effort to remove prescriptive notification requirements for the entire continent” the change was made. This leaves the Generator Operators at the mercy of Transmission Operators who could potentially set a no deviation criteria. It is recommended that a compromise be struck by specifying a limit on the criteria such as “no less than 15 minutes”. For clarification it is recommended that the word “generator” be added before the word “stability” in the last sentence of footnote 6. [Note to NSRF: a comment on this was submitted previously but it did not have a recommended language change] In M2 it is recommended that “alarm logs” be added to the list of evidence. We support the deletion of the language regarding notification of the expected duration of a change in status. At the time a status change occurs it is often difficult to provide a meaningful estimate of the duration of the change. Requirement 3 should be revised to state – Notification must be made within 30 minutes of becoming aware of the change from automatic controlling voltage for the AVR, and from in-service of the PSS. Measure 3 should be revised to reflect this as well. The following change to requirement R4 is recommended: “Reactive capability changes due to factors such as a change in the wind speed for wind generators or a change in the solar resource for solar facilities do not require Transmission Operator notification” Measure 4 should be revised to reflect the wording in Requirement 4 – Notification must be made within 30 minutes of becoming aware of the change of state of the AVR. For the same reason

described above for VAR-001 (NERC IGVT Report), R1 should be modified as follows: "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) or plant-level volt/var regulator in service and controlling voltage) unless the Generator Operator 1) is exempted by the Transmission Operator, or 2) has notified the Transmission Operator of one of the following:" A similar addition should be made where the AVR is referred to in the other requirements of VAR-002.

Group

Northeast Power Coordinating Council

Guy Zito

Yes

We support the direction being taken and the SDT's decision to not reiterate or duplicate the voltage assessment requirements already addressed by the FAC and TOP standards.

Yes

We support the SDT's proposal to remove the requirements that may be redundant with other standards. However, regarding VAR-001-4 Requirement R1 was revised to read: R1. Each Transmission Operator shall specify a system voltage schedule (which is either a range or a target value with an associated tolerance band) as part of its plan to operate within System Operating Limits and Interconnection Reliability Operating Limits 1.1 Each Transmission Operator shall provide a copy of the voltage schedules and associated tolerance bands to its Reliability Coordinator and adjacent Transmission Operators within 30 calendar days of a request. What is meant by "system voltage schedule." Is it a high-level, overall voltage schedule by voltage class, or a voltage schedule by station (even if there is no direct means of controlling voltage at that station)? Requirement R5 already addresses specification of generator voltage schedules, so if that is what is intended to be addressed under R1, why is R1 needed at all? Requirement R5 states: R5. Each Transmission Operator shall specify a voltage or Reactive Power schedule (which is either a range, or a target value with an associated tolerance band) at either the high voltage side or low voltage side of the Generator Step-Up transformer at the Transmission Operator's discretion. There is inconsistency in the tense used in various VSLs. Some are in present tense while others are in the past tense. This should be reviewed and revised as appropriate. "Schedule" is used in both VAR-001 Requirements R1 and R5. However, it is modified by different phrases in each, implying different types of "schedules." These two different types of "schedules" have caused confusion, making the use and intended meaning less than perfectly clear. VAR-001 Requirement R1 - To improve clarity and consistency, suggest that the word "schedule" be deleted here and only be used when referring to GOP operation. Suggest revising Requirement R1 wording as follows: R1. Each Transmission Operator shall specify a system voltage range or a target value with an associated tolerance band as part of its plan to operate within System Operating Limits and Interconnection Reliability Operating Limits. Note that Requirement R1 only requires that the TOP establish the target system voltage level and tolerance band. There is no mention of GOP operation. Requirement R2 requires that the TOP schedule its arrangement of sufficient reactive resources, whether actually used (dispatched)

or not, a Planning function (see Measure M2). The Rationale box states: “to ensuring sufficient reactive resources are online or scheduled.” The use of the word “scheduled” here again has caused confusion. We suggest it be replaced to clarify the meaning, as follows: R2. Each Transmission Operator shall make arrangements for sufficient on-line, available reactive resources to regulate voltage levels under normal and Contingency conditions. Transmission Operators can provide sufficient reactive resources through various means including, but not limited to, making arrangements for reactive generation resources, transmission line and reactive resource switching, and using controllable load. Further recommend revising M2 to synchronize it with the revised Requirement R2 above, as follows: M2. Each Transmission Operator shall have evidence of sufficient reactive resources based on their assessments of the system. For the operational planning time horizon, Transmission Operators shall provide copies of assessments used as the basis for determining how resources were made available. Organizationally, R4 should be swapped with R5. A requirement dealing with exemptions should come after the “foundation” requirement. The Drafting Team must consider the following regarding Hydro-Quebec TransEnergie. "Schedule" in the standard is confusing and does not apply to Hydro-Québec TransÉnergie. Hydro-Quebec TransEnergie does not issue a schedule of voltage or reactive power. Hydro-Quebec TransEnergie sets voltage ranges to comply at all times for the different voltage levels. During light or peak load, these operating situations are governed with voltage setupoints for specific substations. The standard should therefore consider (in addition to the preceding comments) the terms used. For example, consider substituting the term " voltage or reactive power setpoint " for the word “schedule” which does not reflect our operating procedures. Regarding Requirement R5, NERC now requires a specified program voltage or reactive power be given to central planning and forecasting. This requirement is not applicable to Hydro-Québec TransÉnergie because there is no voltage or reactive power schedule, but rather the requirement that every generating facility of more than 10 MW have an automatic voltage regulation system. Hydro-Quebec TransEnergie also requires them to provide a specific power factor for each of those generating units.

Suggest the following changes to more effectively convey the intents of Measure M3 and Requirement R6. Suggest that Measure M3 be reworded to require demonstration of compliance rather than to require actions which should have been stipulated in the requirement. Specifically, we proposed the last part in Measure M3 be revised to: “...therefore, if a status change lasts more than 15 minutes, the GOP shall provide evidence such as system log, electronic message or a transmittal letter that it notified its associated Transmission Operator within 30 minutes of when the change first occurred.” Regarding R6, the wording “the Generator Owner shall ensure that transformer tap positions are changed according to the specifications provided by the Transmission Operator...” is not a direct action and may not be measurable. Suggest revising it to read: “the Generator Owner shall implement the transformer tap positions according to the specifications provided by the Transmission Operator....” We further propose that the SDT insert the evidence language into the first sentence of Measure M3 which asks for evidence that the Generator notified its associated Transmission Operator within 30 minutes of the change identified in Requirement R3. Generators may be asked by their TOP to operate in other modes. Reword Requirement

R1 as follows: 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) unless the Generator Operator 1) is exempted by the Transmission Operator, 2) is notified by the Transmission Operator to operate in a different viable operating mode (e.g., constant VAR output mode), or 3) has notified the Transmission Operator of one of the following:... The comments in Question 2 regarding Hydro-Quebec regarding the word "schedule" apply.

We support the proposed VRFs and VSLs.

Individual

aaa

bbb

Agree

Group

Bureau of Reclamation

Erika Doot

Yes

Yes

The Bureau of Reclamation (Reclamation) notes that the WECC variance indicates that it is intended to replace requirements R3 and R4. However, R3 and R4 in VAR-001-4 are not the same as R3 and R4 in VAR-001-3. Reclamation suggests that the drafting team should examine the WECC variance to determine which requirements it will replace because it appears that the WECC variance should replace R4 and R5. In WECC, it would be difficult for Transmission Operators to comply with both R5 and E.A. 14 because they refer to different voltage schedule reference points. VAR-001-4 R3 specifies that Transmission Operators must operate or direct the Real-time operation of devices to regulate transmission voltage and reactive flow as necessary. Measure M3 specifies that "this may include directions to Generator Operators to: 1) provide additional voltage support; 2) bring resources on-line; or 3) make manual adjustments." Reclamation suggests that this detail should be included in Requirement R3 rather than solely in the measure. VAR-001-4 R4 requires a Transmission Operator to notify a Generator Operator if the "Transmission Operator determines that a generator has satisfied exemption criteria" but does not specify a timeframe for this notification. Reclamation suggests that the drafting team update VAR-001-4 R4 to specify that the Transmission Operator must notify the Generator Operator within 30 days if the Transmission Operator determines that a generator has satisfied criteria for exemption from voltage or Reactive Power requirements and associated notification requirements. Reclamation also suggests that R4 on exemptions should follow R5 on voltage or Reactive Power scheduling and notification criteria. VAR-001 R5 allows the Transmission Operator to specify a voltage or Reactive Power schedule at either the high voltage side or low voltage side of the Generator Step Up transformer. Reclamation suggests that like in requirement E.A.14, Transmission Operators should be able to specify the voltage schedule at the generator terminals, high side of the generator step-up transformer, point of interconnection, or a location designated by mutual

agreement. VAR-001 R5.2 specifies that “The Transmission Operator shall provide the Generator Operator with the notification requirements for deviations from the voltage or Reactive Power schedule.” M5 regarding part 5.2 specifies that voice recordings may be used to establish compliance with this requirement. Reclamation suggests that voice recordings should be removed from the list in M5 for part 5.2 because notification requirements established in the planning horizon should be transmitted in writing. Reclamation notes that there is a potential inconsistency between the Transmission Operator notification requirements discussed in VAR-001 R5.2 and the Generator Operator notification requirements discussed VAR-002 R3 and R4. Reclamation recommends that VAR-001 R5.2 be modified to solely address planning horizon notifications. For consistency with the Generator Operator real-time notification requirements established in VAR-002 R3 and R4, Reclamation also recommends that VAR-001-4 R5 should include an additional subrequirement which specifies that the “TOP shall develop real-time notification requirements for the deviations from the voltage of Reactive Power schedule within 30 minutes of when a Generator Operator becomes aware of a change in reactive capability, AVR status, power system stabilizer status, or alternative voltage controlling device status, unless the status is restored within 15 minutes.” VAR-001-4 R5 requires the Transmission Operator to specify a voltage or Reactive Power schedule “at either the high voltage side or low voltage side of the Generator Step-Up transformer.” VAR-002-3 R2.3 allows Generator Operators to monitor voltages at another location so long as the Generator Operator has a “methodology for converting the scheduled voltage specified by the Transmission Operator to the voltage point being monitored by the Generator Operator.” Reclamation suggests that having the Transmission Operator and Generator Operator monitor voltages at different locations could lead to confusion in real-time communications. Reclamation suggests that VAR-001-4 R5 be updated to require the Transmission Operator to set voltages based on common monitoring locations to avoid confusion in real-time communications between Transmission Operators and Generator Operators. Reclamation suggests that R6 should be updated to specify that the Transmission Operator must coordinate outages to accommodate required step-up transformer tap changes. Reclamation suggests the drafting team update the requirement to read “After consultation with the Generator Owner regarding necessary step-up transformer tap changes, associated outages, and the implementation schedule...”. Reclamation also notes that "Generator Step-Up transformer" is sometimes capitalized in the standard. However, it is not capitalized in the WECC variance or NERC Glossary. Reclamation suggests that the drafting team remove capitalization in the term “Generator Step-Up transformer” because it is not defined in the NERC Glossary.

