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**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**NORTH AMERICAN ELECTRIC            )     Docket No. RD13-\_\_\_\_\_  
RELIABILITY CORPORATION         )**

**PETITION OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
FOR APPROVAL OF PROPOSED RELIABILITY STANDARD  
VAR-002-2b**

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November 21, 2012

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The North American Electric Reliability Corporation (“NERC”)<sup>1</sup> hereby requests the Federal Energy Regulatory Commission (“FERC” or the “Commission”) approve, in accordance with Section 215(d)(1) of the Federal Power Act (“FPA”)<sup>2</sup> and Section 39.5 of the Commission’s regulations, 18 C.F.R. § 39.5 (2012), the proposed Reliability Standard — VAR-002-2b— Generator Operation for Maintaining Network Voltage Schedules and find that the proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential and in the public interest. VAR-002-2b was approved by the NERC Board of Trustees on August 16, 2012.<sup>3</sup>

NERC is hereby requesting approval of the proposed Reliability Standard, the associated implementation plan, Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”), and retirement of the currently effective Reliability Standard as detailed below. Specifically, NERC requests approval of the following:

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<sup>1</sup> NERC has been certified by the Commission as the electric reliability organization (“ERO”) in accordance with Section 215 of the Federal Power Act. The Commission certified NERC as the ERO in its order issued July 20, 2006 in Docket No. RR06-1-000. *North American Electric Reliability Corp.*, 116 FERC ¶ 61,062 (2006) (“ERO Certification Order”).

<sup>2</sup> 16 U.S.C. § 824o (2012).

<sup>3</sup> Unless otherwise designated, all capitalized terms shall have the meaning set forth in the Glossary of Terms Used in NERC Reliability Standards, available here: [http://www.nerc.com/files/Glossary\\_of\\_Terms.pdf](http://www.nerc.com/files/Glossary_of_Terms.pdf).

- Approval of proposed Reliability Standard VAR-002-2b included in **Exhibit B**, effective the first day of the first calendar quarter following the effective date of a Final Rule in this docket
  - Retirement of the VAR-002-1.1b<sup>4</sup> Reliability Standard midnight of the day immediately prior to the effective date of VAR-002-2b:
- Approval of the implementation plan for the proposed VAR-002-2b Reliability Standard which is included in **Exhibit C**;

The proposed effective dates for the standard are just and reasonable and appropriately balance the urgency in the need to implement the standards against the reasonableness of the time allowed for those who must comply to develop necessary procedures, software, facilities, staffing or other relevant capability. This will allow applicable entities adequate time to ensure compliance with the requirements in accordance with Order No. 672.<sup>5</sup> As required by Section 39.5 of the Commission’s regulations, this petition presents the technical basis and purpose of the proposed Reliability Standard VAR-002-2b and a demonstration that the proposed Reliability Standard meets the criteria identified by the Commission in Order No. 672.

## **I. EXECUTIVE SUMMARY**

The proposed Reliability Standard represents an improvement over the currently effective standard because it clarifies in Requirement R1 that a communication between a Generator Operator and a Transmission Operator is not necessary during start-up or shutdown of a

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<sup>4</sup> NERC notes that on August 16, 2012, the NERC Board of Trustees approved retirement of CAN-022 VAR-002 R1 and R3, Generator AVR Operation in Alternative Mode concurrent with the retirement of VAR-002-1.1b.

<sup>5</sup> *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, FERC Stats. & Regs. ¶ 31,204 at P 333, *order on reh’g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006) (“In considering whether a proposed Reliability Standard is just and reasonable, FERC will consider also the timetable for implementation of the new requirements, including how the proposal balances any urgency in the need to implement it against the reasonableness of the time allowed for those who must comply to develop the necessary procedures, software, facilities, staffing or other relevant capability.”).

generator. This clarification reflects current industry practices and will ensure that the VAR-002 Reliability Standard is interpreted and applied in the same manner across regions.

Based on stakeholder comments received during the initial ballot, revisions were also made to Requirement R2 and its VSLs. Proposed VAR-002-2b, Requirement R2 has been revised to change the word “output” to “schedule” to reflect the existing link between VAR-001-2, Requirement R4 and VAR-002-2b, Requirement R2. The VSLs for Requirement R2 were also revised. The previously approved VSLs incorporated a percentage methodology indicating how far off from the directed voltage or reactive power output that the generator was operated. Since generator terminal voltage often fluctuates, even in automatic voltage control mode, a time methodology for the VSLs was incorporated and this is based on how long a generator is operated outside the voltage or reactive power schedule. NERC respectfully requests that the Commission approve the proposed Reliability Standard as just, reasonable, not unduly discriminatory or preferential and in the public interest.