Reclamation believes that the notification requirements in R2 and R3 should provide the continent-wide standard. Reclamation suggests that the bullet points in R1 should be relabeled as sub-requirements R1.1 and R1.2. Reclamation requests that the drafting team clarify the timeframe for notifications required by R1. Reclamation suggests that the drafting team update VAR-002-3 R2 to allow Generator Operators to notify Transmission Operators that a voltage schedule cannot be met for equipment or other reasons, so that the Transmission Operator can alter the voltage schedule accordingly. R2.2 recognizes that a Generator Operator can provide an explanation that a voltage schedule cannot be met “when

directed to modify voltage” but does not address the planning horizon. Reclamation appreciates that R2 recognizes that generators only need to comply with voltage schedules within facility capabilities, and that footnote 6 recognizes that generating facility capability may not be sufficient at times to pull the system voltage within scheduled tolerance bands. Nevertheless, Reclamation believes that R2 subrequirements should more clearly articulate that (1) Generator Operators should provide Transmission Operators with feedback that they cannot meet voltage schedules in the planning horizon, and (2) generators may not always be capable of modifying system voltage. Reclamation notes that R2.3 applies to real-time operations, and suggests that R2.3 should be updated to require Generator Operators and Transmission Operators to monitor voltage at mutually-agreed upon locations to avoid confusion in real-time communications. Reclamation suggests that the drafting team update VAR-002-3 R3 to specify that the “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 becoming aware of the change.” Reclamation also suggests that M3 should be updated to specify that the GOP must notify its associated Transmission Operator “within 30 minutes of becoming aware of the change” rather than “within 30 minutes of when the change first occurred.” Reclamation notes that VAR-002-3 R4 specifies that the “Generator Operator shall notify its associated Transmission Operator within 30 minutes after becoming aware of a change in reactive capability... .” Reclamation suggests that M4 should be updated to match this language and specify that the GOP must notify its associated Transmission Operator “within 30 minutes of becoming aware of the change” rather than “within 30 minutes of when the change first occurred.” Reclamation requests clarification on types of “changes in reactive capability” that could trigger the notification requirement in R4. Reclamation notes that the time horizon for VAR-002-3 R6 should probably 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. Reclamation suggests that VAR-002-3 R6 should be updated to match VAR-001-4 R6 and to specify that the Transmission Operator must coordinate outages to accommodate required step-up transformer tap changes. Reclamation suggests the drafting team update the requirement to read “After consultation with the Generator Owner regarding necessary step-up transformer tap changes, associated outages, and the implementation schedule...”.

Reclamation suggests 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 the same as a failure to notify the Transmission Operator of the status change for 75 minutes.

Individual

John Canavan

NorthWestern Energy

Yes

For R2, M2 - It would be very helpful if "their assessments of the system" be clearly defined. For example, would TPL studies suffice as evidence for meeting this requirement or is this more of a real time requirement and if so, what types of evidence is NERC looking for.

Individual
Chris de Graffenried
Consolidated Edison Co. of NY, Inc.
Yes
<p>The drafting team used the word “schedule” in both VAR-001 Requirements R1 and R5. However, it is modified by different phrases in each, implying different types of “schedules.” These two different types of “schedules” has caused confusion, making the use and intended meaning less than perfectly clear. VAR-001 Requirement R1 - To improve clarity and consistency, we recommend that the word “schedule” be deleted here and only be used when referring to GOP operation. The revised Requirement R1 wording recommended follows: R1. Each Transmission Operator shall specify a system voltage [delete: schedule (which is either a] range or a target value with an associated tolerance band) as part of its plan to operate within System Operating Limits and Interconnection Reliability Operating Limits. Note that Requirement R1 only requires that the TOP establish the target system voltage level and tolerance band. There is no mention of GOP operation. Requirement R2 requires that the TOP document its arrangement of sufficient reactive resources, whether actually used (dispatched) or not, a Planning function (see Measure M2). The Rationale box states: “to ensuring sufficient reactive resources are online or scheduled.” Comment: The use of the word “scheduled” here again has caused confusion. We recommend it be replaced to clarify the meaning, as follows: R2. Each Transmission Operator shall make arrangement for [delete: schedule] sufficient on-line, available reactive resources to regulate voltage levels under normal and Contingency conditions. Transmission Operators can provide sufficient reactive resources through various means including, but not limited to, making arrangements for reactive generation resources [delete: scheduling], transmission line and reactive resource switching, and using controllable load. We further recommend revising M2 to synchronize it with the revised Requirement R2 above, as follows: M2. Each Transmission Operator shall have evidence of [delete: scheduling] sufficient reactive resources based on their assessments of the system. For the operational planning time horizon, Transmission Operators shall provide copies of assessments used as the basis for determining how resources were [delete: scheduled] made available. The verbiage of R4 should come after R5 is stated. From an organizational perspective, a requirement paragraph on exemptions should come after the referenced requirement.</p> <p>Generators may be asked by their TOP to operate in other modes. Reword Requirement R1 as follows: 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) unless the Generator Operator 1) is exempted by the Transmission Operator, [delete: or] 2) is notified by the Transmission Operator to operate in a different viable operating mode (e.g., constant VAR output mode), or 3) has notified the Transmission Operator of one of the following:</p>
Individual
Ronnie C. Hoeinghaus
City of Garland



Yes
1st question: Yes - we agree with this approach 2nd question: We have comments on R2. In ERCOT, the TOP can only plan to respond to voltage issues with the resources they have available. They do not have authority to order generation on line for voltage support nor do they have authority to back down fully loaded generation for voltage support. Only the RC has this authority.
Individual
Thomas Foltz
American Electric Power
No
R5: Rather than allowing only 30 days, we instead recommend that the Generator Owner be allowed to provide the data within the timeframe agreed upon by the GO and either the Transmission Operator or Transmission Planner. This data is often part of larger data submission that may stretch beyond the proposed time horizon. In addition, providing this data to the TP appears to be duplicative of the MOD standards currently being updated. As a result, we recommend removing the TP from this requirement. R6: We recommend that Requirement 6 and its subrequirement be applicable only to the Generator Owner and not split between the Generator Owner and Generator Operator. If both are to be retained, we recommend that the subrequirement be changed to state “*If* the Generator Owner cannot provide tap setting changes as requested, the Generator Owner or Generator Operator should notify the Transmission Operator...”
R3 & R4 do not require communications for all instances. As a result, the severe VSL text must be qualified so that it only applies to those situations where notification is actually necessary.
Individual
Oliver Burke
Entergy Services, Inc.
Agree
SERC OC Review Group
Individual
John Seelke
Public Service Enterprise Group
No
1. R4 and part 4.1 address generator exemptions. R4 requires TOPs to develop criteria for exempting generators from R5, part 5.1. Those criteria should be made available. However, TOPs, not generators, must comply with R5, part 5.1. If the SDT’s intent is to exempt specific generators from following a voltage or Reactive Power schedule, we suggest the following rewrite for R4, with no change to part 4.1: R4. Each Transmission Operator shall specify the generator criteria that will exempt Generator Operators of generators that meet these criteria from compliance with the requirement to maintain a voltage or Reactive Power schedule and

publish or provide such criteria upon request. M4 would have to be rewritten, with item 2) and item 3) deleted. Because 1) exempts a generator from having to meet a voltage of Reactive Power Schedule and 2) exempts a generator from having its automatic voltage regulator (AVR) in service or from being in voltage control mode, being exempt from having to meet a voltage schedule in 1) is equivalent to being exempt from 2). Item 3) is addressed by exemptions stated in VAR-002-3, R1 and R2. 2. R5, part 5.1 should have the phrase “in automatic voltage control mode (the AVR is in service and controlling voltage)” stricken since it would not apply to a Reactive Power schedule. In addition, the TOP should not be required to provide voltage or Reactive Power schedules to exempt generators under part 5.1. Finally, the text box for R5 refers to maintaining a schedule for “normal operations.” “Normal operations” is a critical assumption, which we believe is equivalent to “normal operating conditions.” For example, a generator that experiences a fault on its GSU will be outside of any voltage or Reactive Power schedule during that fault. Therefore, part 5.1 should be rewritten: 5.1. Except for exempt generators, the Transmission Operator shall provide the voltage or Reactive Power schedule for the associated Generator Operator and direct the Generator Operator to comply with the schedule during normal operating conditions. 3. R5, part 5.3 should have the phrase “or Reactive Power” inserted after “voltage.”

1. In R1, a generator that is exempt from having to meet a voltage or Reactive Power schedule is exempt from R1. However, a generator that must meet a Reactive Power schedule should also be exempted from R1 because R1 only applies to AVRs in the voltage control mode. R1 should be rewritten as follows: 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) unless the Generator Operator 1) is exempted by the Transmission Operator, or 2) has been directed by its Transmission Operator to meet a Reactive Power schedule, or 3) has notified the Transmission Operator of one of the following: 2. We suggest R2 have “or Reactive Power” inserted in the following phrase: “...for otherwise shall meet the conditions of notifications for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator.” 3. R2, part 2.3 should be moved to M3 since it addresses measures to prove compliance with R2. We suggest the second sentence in M2 be modified as follows: “The Generator Operator shall have evidence to show that the its generator(s) maintained the voltage or Reactive Power schedule provided by the Transmission Operator (either at the location specified by the Transmission Operator or at an alternate location that includes a methodology for converting the schedule from Transmission Operator’s location to the alternate location), or shall have evidence of meeting the conditions of notification for deviations from the voltage schedule provided by the Transmission Operator.”

Individual

Shirley Mayadewi

Manitoba Hydro

Yes

Yes

(1) M1 – the language in the second paragraph re: Part 1.1 does not match the language of the requirement itself in that the measure refers only to voltage schedules, not voltage schedules ‘and associated tolerance bands’. (2) R3 – without further clarification, ‘as necessary’ will be interpreted to mean as deemed necessary by the Transmission Operator. (3) M3 – the measure in this part contains more details and is more narrow than the requirement itself. The requirement refers to the operation of ‘devices to regulate transmission voltage and reactive flow’ while the measure refers to the operation of ‘capacitive and inductive resources’. Language should be consistent. (4) R4 – the language goes back and forth between ‘generators’ and ‘generating units’ – this should be made consistent. Also, the reference to ‘associated notification requirements’ presumably refers to the associated notification requirements in R5 but this is not specified. (5) M4 – the qualification language that it refers only to generating units ‘in its area’ appears only in the measure and not in Part 4.1 itself. (6) R5 – neither Generator nor Step-Up is a defined term so they should not be capitalized. (7) M5 – there is a shift in language here. Generally the measures indicate that the responsible entity ‘shall have evidence’ and that the evidence ‘may include’. In this measure, the language is that the responsible entity ‘shall have evidence’ and that the evidence ‘shall include’. This is much more restrictive and may make compliance more difficult as there is no longer flexibility in the evidence that will meet the criteria of the measure. (8) Compliance, Evidence Retention 1.2 – Measures 5 and 6 are not mentioned. (9) Compliance, Compliance Monitoring, 1.3 - The language refers specifically to processes found in the NERC Rules of Procedure. Generally in draft standards, there is just a list of processes that may be used. The reference included in this draft standard is concerning because MB Hydro has their own Compliance and Monitoring program and has only adopted select aspects of the NERC Rules of Procedure. (10) VSLs, R4 – the words ‘of the Generator Operator’ are missing from the end of this section. (11) VSLs, R5 – the words ‘and associated tolerance bands’ is missing from Moderate VSL after ‘voltage schedules’ and is not fully referenced in Severe VSL. (12) VSLs, R6 – the words ‘Documentation specifying requiring tap changes was provided to the Generator Owner but’ could be inserted at the start of each of the Lower VSL and Severe VSL.

Although Manitoba Hydro is in general agreement with the standards, we have the following comments: (1) M1 – the language in the measure is that evidence ‘must’ include which is a shift from typical language that evidence ‘may’ include. It also seems to be a shift from what is discussed in the rationale that the measure has been updated to include some of the evidence that ‘can be used’ for compliance purposes as the evidence listed is made mandatory by the ‘must’. (2) R1 – footnote 2 and 4 seems to be missing (3) M2 – refers to ‘unit’ while rest of standard refers to generator. For part 2.3, I believe the reference to ‘units’ should be to ‘Generator Operators’. (4) M3 –the acronym GOP is used while every other reference in the standard is to Generator Operator. (5) M4 – the language between the measure and the requirement differs slightly. The measure requires evidence of notification within 30 minutes of ‘the recognition’ of a change, while the requirement requires notification within 30 minutes of ‘becoming aware’ of a change. (6) M5 – there is nothing in the measure that addresses the timeline upon which the Generator Owner is required to provide information. (7) R6/M6 – the requirement and measure refers to both Generator Owner and Generator Operator. Its not

clear whether this is intentional or inadvertent. The words 'and provided technical justification' should be added to the end of M6 after 'tap specifications'. (8) Compliance, 1.2 – there is no time limit on the requirement for a Generator Owner to keep documentation on its step up and auxillary transformers. Its it meant to be for as long as that version is current? (9) Compliance, Compliance Monitoring, 1.3 - The language refers specifically to processes found in the NERC Rules of Procedure. Generally in draft standards, there is just a list of processes that may be used. The reference included in this draft standard is concerning because MB Hydro has their own Compliance and Monitoring program and has only adopted select aspects of the NERC Rules of Procedure.

(1) VSLs, - not clear why the references throughout the VSLs are to 'responsible entity' when the requirements are clear as to an obligation on either the Generator Owner or Generator Operator. Those entities should be listed in the VSLs as they are in the requirements and standards. (2) VSLs, R2, Severe VSL – the word 'Power' is missing after 'Reactive'. Also doesn't mention that the Generator Operator 'did not have an exemption'. (3) VSLs, R3 and R4 – would read better if stated 'the Generator Operator did not make the notification of a change that lasted more than 15 minutes within 30 minutes of the first occurrence of the change as required'.

Individual

Jonathan Appelbaum

The United Illuminating Company

No

Please note that my affirmative ballot vote was in error. We are voting NO on VAR-001. Since there is no catchall section for comments on VAR-001, we are providing comments here. Although We do agree with the removal of duplicative requirements, we are voting No on VAR-001. VAR-001 R2 remove everything after the but not limited to phrase. The various methods to obtain reactive power do not belong in the requirement but they can be included in the measure. VAR-001 R3: Clearly this is something a TOP perfoms but the compliance evidence will be overwhelming. The TOP is being asked to demonstrate that it has constantly monitored reactive and provided direction to operate reactive devices. This will require the retention of the evidence of why a reactive adjustment was necessary as well as the various adjustments made. This would mean maintaining snapshots of the normal operation of the system, records of adjustments, corrections, etc.

Yes

Individual

Angela P Gaines

Portland General Electric Co

PGE appreciates NERC's efforts to revise VAR-002. The standard as whole is a significant improvement from the previous version. However, R3 still requires a 30 minute notification for notifying the transmission operator (TOP). The 30 minute limit is a challenge for generator operations to meet. The SDT should consider increasing this limit to 60 minutes. In addition,

the requirement should allow registered entities to set up an alternative method to provide real-time AVR/PSS/voltage control device telemetry. This method would eliminate a need for notifying the transmission operator within 30 minutes. Also, the NERC glossary should fully define the term, 'voltage controlling device', as stated in R3.

Group

Dominion

Louis Slade

Yes

Yes

Yes. In order to be consistent, Dominion also suggests reviewing the need to use "its associated Transmission Operator" throughout the entire standard (i.e. R1 - "has notified the Transmission Operator", R2/M2 - "provided by the Transmission Operator", R6 - "specifications provided by the Transmission Operator", etc).

Individual

Anthony Jablonski

ReliabilityFirst

1. General Comment - ReliabilityFirst believes that due to the interdependency of the VAR-001-4 and VAR-002-3 standards, the SDT should consider combining the two into a single standard. It would be a natural progression to list a requirement associated with the Transmission Operator having it immediately followed by the associated Generator Owner/Operator requirement. ReliabilityFirst believes the Generator Owner/Operator would benefit from knowing what is being required of the associated Transmission Operator. Specific VAR-002-3 Comments 1. Requirement R6 - The parent Requirement R6 is applicable to the Generator Owner while the sub-part 6.1 specifies the Generator Operator. The same applicable entity listed in the "parent" requirement should be the same as any associated sub-parts. Since only Requirements are enforceable in Reliability Standards, if the Generator Operator fails to notify the Transmission Operator and fails to provide the technical justification per sub-part 6.1, a Possible Violation would be rolled up to Requirement R6. This would not work since Requirement R6 is only applicable to the Generator Owner. ReliabilityFirst completely understands that the Generator Owner is the responsible entity for ensuring that transformer tap positions are changed and that the Generator Operator is the entity responsible for actually performing the change. ReliabilityFirst recommends splitting Requirement R6 and sub-part 6.1 into two separate requirements (i.e., create a new Requirement R7 using the language of sub-part 6.1).

Group

Arizona Public Service Company

Janet Smith, Regulatory Affairs Supervisor

Yes

Yes

Yes
The VRF of “high” is not justified for any of the requirements. We would suggest a VRF of “medium” or “low”. If the drafting team thinks a VRF of “high “ is justified, some reasoning should be provided by the team. Lack of documented voltage schedules does not mean the system is being operated unreliably. Units are still being operated in AVR mode as required by other schedules and transmission operators coordinate the voltage schedules as needed.
Individual
Bill Fowler
City of Tallahassee
Agree
FMPA
Individual
Cheryl Moseley
Electric Reliability Council of Texas, Inc.
Yes
ERCOT agrees it is clear voltage limits are to be monitored as either SOLs or IROLs. However it seems the SDT could make more changes to clear up more items. A. VAR-001 R3 grammatical: recommend deleting “as necessary” from this sentence. It adds no value and is not needed. B. It appears VAR-001 R4 allows the TOP to not comply with the VAR Standards by utilizing exemptions?
Yes
ERCOT agrees that duplicative requirements should be removed. However, the standard would benefit from additional revisions. A. R1 and R5 should be merged. This could be accomplished in the following manner: “Each Transmission Operator shall notify associated RCs and adjacent TOPs, and specify assigned GOs the a system voltage schedule (which is either a range or a target value with an associated tolerance band) as part of its plan required forassigned GOs to operate within System Operating Limits and Interconnection Reliability Operating Limits. B. The second sentence of VAR-001 R2 is not needed. This is not an actionable requirement, but rather is an instruction as to how it’s to be done. The 2nd sentence is not a requirement. C. Recommend deleting from R5.1 the words, “...in automatic voltage control mode (the AVR is in service and controlling voltage).” The standard should establish what needs to be done, and how the GO elects to comply with the requirement should be left to the discretion of the GO. Furthermore, VAR-002 requires the GO to have its AVR in service and in auto, so this requirement is also redundant. D. It appears that VAR-001 R6 is redundant to R5.3. Also see comments on VAR-002 R6.
Yes. ERCOT supports the revisions but recommends that the SDT consider the following additional issues: A. Consider revising R2 as follows: “The generator shall follow the voltage schedule assigned by its TOP.” Otherwise this is effectively a “fill in the blank” standard. As drafted, R2 also establishes “how” entities are required to meet their obligations. The standards should establish what is required and leave it to the discretion of the functional entity to determine how to meet the relevant objective. R3 provides the needed notification.

B. VAR-002 R2 requires GOs to notify TOPs of voltage. This seems to create an unnecessary requirement given that TOPs are obligated to monitor system voltage. C. VAR-002 R2.1 appears to require that GOs maintain the voltage assigned. Consistent with the general principle that the standards should establish what is required, how GOs maintain voltage assignments should be within the discretion of the entity. D. VAR-002 R2.2 is redundant. If GOs have to maintain the voltage assigned, this is unnecessary. E. VAR-002 R2.3 is redundant if a GO has to maintain the voltage assigned. F. VAR-002 M2 includes a statement that has a “will” in it. This effectively establishes a requirement. Measures are means of demonstrating compliance, they are not requirements. The measure should be revised accordingly. G. VAR-002 R3 should state that the notification is not required during startup or shutdown. A TOP can determine from telemetered information when a unit is operating below their lower stability limit. Requiring reporting of AVR/PSS status coming on/going off line is not necessary and creates unnecessary distractions that could undermine reliability. H. The 2nd sentence of R3 is redundant with the 1st. If notification is required within 30 minutes it is implicit that the entity does not have to notify within 15 minutes? I. If a GO maintains the assigned voltage, the status of a GO’s AVR is irrelevant. If a GO failed to maintain the assigned voltage they are in violation of R2 regardless of the reason. M3 seems to unnecessarily create the potential for double violation issue on a reporting obligation. J. The standard should make clear that telemetry on status of AVRs and PSSs to TOPs meets this notification obligation. The term ‘notify’ seems to imply a manual written or verbal communication. K. VAR-002 R4 second sentence dealing with 15 min language- - please refer to R3/M3 comments. L. VAR-002 R5 – This requirement is unnecessary if GOs have to respond to any reasonable data request from their TOP. M. VAR-002 R6 is redundant with R2. If a GO has to maintain assigned voltage, and adjusting taps is necessary to do that, then this instructional requirement is not needed. If R6 is kept, in VAR-002-3 Standard the entity changes in R6.1. VAR-001-4 states the TOP will work with the GO in R6. Then in VAR-002-3 it states the following: R6. After consultation with the Transmission Operator regarding necessary step-up transformer tap changes, the Generator Owner shall ensure that transformer tap positions are changed according to the specifications provided by the Transmission Operator, unless such action would violate safety, an equipment rating, a regulatory requirement, or a statutory requirement. [Violation Risk Factor: Lower] [Time Horizon: Real-time Operations] 6.1. If the Generator Operator cannot comply with the Transmission Operator’s specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification. Why does it change from the GO to the GOP? The SDT should address the differences within VAR-002-3 to mirror R6 in the VAR-001-4 Standard.

Individual

Michael Falvo

Independent Electricity System Operator

Yes

We support this direction and the SDT’s decision to not reiterate or duplicate the voltage assessment requirements already addressed by the FAC and TOP standards.

Yes

We support the SDT's proposal to remove the requirements that may be redundant with other standards. We do not have any comments on the requirements, Measures or VRFs, but we do have some comments on the VSLs: a. R1: The word "schedule" after "system voltage" is missing from the VSL. b. There is inconsistency in the tense used in various VSLs – some are in present tense while others in past tense. Please review and revise as appropriate.

We agree with most of the proposed changes, but would suggest the following changes to more effectively convey the intent of Requirement R3 and Measure M3. a. R3: The wording "the Generator Owner shall ensure that transformer tap positions are changed according to the specifications provided by the Transmission Operator" is not a direct action and may not be measurable. We suggest to revise it to read: "the Generator Owner shall implement the transformer tap positions according to the specifications provided by the Transmission Operator...." b. M3: We suggest it be reworded to require demonstration of compliance rather than to require actions which should have been stipulated in the requirement. Specifically, we proposed the last part in Measure M3 be revised to: "...therefore, if a status change lasts more than 15 minutes, the GOP shall provide evidence such as system log, electronic message or a transmittal letter that it notified its associated Transmission Operator within 30 minutes of when the change first occurred." We further propose that the SDT insert the evidence language into the first sentence of Measure M3 which asks for evidence that the Generator notified its associated Transmission Operator within 30 minutes of the change identified in Requirement R3. We assess the changes proposed under Q2 and Q3, above, are not substantive and do not materially change the intent or content of the standards. Therefore, if the standards receives 2/3 majority approval at the ballot, these changes can be implemented and posted for recirculating ballot without having to post and ballot the standards for a successive ballot.

We support the proposed VRFs and VSLs.

Group

Southern Company: Southern Company Services, Inc.; Alabama Power Company; Georgia Power Company; Gulf Power Company; Mississippi Power Company; Southern Company Generation; Southern Company Generation and Energy Marketing

Marcus Pelt

Yes

R1: The modifications in this version of VAR-001 R1 are good because they standards that are now enforceable, particularly FAC-011 and FAC-014. M2: All Transmission Operators are required to run contingency analysis on the real time system on a periodic basis per TOP-008-1 R4. We suggest modifying VAR-001 M2 to state: "If the assessment is performed in the Operations Planning Horizon, Transmission Operators shall provide copies of assessments used as the basis for how resources were scheduled." M3: Actions are not always required to be taken because of automatic settings of reactive devices. We suggest modifying VAR-001 M3 to state: "Each Transmission Operator shall have evidence that actions were taken as necessary to operate capacitive and inductive resources as needed in Real-time. This may include directions to Generator Operators to: 1) provide additional voltage support; 2) bring resources on-line; or 3) make manual adjustments." R5.3 states, "The Transmission Operator



shall provide the criteria used to develop voltage schedules and associated tolerance bands to the Generator Operator within 30 days of receiving a request." We suggest that this requirement is removed due to administrative burden. We recognize the need for transparency; however, this requirement does not serve a reliability purpose.

Yes

: The High VSL for VAR-001 R4 should be changed from the proposed state to "The TOP has exemption criteria, but did not notify the GOP." As it is currently written, the TOP satisfied R4, but simply cannot show documentation to prove the satisfaction. The proposed change wording focuses on the TOP not satisfying the requirement. The first clause in the Severe VSL for VAR-001 R5 should be corrected to state "voltage or Reactive Power schedules." In addition, the Severe VSL for VAR-001 R5 should have another OR clause to include the failure to comply with R5.3.

Adding "testing" to VAR-002 R1 was a good move. This will serve to avoid nuisance notifications for routine testing. Modifying VAR-002 R2 to allow the TOP to specify notification instructions is a good move. Each TOP will be able to specify notifications appropriate for characteristics of their transmission system. Removing the VAR-002 R3 notification of duration was a good move - the GO often does not know how long it will be out until some troubleshooting is performed. Splitting the old R3 into new R3 and new R4 was a good move. This separates two distinct types of trouble. The addition of "after becoming aware of a change in reactive capability" to the new R4 was a good move - this change is not always immediately evident. M4 should be modified to match R4 - "after becoming aware of a change needs to appear in M4".

The removal of "up to 45 minutes for the R2 VSL was a major improvement. The comma in the second and third OR statements of the Severe VSL for VAR-002 R2 is not needed. The comma in the second OR statement of the Severe VSL for VAR-002 R6 is not needed.

Individual

Brett Holland

Kansas City Power & Light

Yes

I agree with the approach to condense standards if they are duplicated in other standards.

NO. R2 is the part of VAR-002 that I disagree with because the Transmission System Operator is monitoring the system voltage and notifies each generating facility when they need to raise/lower voltage in that particular area of the system. If the voltage at the generating facility is high/low the TSO has received an alarm and will be notifying the plants control operator to correct the voltage and there already is a requirement for the control operators to comply with the TSO request.

No.

Individual

Andrew Z. Puztai

American Transmission Company, LLC

Yes
No
<p>ATC agrees with the approach in removing any duplicate requirements. ATC also has a couple comments and is recommending the following changes for the drafting team to consider: 1. For consistency, Measure M2, 2nd sentence should be reworded as follows: "For the operational planning time horizon, Transmission Operators shall "have evidence of assessments" used as the basis for how resources were scheduled" The current wording of "shall provide copies" imposes an action that is not included in the associated requirement R2. 2. The following from requirement R2: "Transmission Operators can provide sufficient reactive resources through various means including, but not limited to, reactive generation scheduling, transmission line and reactive resource switching, and using controllable load" implies that all of the items listed need to be considered. If the intent is that the items are intended to be examples it is suggested that the words "including , but not limited to" be replaced by "such as".</p>
Individual
Alice Ireland
Xcel Energy
Yes
Yes
<p>Xcel Energy appreciates the hard work of the Standard Drafting Team. We recognize that significant effort has been put into the modifications of the VAR-001 and VAR-002 standards and we applaud the direction the team is moving. We are voting Negative on VAR-001-4 for one reason which we explain below. Xcel Energy believes that the WECC Regional Variance should not replace R4 in the NERC standard based on the rationale provided for modifications to the proposed R4. Instead, WECC Regional Variance Requirement E.A.13 should be removed and the remaining Regional Variance Requirements should supplement the NERC Requirements in the Western Interconnection. As proposed, the NERC standard states that the TOP is not bound to provide a voltage schedule for each BES generator; however , due to the WECC variance, the TOP would be found in violation if any BES Generator was not provided a voltage schedule. In order to resolve the issue, Xcel Energy asks the drafting team to delete E.A.13 in its entirety and modify the language of the Regional Variance to state that the additional requirements are for in addition to the NERC requirements. Once this modification is made, Xcel Energy could support the proposed standard.</p>
<p>Yes. Xcel Energy appreciates the hard work of the Standard Drafting Team. We recognize that significant effort has been put into the modifications of the VAR-001 and VAR-002 standards and we applaud the direction the team is moving. We are voting Negative on VAR-002 for one reason which we explain below. Xcel Energy understands that the existing language in the VAR-002 standard uses the term "status change" but believe that this term is not well defined and is subject to different interpretations. AVRs and PSSs are designed to cycle based on the parameters being monitored by the devices. This as-designed cycling may be interpreted as a status change. We note here that the drafting team does not use the term status change in its</p>

rationale statement. Instead, the rationale statement is much clearer in meaning than the proposed requirement language. To address Xcel Energy's concern, we request that the drafting team replace the first sentence in Requirement R3 with the following sentence. (We believe that this change does not constitute a significant modification but is instead providing more clarity in the requirement language based on the wording of the Rationale for Requirement R3.) "Each Generator Operator shall notify its associated Transmission Operator when the AVR, power system stabilizer, or alternative voltage controlling device goes out of service within 30 minutes of the change."

If the drafting team makes the requested modifications to the requirements, Xcel Energy has no concerns with either the VSLs or VRFs.

Individual

Lynda Kupfer

Puget Sound Energy

- The implementation period might be as short as one day as the Effective Date section is currently formulated. For example, if approval occurs on 12/31/2013, the first day of the first calendar quarter after that date would be 1/1/2014. A short implementation period for this standard is appropriate; however, language such as "The first day of the first calendar quarter that is one month beyond the date that this standard is approved..." would ensure that a minimum of one month is available for implementation.

Yes

- The first paragraph of the Regional Variance section of VAR-001 should be updated to reflect that requirements R3 and R4 of the current standard are requirements R4 and R5 in the proposed standard. - M4 should be updated to reflect that the Generator Operator "must notify its associated Transmission Operator within 30 minutes of when the change first occurred. after becoming aware of the change in reactive capability" to be consistent with the wording of R4.

Group

Salt River Project

Bob Steiger

Yes

Yes

Yes

No.

Individual

Silvia Parada Mitchell

NextEra Energy

Agree

MidAmerican

Individual

Rjick Terrill
Luminant Generation
Yes
Yes
<p>Luminant appreciates the work of the SDT and agrees that most of the revisions are appropriate, and that the intent of the SDT to allow for more than one method of voltage support is correct. However, as written, VAR-002, R2, does not clearly identify that generators can provide voltage support by a method other than maintaining a voltage schedule, continuously monitoring voltage and reporting deviations from the voltage schedule. In some areas of the country, the TOP monitors the voltage at all busses in its area, including the busses connecting generators, and directs generators to modify reactive output as the TOP requests. Luminant believes the language of VAR-002, R2 should be modified to provide clarity as follows: R2. Unless exempted by the Transmission Operator, each Generator Operator shall provide generator voltage support or Reactive Power support (within each generating Facility's capabilities<sup>4</sup>) as follows: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] 2.1. When a generator's AVR is out of service or the generator does not have an AVR, the Generator Operator shall use an alternative method to control the generator reactive output to provide voltage or Reactive Power support directed by the Transmission Operator. 2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the request cannot be met. 2.3. When directed by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within each generating Facility's capabilities<sup>4</sup>) provided by the Transmission Operator, and shall meet the conditions of notification for deviations from the voltage schedule provided by the Transmission Operator. 2..3.1 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. With this proposed language, the GOP would have to maintain a voltage schedule and report deviations only if that is the normal method of voltage support requested by the TOP. 2.3 and 2.3.1 would only apply to a GOP that maintains a voltage schedule. The measures for 2.1 and 2.2 would include operator logs, voice recordings, etc.</p>
Individual
Andrew Gallo
City of Austin dba Austin Energy
Yes
Yes
<p>City of Austin dba Austin Energy (AE) agrees with removing duplication. AE does not have any comments about the requirements, but requests the SDT review the VSL for R2 because the text does not match the requirement text.</p>
Yes.

No. Because NERC has not provided an area for "Additional Comments," we are adding them here. The City of Austin dba Austin Energy (AE ) commends the Standard Drafting Team's efforts related to Project 2013-04. The quality of the standard is enhanced over previous approved versions, providing additional clarity and compliance sensitivity. AE respectfully submits the following comments on VAR-001-4 and VAR-002-3 to the Standard Drafting Team (SDT): VAR-002-3, R1, Pertaining to the phrase "... unless the Generator Operator 1) is exempted by the Transmission Operator, or 2) has notified the Transmission Operator..." AE recommends the SDT clarify whether the TOP may exempt all the units represented by a GOP, or instead, specific generating facilities or a generator bus. AE suggests altering the language to read "... unless 1) the generator is exempted by the Transmission Operator, or 2) the Generator Operator has notified the Transmission Operator..." This change will make the language in VAR-002-3 R1 consistent with the language in VAR-001-4 R4. VAR-002-3, R2.3: The requirement makes it mandatory for Generator Operators to monitor the voltage at the location specified in the voltage schedule or have a methodology for converting the scheduled voltage specified by the TOP. This may imply that the Generator Operator should make voltage corrections independent from the TOP. AE believes that maintaining the appropriate transmission level voltage is the key for sustaining system stability and that responsibility falls on the TOP. Because the TOP already monitors the transmission level voltages, the R2.3 requirement for GOPs to monitor voltage is redundant and may create a situation where the TOP and GOP do not agree on the monitored value (i.e. the voltage readings can be different due to step-up voltage equipment). To avoid confusion and potential compliance ambiguities, AE suggests the standard specifically state TOPs are responsible for monitoring the system voltage schedule and notifying the GOP when voltage drifts outside acceptable parameters. This appears to be a common practice of operating the grid. The GOP will be responsible for meeting the reactive support requested by the TOP. If the GOP cannot meet the reactive support requested by the TOP, the GOP should have to notify the TOP. AE suggests the following: Add "Transmission Operators" under R4 – "4.3 Transmission Operators", and alter R2.3 to: "Each Transmission Operator shall monitor the system voltage and notify its associated GOPs for additional voltage support if system voltage fails to meet the voltage schedule. If the GOP cannot meet the reactive support requested by the TOP due to equipment limitations, it shall notify the TOP of the limitations within 15 minutes. VAR-002-3, R4: AE believes the phrase "a change in reactive capability" is vague. As written, even the slightest change in reactive capability must be reported to the TOP. Is it the SDT intent the TOP be notified if a reactive capability (leading or lagging) of a generation resource changes by 1 MVAR? Detecting and reporting small reductions in reactive capability will create onerous reporting. AE recommends the following for R4: "Each Generator Operator shall notify its associated Transmission Operator within 30 minutes that a resource's reactive capability changed by 20 MVAR or 10%, whichever is greater, of the previously provided reactive capability due to factors other than a status change described in Requirement R3."

Individual

David Jendras

Ameren

Yes
No
We request that the SDT leave the language as currently used in VAR-001-2, R4.
We request that the SDT support adding to R3 the "...after becoming aware of..." language now proposed for R4. This will help reduce the number of unnecessary GOP notifications to the TOP.
Group
Florida Municipal Power Agency
Frank Gaffney
Yes
Yes
<p>FMPA appreciates the efforts of the SDT to remove some of the duplicative requirements of the VAR standards with other standards (e.g., TOP and FAC standards). However, FMPA is voting Negative because we believe more requirements ought to be treated in the same fashion as described in our earlier comments on the September posting, as provided in a mapping document submitted directly to the SDT to better illustrate those duplications, and as summarized below. VAR-001-4 R2 is duplicative of the requirements of TOPs to plan for and operate to SOLs in the TOP and FAC standards. In order to plan to and operate to SOLs, TOPs must schedule sufficient reactive resources, or they will violate those requirements (just as must-run generators need to be scheduled, yet those are not discussed within the standards). Operating to SOLs is results based, VAR-001-4 R2 is not. VAR-001-4 R2 ought to be deleted. VAR-001-4 R3 is duplicative of requirements of TOPs to plan for and operate to SOLs as described above. As far as TOPs ability to direct, that is covered in TOP-001. VAR-001-4 R3 should be deleted. Although FMPA supports both VAR-001-4 R1 and R5, we wonder if there is some duplication between those requirements and whether they can be combined into a single requirement.</p>
<p>FMPA appreciates these changes. However, VAR-002-3 remains duplicative of other requirements within the standards VAR-002-3 R2, bullet 2.3 is duplicative of TOP-001-2 R1. Both require the GOP to follow the direction of the TOP. Bullet 2.3 should be deleted. VAR-002-3 R5 is duplicative of TOP-003-2 and should be deleted. VAR-002-3 R5 requires the GO to provide the TOP information about the GSU. TOP-003-2 R5 requires the GO to submit data as specified by the TOP. The TOP cannot perform their obligations of VAR-001-4 R6 to specify GSU tap positions without the data of VAR-002-3 R5; however, the TOP will ask for that data in accordance with TOP-003-2 R3. Hence, these requirements are redundant and VAR-002-3 R5 ought to be deleted. FMPA also wonders how duplication between TOP-003-2 that gives TOPs a carte blanche opportunity to develop data requests on any information they need and the notification requirements of VAR-002-3 will be managed. In other words, the TOP can develop their TOP-003-2 data specification to include the notification requirements of VAR-002-3 and as such GOPs would be subject to double jeopardy risk.</p>
Group

Tennessee Valley Authority
Brandy Spraker
Yes
Yes
The SDT is requested to clarify the word “directions” as used in M3. The word “directions” is close to, but not, the word “directive” which has a very specific meaning. If the intent is to capture directives, then the word directives should be used. If the intent is to capture communications that are not directives, then the word “directions” should be replaced with wording that is not so close to the word “directives.” Current M3 draft language: M3. Each Transmission Operator shall have evidence that actions were taken to operate capacitive and inductive resources as needed in Real-time. This may include directions to Generator Operators to: 1) provide additional voltage support; 2) bring resources on-line; or 3) make manual adjustments. The SDT is requested to consider a modification to R4: Current R4 draft language: R4. The Transmission Operator shall specify the criteria that will exempt generators from compliance with the requirements defined in Requirement R5, part 5.1, and any associated notification requirements. Suggested modification to R4: R4. The Transmission Operator shall specify the criteria, ADD: “if any” that will exempt generators from compliance with the requirements defined in Requirement R5, part 5.1, and any associated notification requirements.
Yes
No comments
Individual
Kathleen Goodman
ISO New England Inc.
Agree
IRC SRC
Individual
Karen Webb
City of Tallahassee - Electric Utility
Agree
FMPA
Group
PacifiCorp
Ryan Millard
Yes
Yes
PacifiCorp supports MidAmerican's comments.
The following change to requirement R4 is recommended: “Reactive capability changes due to change in the wind speed for wind generators or a change in the solar resource for solar

facilities do not require Transmission Operator notification.” Given the variable nature of wind, the reliance of weather forecasting does not rest explicitly with the GOP. The TOP has access to weather forecasting that would make the need of notification by the GOP unnecessary. Additionally, PacifiCorp supports the following comments from MidAmerican: We support the deletion of the language regarding notification of the expected duration of a change in status. At the time a status change occurs it is often difficult to provide a meaningful estimate of the duration of the change. Requirement 3 should be revised to state – Notification must be made within 30 minutes of becoming aware of the change from automatic controlling voltage for the AVR, and from in-service of the PSS. Measure 3 should be revised to reflect this as well. The revised VAR-002 R2.1 removes the 15 minute deviation criteria for notification by Generator Operators to Transmission Operators. The revised VAR-001-4 requires Transmission Operators to provide notification requirements. The drafting team in the consideration of comments explained “In an effort to remove prescriptive notification requirements for the entire continent” the change was made. This leaves the Generator Operators at the mercy of Transmission Operators who could potentially set a no deviation criteria. It is recommended that a compromise be struck by specifying a limit on the criteria such as “no less than 15 minutes”.

Individual

Robert L. Dintelman

Utility System Efficiencies, Inc.

Yes

Yes

Many of the other standards that require the provision of this sort of information to the RC and neighboring entities includes a requirement that the entity respond to comments/concerns from the copied entities. Why not here? R2 appears to be a little ambiguous; does this apply to all contingency conditions? Just N-1? Only those chosen by the TOP? This would appear to be hard to determine compliance by the Region. It looks like R6 assumes that the GO has a non-LTC transformer. We are seeing LTCs in generation facilities; shouldn't this be modified to address the LTC GSUs? For M2 and M3 particularly, Evidence Retention could require a lot of data for 12 months.

For R2, what about the situation where the generator cannot actually influence the voltage? There may be a significant amount of hours where they can't keep the voltage in range. For M2, for a generator that does not have an AVR, what type of evidence is required to show compliance for 8760 hours per year? Sounds like a lot of evidence potentially.

No

Group

Duke Energy

Colby Bellville

Yes

Yes



Duke Energy approves of the approach of removing duplicative requirements based on other standards. Duke Energy seeks clarification on the definition of “system voltage schedule” and believes that once this is more clearly defined, it should be added to the NERC Glossary of Terms. The Rationale for Requirement 1 discusses the TOP setting voltage or Reactive Power schedules with associated tolerance bands. However, Requirement 1 makes no mention of using Reactive Power schedules. Is the use of Reactive Power Schedules implied in Requirement 1? Duke Energy suggests changing “Each Transmission Operator shall schedule” to “Each Transmission Operator shall maintain” in Requirement 2 for more clarity. In Duke Energy’s opinion, not all reactive resources can be “scheduled” in order to regulate voltage levels. For example, SVCs cannot be scheduled, the reactive resources of an SVC dynamically change to maintain set voltage levels. The TOP needs to ensure that adequate static and dynamic reactive resources are available to the System Operator in real time to support the Reliability needs of the BES. Reliability Studies are performed in the Operations Planning horizon to ensure that reactive resources are adequate to support the planned BES configuration.

No. Duke Energy does not agree with the revisions made. Duke Energy is unclear whether the exemptions referenced in R1 and R2 in VAR-002-3 are the same as the exemptions created in VAR-001-4 R4. We believe using the word “exempted” in multiple requirements without identifying the origin of the exemption is a cause of confusion. Requirement 2 - Revise R2.1 to read, “ When a generator’s AVR is out of service, the generator does not have an AVR, or is not in a TOP approved mode of AVR operation as specified in R1, the Generator Operator shall use an alternative method to control the generator reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. “ The VRF/VSL for Requirement 2 would need to be modified if this change is made. Requirement 3 – Duke Energy is unclear as to what is considered an alternative voltage controlling device. Duke Energy prefers the language in the previous draft of this standard which states, “Each Generator Operator shall notify its associated Transmission Operator of a status or capability change on any generator Reactive Power resource, including the status of each automatic voltage regulator and power system stabilizer and the expected duration of the change in status or capability within 30 minutes of the change. If the status has been restored within the first 15 minutes of such change, then there is no need to call the TOP. “ The language in the previous draft provides more clarity on what would prompt notification from a GOP to a TOP based on status or capability change. Requirement 5 – Duke Energy would like the SDT to review and verify that the Transmission Planner, and not the Planning Authority or Planning Coordinator, is the correct functional entity for this requirement. Lastly, Duke Energy would like to clarify that we encouraged our ballot body members to vote “Negative” on this ballot for reasons stipulated above. However, one of our ballot body members mistakenly voted “Affirmative” which was in error. Our decision to vote “Negative” on this ballot was unanimous among all those involved. We apologize for any confusion this may have caused.

See our comments on VAR-002 Requirement 2.

Individual

Melissa Kurtz

US Army Corps of Engineers
Agree
MRO NSRF
Group
Western Area Power Administration
Lloyd A. Linke
Agree
US Bureau of Reclamation.
Group
PPL NERC Registered Affiliates
Brent Ingebrigtsen
Yes
Yes
An additional change should be made – R3 should state that when real-time status is provided to the TOP electronically there is no need for additional notification.
Time requirements are not necessarily arbitrary, and it is in fact important to establish explicit and meaningful criteria regarding the acceptable time (and magnitude) of voltage schedule deviations. The principal reason that VAR-002 has been so troublesome in the past is that one could interpret a 10 MW hydro unit being out of the bandwidth by 0.1 kV for 1 minute as constituting a violation, despite there being no meaningful impact on BES reliability. There are moreover many occasions when a the system voltage unavoidably strays briefly outside the bandwidth due to a disturbance or because there are step-changes in the TOP’s voltage schedule. VAR-002-3 makes a slight movement in the right direction by stating in R2 that a unit must keep within the bandwidth or, “meet the conditions of notification,” but there is nothing in VAR-001 or 002 to require TOPs to create justifiable requirements in this respect. We presently suffer under a system in which meaningless violations are spawned by abusive practices, such as establishing a bandwidth of only +/- 0.5%, and VAR-001 and 002 should be revised in a fashion that prohibits such practices.
Individual
Gerald G Farringer
Consumers Energy
Yes
Yes
This is a two part question with only one YES/NO answer. YES we agree with the approach. YES we have questions or comments on the remaining revised requirements. In R4, there should be a statement that the TOP will publish the exemption criteria to GOPs in the area. A consideration should be made to reserves R1 and R5. It is imperative both get the voltage schedules but if the GOP does not have them there is no control.
It is important to clarify the statement of “notification requirements.” In the context of VAR-

002 this term refers to the notification from the GOP to the TOP on status of the AVR, Ability to follow the voltage schedule or the status of the unit. We would suggest the timing on VAR-002 R3 be similar to R4 in that the clock starts at the awareness of the GOP of a status change. VAR-001 clearly defines a Voltage or Reactive Power schedule. We suggest this be done in VAR-002 for consistency rather than the footnotes provided.

Individual

Chris Scanlon

Exelon Companies

Yes

Yes

Yes, agree with approach, no additional comments relating to requirements. Exelon companies would vote Affirmative for VAR-001-4 if it were being balloted separately from VAR-002-3.

Exelon appreciates changes made to the standard the current revision is a significant improvement on the previous draft version. As mentioned above, we support VAR-001-4 as written but feel important issues remain unaddressed with VAR-002-3 and will therefore vote Negative. Our principal concerns include: VAR-002-3 Effective Dates. The Implementation Plan for VAR-001-4 and VAR-002-3 requires the new Standard revisions to be implemented the first day of the first calendar quarter after applicable regulatory approval. 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. This 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 with the AVR, PSS or alternative voltage controlling device. We suggest at least a 6 month implementation period following regulatory approval. VAR-002 R1 or in the applicability section of the standard. This standard or requirement does not account for dispersed Generation (such as wind or solar as found in the new BES definition). These generators may not have 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. VAR-002-3 R2.3 Exelon believes it is reasonable to allow the GOP to monitor the voltage at the location 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 communicated and agreed to by the Transmission Operator. There is not a one for one conversion between grid voltage and terminal voltage and both parties should agree on the conversion method and monitoring point to avoid any future audit or implementation issues. VAR-002-3 R3 Exelon agrees with the fifteen (15) minutes to allow a GOP time to resolve an issue before having to notify the TOP of a status or capability change; however, postponing the notification by 15 minutes to alleviate short term / nuisance notifications has the effect, as written, of shortening the notification window to 15 minutes. Fifteen minutes is not a reasonable timeframe for such notifications to occur,

especially in large dispersed fleet operators where the GOPs do not communicate directly to their TOP and must notify via a third party (e.g., an independent generation dispatching organization). Exelon suggests that the 30 minute notification timeframe for a status change on the AVR, PPS or alternative voltage controlling device be started following the inability to restore within 15 minutes. VAR-002-3 R4 Exelon suggests that the VAR SDT provide guidance to the industry on examples of reactive capability changes that would require notification to the TOP within 30 minutes after becoming aware of a change. The only guidance provided to date is in the VAR-002 Compliance Analysis Report dated August, 2010.

We understand that R3 and R4 are binary requirements, (did or did not notify in 30 minutes), but it seems unreasonable that a complete failure to notify would have the same VSL as a notification that is one or five minutes late.

Group

SPP Standards Review Group

Robert Rhodes

Yes

We thank the drafting team for taking this stance in not establishing details in the VAR standards and relying on those that already exist within defined SOLs and IROLs. Adding additional detail here would be redundant and possibly conflicting with requirements in other standards.

Yes

We agree with the retirement of redundant requirements and suggest that the drafting team delete R2 and R3 in addition to the other deletions already proposed. R2 is redundant with the pending TOP-002-3, R1. R3 is redundant with pending TOP-001-2, R7 and R9.

Yes. We also offer the following comments on the two standards. Generic Comments on VAR-001-4 We recommend changing 'real time' in the Purpose to 'Real-time' as defined in the NERC Glossary of Terms. We suggest rewording R1.1 to the following: 'Each Transmission Operator shall provide a copy of the voltage schedules as specified in R1 to its Reliability Coordinator and adjacent Transmission Operators within 30 calendar days of such a request.' Although we have proposed deleting R2, if the drafting team decides to keep it, we recommend deleting the last sentence in R2. It is really an example and doesn't contribute substantially to the requirement. We also recommended deleting R3 but if the drafting team decides to keep it, we suggest adding 'to operate within SOLs and IROLs' following 'as necessary' at the end of the requirement. The use of the term 'direct' in R3 and R5.1 lead to implications of issuing directives. To get away from this situation, we suggest substituting 'instruct' for 'direct'. This change will also need to be reflected in the Measures and the VSLs. Since R4 contains an exemption for R5, we suggest reordering requirements R4 and R5 such that R5 becomes R4 and R4 becomes R5. That way the exemption follows the requirement. We suggest the drafting team delete the phrase '...at the Transmission Operator's discretion.' at the end of R5. We suggest changing 'associated' to 'applicable' in and deleting the redundant phrase at the end of R5.1. The requirement would then read: 'The Transmission Operator shall provide the voltage or Reactive Power schedule to the applicable Generator

Operator.’ The Measure will also need to be revised to correspond with the revised requirement. We recommend adding ‘for that criteria’ following ‘request’ at the end of R5.3. We recommend changing the Time Horizon in R6 to Long-Term Planning since the Transmission Planner is typically the entity that will determine when a tap change is necessary and will notify the Transmission Operator that it needs to be done. In the Rationale Box for R6 there is a reference to VAR capability and tap setting. We suggest rewording that sentence to the following: ‘If the tap setting is not properly set, then the VARs available from that unit can be affected.’ The Severe VSL for R3 contains ‘real-time’. It needs to be ‘Real-time’. Generic Comments on VAR-002-3 The use of the term ‘direct’ in R2.2 lead to implications of issuing directives. To get away from this situation, we suggest substituting ‘instruct’ for ‘direct’. This change would need to be reflected in the Measure 2.1 and 2.2 and the VSL also. We suggest changing the notification timing requirements in R3 to the Generator Operator must notify the Transmission Operator within 30 minutes of the change of AVR status unless the AVR has been restored to service. In the second sentence in the Rationale Box for R3, use ‘provide’ instead of ‘provided.’ In the Rationale Boxes for R5 and R6 there is a reference to VAR capability and tap setting. We suggest rewording that sentence to the following: ‘If the tap setting is not properly set, then the VARs available from that unit can be affected.’

We suggest the following change for the High VSL for R2. The responsible entity did not have a conversion methodology when it monitored voltage...’ We recommend replacing the word ‘directive’ with ‘specification’ in the Severe VSL for R6.

Individual

Texas Reliability Entity

Texas Reliability Entity

(1) Under the currently enforceable TOP standards, there is a requirement to operate within SOLs and IROLs (in TOP-004-2 R1). However, in the proposed TOP standards currently filed at FERC for approval, the wording of this requirement changed. In TOP-001-2 R8 thru R9, the TOP only has to operate within SOLs that “deserved increased attention” according to the rationale stated in the proposed Standard. What effect does that change have on these VAR requirements, and the stated rationales? (2) If it is the SDT’s intent for R2 and R3 that the TOP operate within voltage SOLs, then we suggest rewording R3 to remove “as necessary” to say “within System Operating Limits” or “under normal and Contingency conditions” to match R2. (3) The VSL language for VAR-001-4 R2 and R3 does not match the wording in the requirements. If the intent is to require operation within SOLs and IROLs as suggested by the VSLs, then the requirements should expressly say so. If it is not, then the VSLs should be revised to match the requirements. (4) For VAR-001-4 R1 and R5, should there be a process to provide feedback to the TOP on the voltage schedule? For example, if the TOP sets the voltage schedule in a manner that requires the generator to be at or near a reactive limit for the unit, then the unit may not be able to provide the necessary reactive support under a contingency situation.

(1) The status and capability notifications in R3 and R4 may be directly or indirectly in conflict with TOP-005-2a Attachment 1, Item 1.2.4, IRO-005-3.1a R1.1 and R12, IRO-002-2 R5, IRO-003-2 R2, TOP-006-2 R1 and R2, TOP-008-1 R4 and possibly future TOP-003-2 R1. Will the TOP

and RC be able to satisfy their obligations under these other standards in view of the proposed GOP reporting parameters? (2) In VAR-002-3 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 to meet power factor requirements). Would this requirement apply to such devices if they are not included in the Bulk Electric System per the new BES definition?

Individual

Dave Willis

Idaho Power Company

Yes

Yes

Yes, exempting the intermittent outages of AVR’s and only requiring notification for extended interruptions is an improvement and lessens the documentation necessary to show compliance.

No

Group

ACES Standards Collaborators

Jason Marshall

Yes

Yes this is clear. We thank the drafting team for removing the duplication from the previous draft.

Yes

(1) Requirement VAR-001-4 R1 is vague and ambiguous and may be duplicative of VAR-001-4 R5. It requirements need further refinement. First, it states that the TOP shall specify “a system voltage schedule”. This is singular. A system always has multiple schedules for generators, capacitor banks, reactors, etc. It does not have a single voltage schedule. Second, what equipment or facilities is the voltage schedule supposed to apply? Is this supposed to be the voltage schedule for a generator? Is this supposed to the voltage for reactor or capacitor switching? Is this supposed to be the voltage limits on a transmission bus? Schedule would tend to imply a level of control and, thus, not a limit but the simple reality is that the requirement is vague, ambiguous, and unenforceable as written. Third, if the requirement applies to voltage schedules at generators, it is duplicative to VAR-001-4 R5 because this already compels the TOP to provide voltage schedules for generators. Please provide additional clarifications in the requirement. (2) We appreciate the drafting team removing duplicate requirements. This version of the standard has been improved greatly. However, we still believe there is some duplication that needs to be addressed. For example, VAR-001-4 R1 requires a TOP to “specify a system voltage schedule... as part of its plan to operate with System Operating Limits and Interconnection Reliability Operating Limits” while VAR-001-4 R2 requires the TOP to “schedule sufficient reactive resources to regulate voltage levels under normal and Contingency conditions”. How does a TOP specify a voltage schedule per R1 and

not also schedule sufficient reactive resources per R2? The TOP can't maintain the voltage schedule without scheduling sufficient reactive resources. Please eliminate the duplication. (3) VAR-001-4 R2 is also duplicative of VAR-001-4 R3. R2 requires the TOP to "schedule sufficient reactive resources to regulate voltage levels under normal and Contingency conditions" while R3 requires the TOP "to operate or direct the Real-time operation of devices to regulate transmission voltage and reactive flow". How does the TOP schedule sufficient reactive resources without regulating transmission voltage and reactive flow? The TOP would be operating the voltage-regulation devices when they schedule sufficient reactive resources since the voltage-regulation devices are reactive resources. If the purpose was to delineate by time frames implied by the use of "Real-time Operation" in R3 and "schedule" in R2, the requirements need further refinement to be clear that the targeted time frames are supposed to be different. Furthermore, the Time Horizons for both R2 and R3 are duplicate covering Real-time Operations, Same-day Operations, and Operational Planning which would imply that different time frames are not intended. Please eliminate the duplication or clarify the time frames as appropriate. Detailed application guidelines would help eliminate some of the confusion. (4) Part 1.1 meets P81 criteria and should be retired. The requirement meets Criterion A (overarching) because it "does little, if anything, to benefit or protect the reliable operation of the BES" and meets criterion B4 – Reporting because it requires the TOP to report to another party and has "no discernible impact on promoting the reliable operation of the BES." The mere fact that Part 1.1 only requires reporting upon receiving a request is supportive that it has no impact on reliability. If it did materially support reliability, the RC would be required to have the data and the TOP would be obligated to provide it. Please remove Part 1.1. If Part 1.1. persists in the next draft, we request that the drafting team provide written justification for why these requirements do not meet P81 criteria and actually materially support reliability. (5) Measure VAR-001-4 M2 is inconsistent with the main requirement R2 and needs to be modified. M2 proposed that the TOP shall have evidence of scheduling resources based on their system assessment. While we agree this is likely the method the TOP will use to schedule resources, the simple fact is that it is not part of the requirement and cannot be compelled in the measure. Please modify the measure to be consistent with the requirement. (6) The second sentence of R2 is an explanation and not a requirement. Thus, it should be moved to the application guidelines section. We understand that FERC previously directed NERC to include use of controllable load as a reactive resource because it was not one of the explicitly listed reactive resources. FERC likely included this statement as evidenced by the first sentence of paragraph 1879 of Order 693 to further a policy goal of expanding the use of demand side management (DSM). At the time the order was issued, DSM was in its infancy. Today, DSM has become ubiquitous as demonstrated by the almost 40,000 MW reported in the NERC 2013 Summer Assessment. Given that all organized markets include at least one DSM product, its proliferation will only continue. Thus, the policy goal has been clearly met and specific mention in NERC standards is no longer necessary. In fact, an equally efficient and effective alternative would be to eliminate specific references of any type of reactive resource by striking the second sentence in its entirety. (7) The Time Horizons for VAR-001-4 R3 are inconsistent with the requirement. R3 specifically states that it deals with Real-time operation. Thus, how could Operational Planning and Same-

day Operation be applicable? These timelines are conflicting and need to be modified. (8) For requirement VAR-001-4 R4, why can't the GOP make a self-determination that it meets the TOP criteria? Is the TOP obligated to make a determination or to simply supply the criteria to the GOP? The RSAW indicates that the auditor will not determine if the GOP received pre-authorization from the TOP. Thus, the requirement should either be modified so that audit practices will have to be modified or aligned with how the RSAW indicates compliance will be assessed. We recommend that the drafting team work with NERC compliance to align the requirement with the RSAW language. (9) VAR-001-4 R5 should be modified to clarify that the TOP is not required to provide a voltage schedule to all generators but only to those generators that it determines it needs to provide reactive supply. A TOP may determine that a generator is too small to control voltage at its location and that it does not need to provide a voltage schedule for this generator. Including all generators is unnecessary for reliability. (10) Part 5.3 meets a P81 criterion and should be retired. The requirement meets Criterion A (overarching) because it "does little, if anything, to benefit or protect the reliable operation of the BES" and meets criterion B4 – Reporting because it requires the TOP to report its criteria to another party and has "no discernible impact on promoting the reliable operation of the BES." The mere fact that Part 5.3 only requires reporting upon receiving a request is supportive that it has no impact on reliability. If it did support reliability, the GOP would be required to have the data. Please remove Part 5.3. If Part 5.3 persists in the next draft, we request that the drafting team provide written justification for why these requirements do not meet P81 criteria and actually materially support reliability. (11) We request that R6 be modified to state that the timeframe shall be mutually agreeable. The TOP is only required to consult with the GO and could still provide an unreasonable timeframe after such consultation. At the very least, the requirement needs to be clear that the GO and GOP are not obligated to take an outage to implement tap changes and would be allowed make them at the next scheduled maintenance or forced outage with sufficiently long outage window to allow such changes. (12) The evidence retention section needs to be updated. First, it covers only measures one through four when there are actually six. Second, it covers measures when it should cover requirements to be consistent with existing standards. (13) As written, the VSL for R1 is overly harsh. If a TOP simply failed to create a single voltage schedule, it would be a severe violation. It seems the VSLs could be graduated based on the number of voltage schedules that are not created as a percentage of the total voltage schedules. (14) The VSLs for R2 and R3 are inconsistent with the requirement. The High VSL and Severe VSL mention avoiding violating an SOL or IROL respectively. However, the requirement mentions neither. This would be inconsistent with FERC guideline three that VSLs should be consistent with the corresponding requirement. (15) The High and Severe VSLs for R2 and R3 overlap with one another. High VSLs for both requirements apply to SOL violations and Severe VSLs for both requirements apply to IROL violations. By definition in the NERC glossary, an IROL is a subset of a SOL. Thus, a failure to schedule or operate reactive resources that results in an IROL violation would be both a High and Severe violation simultaneously. (16) From a compliance perspective, the High VSL for VAR-001-4 R4 is a logical fallacy. Compliance requires evidence. Thus, an auditor cannot make a determination that a TOP has exemption criteria but does not have evidence of exemption criteria. Thus, the High VSL could never be assigned by a



compliance enforcement authority. This needs to be modified. (17) The VSLs for VAR-001-4 R5 need to be modified. In the FERC order approving VSLs, FERC was clear that as many VSLs as possible should be used. Clearly, each VSL could be assigned based on the number of GOPs that the TOP failed to provide voltage schedules. This essentially means that the High VSL should be graduated. We disagree with assigning a moderate VSL for the failure of a TOP to provide its criteria in response to Part 5.3 by one minute. As written, the TOP could literally be one minute past the 30 day time frame and reach a moderate violation. This should not even be a violation let alone a Moderate VSL. The solution is to remove Part 5.3. If Part 5.3 persists, at a minimum, the VSL should be Lower because reliability is not impacted. The second half of the Severe VSL regarding not supplying the notification requirements to the GOP should be moved to Moderate VSL. Failure to provide voltage schedules misses significantly more of the spirit of the requirement than failure to provide exemption criteria. The purpose of failure to provide exemption criteria is an attempt to avoid nuisance violations not directly support reliability. (18) In the regional variances section, E.A. 16 and E.A. 17 meet P81 criteria and should be removed from the next draft. The purpose of these two requirements is to provide transparency between the GOP and TOP in determining voltage schedules and implementation of voltage schedules. While establishing transparency is certainly a laudable goal, it simply does not directly support reliability. Thus, these two regional variance requirements meet Criterion A (overarching) because they do little, if anything, to benefit or protect the reliable operation of the BES and meet criterion B4 – Reporting because they require the TOP and GOP to report to each other. (19) It is unnecessary to require the TOP to direct the Generator Operator to comply with the voltage schedule with the AVR in voltage control mode in VAR-001-4 Part 5.1. It is redundant with VAR-002-3 R2 which compels the GOP to follow the voltage schedule. If drafting team feels the “directive” language is necessary in VAR-001-4 Part 5.1, then VAR-002-3 R2 should be removed because it would be redundant with TOP-001-1a R3 (existing) and TOP-001-2 R1 (pending regulatory approval). Both require the GOP to follow the directives of its TOP.

(1) Consistent with our comment number 9 in question 2, 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. (2) VAR-002-3 R5 meets multiple P81 criteria and should be removed. It meets Criterion A (overarching) because it does little, if anything, to benefit or protect the reliable operation of the BES and meets B2 – Data Collection/Data Retention and B4 – Reporting because 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 requirements. 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 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 to the GO per TOP-003-2 R3 and then GO would

have to respond per TOP-003-2 R5. (3) VAR-002-3 Part 6.1 meets a P81 criterion and should be struck. It meets Criterion A (overarching) because it does little, if anything, to benefit or protect the reliable operation of the BES and meets 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, regulatory or 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. (4) The RSAW for VAR-002-3 indicates that compliance assessment for R4 could be vague and result in inconsistent outcomes. The RSAW indicates that the auditor will look for evidence when the GOP became aware of changes. If the entity’s data historian or another piece of evidence indicates a reactive capability change occurred at a certain time, does this mean that the entity is aware? We think the answer is no. The entity is only aware when its personnel become aware and not when a measurement first records that something is askew. Furthermore, we believe personnel should be limited to the plant operators in the control room who have overall responsibility. Any evidence review for when the entity became aware should be limited to plant operator logs because this evidence will most closely demonstrate what the plant operator knew based on information provided and will not be as likely to be second-guessed on what the plant operator should have known. (5) 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.

We do not support the VSLs for R5 because it meets P81 criteria and should be removed. We also do not support the VSLs for requirements that need modifications as identified in question 3.

Group

DTE Electric Co.

Kathleen Black

Yes

Yes

Yes Comments: Adding the 15 minute window in VAR-002 is a great improvement.

Individual

Roger Dufresne

Hydro-Québec Production
Yes
No
The requirement number five has to be removed, the reactive power of an auxiliary transformer unit has a little impact on the ability of a group or plant to provide the reactive power required by the network.
Group
ISO/RTO Standards Review Committee
Gregory Campoli
Yes
We support this direction and the SDT's decision to not reiterate or duplicate the voltage assessment requirements already addressed by the FAC and TOP standards.
Yes
We support the SDT's proposal to remove the requirements that may be redundant with other standards. We do not have any comments on the requirements, Measures or VRFs, but we do have some comments on the VSLs: a. R1: The word "schedule" after "system voltage" is missing from the VSL. b. There is inconsistency in the tense used in various VSLs – some are in present tense while others in past tense. Please review and revise as appropriate.
We assess the changes proposed under Q2 and Q 3, above, are not substantive and do not materially change the intent or content of the standards. Therefore, if the standards receives 2/3 majority approval at the ballot, these changes can be implemented and posted for recirculating ballot without having to post and ballot the standards for a successive ballot. We agree with most of the proposed changes, but would suggest the following changes to more effectively convey the intent of Requirement R3 and Measure M3. a. R3: The wording "the Generator Owner shall ensure that transformer tap positions are changed according to the specifications provided by the Transmission Operator" is not a direct action and may not be measurable. We suggest to revise it to read: "the Generator Owner shall implement the transformer tap positions according to the specifications provided by the Transmission Operator...." b. M3: We suggest it be reworded to require demonstration of compliance rather than to require actions which should have been stipulated in the requirement. Specifically, we proposed the last part in Measure M3 be revised to: "...therefore, if a status change lasts more than 15 minutes, the GOP shall provide evidence such as system log, electronic message or a transmittal letter that it notified its associated Transmission Operator within 30 minutes of when the change first occurred." We further propose that the SDT insert the evidence language into the first sentence of Measure M3 which asks for evidence that the Generator notified its associated Transmission Operator within 30 minutes of the change identified in Requirement R3.
We support the proposed VRFs and VSLs.
Individual
Michelle D'Antuono

Ingleside Cogeneration LP
Yes
Yes
Yes,Ingleside Cogeneration agrees that there must be reasonable notification criteria controlled by TOPs that allows them to specify when notification of change in AVR or reactive resource status is necessary. In many cases, the status is telemetered in real-time, but a call is required anyways to specify the expected duration of the status change. This is overcommunication in most cases, and only serves to tie up resources at the GOP and TOP. The same is true of notifications when the GOP cannot maintain the voltage at the interconnection point. Many GOPs do not control interconnection voltage and could actually resist an adjustment that the TOP is trying to make in response to system conditions. Again, some reasonable notification criteria could stop a lot of nuisance calls under these circumstances.
Individual
Scott Langston
City of Tallahassee
Agree
Florida Municipal Power Agency
Group
Santee Cooper
S. Tom Abrams
We agree with the comments of the North American Generator Forum.
Individual
John D. Brockhan
CenterPoint Energy, Houston Electric LLC.
Yes
CenterPoint Energy believes the language proposed in R1 supplemented by the rationale for R1 is clear in stipulating that a Transmission Operator specified voltage schedule must operate within the boundaries of System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs). What is missing from this standard is the coordination that occurs between the Reliability Coordinators, Transmission Operators, and Generator Operators in defining voltage schedules that do not violate established SOLs and IROLs. Transmission Operators have capabilities to monitor, study, and control their systems but do not have the complete data that a Reliability Coordinator uses to establish SOLs and IROLs. Furthermore, the Reliability Coordinator establishes a baseline voltage profile for the Reliability Coordinators area and its Transmission Operators to review before the schedule is finalized, distributed, and posted. CenterPoint Energy believes that Voltage and Reactive standards that apply strictly to the TOP and/or the GOP and GO create a possible misalignment in the operation of the Bulk Electric System. Moving forward with these standards only to address

the RC's applicability to the monitoring and control of voltage and reactive at a future date would not accurately reflect the industry's Real-Time operation with respect to voltage and reactive processes and does not align with NERC's Functional Model definition and relationships of an RC with other Functional Entities. CenterPoint Energy appreciates the efforts of the Standard Drafting Team and recommends the following requirement language to add the Reliability Coordinator back into the applicability of the standard: "Each Transmission Operator shall coordinate with the applicable Reliability Coordinator to specify a system voltage schedule (which is either a range or a target value with an associated tolerance band) as part of its plan to operate within System Operating Limits and any Interconnection Reliability Operating Limits established by the applicable Reliability Coordinator."

Yes

CenterPoint Energy agrees with the SDT's efforts to eliminate duplicated standards, but has the following concerns. R1.1 is unclear on the applicability of the "30 days of a request." Is the requirement for Transmission Operators to provide their perspective Reliability Coordinators the voltage schedule automatically without a request and only to any adjacent Transmission Operators that requests the schedule within 30 days of the request; or is it the intent of the SDT for the Reliability Coordinator to also request the Transmission Operator for the schedule with the same "30 days of request" requirement. In order for a TOP to obtain evidence to prove compliance to this requirement, a TOP must receive documentable requests from its RC and/or its adjacent Transmission Operators to then provide the voltage schedule within the 30 days of the request. If the Transmission Operators do not receive such requests then essentially according to the standard they do not have to provide the established voltage schedules as the requirement currently specifies. Many Reliability Coordinators or regions have established voltage working groups with processes or its equivalence to aid in the corroboration and defining of company specific voltage schedules within the RCs area or region then such voltage schedules would already be provided as part of the regional processes. CenterPoint Energy recommends the following clarifying language: "If requested, Each Transmission Operator shall provide, a copy of the voltage schedules and associated tolerance bands to its Reliability Coordinator and adjacent Transmission Operators within 30 calendar days of such a request." CenterPoint Energy agrees with providing the Generator Operators the voltage or Reactive Power schedule; however, we believe R5.1, which also requires the Transmission Operator to direct the Generator Operators to comply with such schedule to the specificity that the AVR be in automatic voltage control mode, is redundant and is an unnecessary requirement as well as a compliance burden for the Transmission Operators. Exemptions to the Generator Operator to deviate from the established voltage schedule or the Automatic Voltage Regulator functioning in any mode other than automatic voltage control are addressed in R4 and VAR-002-3 R1 and R2 and will be handled in Real-Time operations and will be scenario specific. VAR-002 R1 and R2 requires Generator Operators to maintain the voltage or Reactive Power schedule and operate each generator with its AVR in service and in the automatic voltage control mode. Based upon this redundancy and Paragraph 81 criteria regarding duplicative and redundant requirements CenterPoint Energy recommends removal of the language "...and direct the Generator Operator to comply with the schedule in automatic voltage control mode (the AVR is in

service and controlling voltage)”. Yes, CenterPoint Energy agrees with these revisions to VAR-002 removing compliance issues that address burdensome notification requirements, allowing the Transmission Operator, through VAR-001 to tailor notification requirements based on system/area needs.
CenterPoint Energy believes the VSLs associated with VAR-001 R2 and R3 do not consider changes in Real-Time topography such as forced outages, Resource inadequacy, or changes in weather that can drastically change the outcome of any planned or studied environment in both normal and emergency operations. A transmission operator could have scheduled sufficient reactive resources as necessary and have them available to mitigate known and identified SOLs or IROLs, but cannot schedule sufficient reactive resources for the unknown. CenterPoint energy suggests adding “identified” to the VSL language. “The Transmission Operator does not schedule sufficient reactive resources as necessary to avoid violating an identified SOL or IROL”. CenterPoint energy believes that the High VSL for R4 is inappropriate and is indicative of a zero tolerance environment. If a Transmission Operator has an exemption criteria established, notifies the Generator Operator of such exemption, and captures evidence for compliance to prove notification 99 times out of 100, then the one instance in which the TOP notified the Generator Operator, but failed to capture evidence would warrant a High VSL possible violation.
Individual
RoLynda Shumpert
South Carolina Electric and Gas
Agree
SERC OC Review Group
Individual
Catherine Wesley
PJM Interconnection
Yes
Yes
PJM recommends the drafting team revise R1 as follows: Each Transmission Operator shall specify a system voltage schedule. The remaining language in that requirement is not needed to support reliability. PJM does not understand the scope of controllable load in R2. We urge the drafting team to include clarification. For R3, PJM recommends revision to the Time Horizon to include Real Time only. PJM recommends the following addition to R5 as the last phrase in the requirement for consistency with R4 language. “unless otherwise exempted as noted in R4.”
Yes.
Individual
Sergio Banuelos
Tri-State Generation and Transmission Association, Inc.
No

Yes
In the draft of VAR-001-4 R2 the use of the word ‘schedule’ when referring to all reactive resources is unclear. This is in conjunction with the Compliance response to question 2 part 2, “...provide the documentation for the day ahead scheduling in addition to documentation supporting that it was scheduled...” found in the NERC document Draft Reliability Standard Compliance Guidance for VAR-001 and VAR-002 dated July 8, 2013. Is it the ad hoc group’s intent to have a schedule for all reactive resources including capacitors, reactors, Static var Compensators and generators? Is the schedule meant to be similar to that of a generator (i.e. Insert capacitors at 1.0pu and remove at 1.05) or on a time base? Is schedule just supposed to take into account availability of all reactive resources? Also TSGT believes the statement “(at either the high or low side of the Generator Step-Up transformer at the TOP’s discretion)” currently in VAR-001-4 R4 to should be changed to “(at an agreed upon metering point to which the GOP has direct access).” For VAR-001-4 R6 why did the ad hoc group not change the consultation requirement from GO to GOP? Tri-State believes that this information would better serve the GOP function particularly at Co-Owned facilities. This change would not have a negative effect on the reliability of the BES would reduce duplicative notification to be administered by the TOP.
For VAR-002-3 R5 TSGT believes the TOP should consult with the GOP rather than the GO to better align requirement R5 with its subrequirement R5.1.
Individual
Mary Lou Ideus
EDP Renewables North America LLC
Yes
Yes
Yes. EDPR NA believes it is important for TOPs to have the flexibility to tailor its requirements, as long as there is sufficient coordination among affected entities. We also offer the following comment: VAR-002 R1: We support the concept that a GOP need not notify its TOP that its AVR is out of service if it has previously advised its TOP that it will not have its AVR in service during start-up and shut-down. We recommend that similar provision be made for variable energy resources which are not able to provide voltage support when operating in similar circumstances. Wind farms, for example, generally have equipment limitations that can affect their ability to follow voltage schedules when operating at low levels. Wind farms will not telemeter a different status in that circumstance, however. We propose that, if a variable energy resource has notified its TOP of equipment limitations that affect its ability to follow a voltage schedule until it achieves a certain level of production, also not be required to notify the TOP that its AVR is out of service.
No.
Group
Bonneville Power Administration
Andrea Jessup

Yes
The SDT considered standards put in place after Order 693 was issued and avoided overlapping FAC and TOP standards. The SDT did include the tolerance band requirement to be consistent with voltage limit requirements in other standards.
Yes
There are two questions under Question #2. BPA answered the first question in the check box. BPA's answer to the second part of the question is No.
Yes. Comments: BPA requests further clarification of VAR-002-3 R3 and M3, to be revised such that a status or capability change in generator Reactive Power should be reported within 30 minutes from an entity becoming aware of the change in condition, rather than the current form, which is 30 minutes from the change in condition.
No.
Individual
Brenda Hampton
Luminant Energy Company LLC
Agree
Luminant Generation Company, LLC
Group
Colorado Springs Utilities
Kaleb Brimhall
Agree
Florida Municipal Power Authority