## II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:<sup>6</sup>

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## III. BACKGROUND

### a. **Regulatory Framework**

By enacting the Energy Policy Act of 2005,<sup>7</sup> Congress entrusted the Commission with the duties of approving and enforcing rules to ensure the reliability of the Nation’s bulk power system, and with the duty of certifying an electric reliability organization (“ERO”) that would be charged with developing and enforcing mandatory Reliability Standards, subject to Commission approval. Section 215 of the FPA states that all users, owners, and operators of the bulk power system in the United States will be subject to Commission-approved Reliability Standards.<sup>8</sup>

Section 215(d)(5) of the FPA authorizes the Commission to order the ERO to submit a new or modified Reliability Standard. Pursuant to Section 215(d)(2) of the FPA and Section

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<sup>6</sup> Persons to be included on the Commission’s service list are indicated with an asterisk. NERC requests waiver of the Commission’s rules and regulations to permit the inclusion of more than two people on the service list.

<sup>7</sup> 16 U.S.C. § 824o (2012).

<sup>8</sup> See Section 215(b)(1)(“All users, owners and operators of the bulk-power system shall comply with reliability standards that take effect under this section.”).

39.5(c)(1) of the Commission’s regulations, the Commission will give due weight to the technical expertise of the ERO with respect to the content of a Reliability Standard. In Order No. 693, the Commission noted that it would defer to the “technical expertise” of the ERO with respect to the content of a Reliability Standard and explained that, through the use of directives, it provides guidance but does not dictate an outcome. Rather, the Commission will consider an equivalent alternative approach provided that the ERO demonstrates that the alternative will address the Commission’s underlying concern or goal as efficiently and effectively as the Commission’s proposal, example, or directive.<sup>9</sup>

Section 39.5(a) of the Commission’s regulations requires the ERO to file with the Commission for its approval each Reliability Standard that the ERO proposes to become mandatory and enforceable in the United States, and each modification to a Reliability Standard that the ERO proposes to be made effective. The Commission has the regulatory responsibility to approve standards that protect the reliability of the bulk power system and to ensure that such standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest.

#### **b. NERC Reliability Standards Development Procedure**

The proposed Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.<sup>10</sup> NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards

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<sup>9</sup> See *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, FERC Stats. & Regs. ¶ 31,242 at PP 31, 186-187, *order on reh’g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007).

<sup>10</sup> Order No. 672 at P 334 (“Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about whether the ERO implemented its Commission-approved Reliability Standard development process for the development of the particular proposed Reliability Standard in a proper manner, especially whether the process was open and fair. However, we caution that we will not be sympathetic to arguments by interested parties that choose, for whatever reason, not to participate in the ERO’s Reliability Standard development process if it is conducted in good faith in accordance with the procedures approved by FERC.”).

Development) of its Rules of Procedure and the NERC Standard Processes Manual.<sup>11</sup> In its ERO Certification Order, the Commission found that NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards and thus satisfies certain of the criteria for approving Reliability Standards. The development process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders, and a vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard before the Reliability Standard is submitted to the Commission for approval.

**c. History of Project 2011-INT-02**

On January 28, 2011, Constellation Power Generation requested an interpretation of VAR-002-1.1b, Requirement R1. The request sought clarification regarding whether a communication must be conducted between a Generator Operator and a Transmission Operator during start up or shutdown of a generator, when the unit is not stable and is not counted upon for real or reactive power by the Balancing Authority and Transmission Operator at that time.

The request for interpretation states:

During startup and shutdown of a generator, it is industry practice to have a generator's AVR in the manual mode. Due to the instabilities associated with the changes in the field during these times, it is more reliable to have an operator control the generator than the AVR. Further, an AVR's response is slower and more unreliable when the field current is low, which is the case during start up and shut down. Both the BA and TOP realize that during start up and shut down the real and reactive power from that generator cannot be counted upon for system stability.

Some regions have taken the stance that during start up and shut down of a generator, it is reasonable to assume that the AVR is in manual and that it will be switched to automatic once stable. This

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<sup>11</sup> The NERC Rules of Procedure are available here: <http://www.nerc.com/page.php?cid=1%7C8%7C169>. The current NERC Standard Processes Manual is available here: [http://www.nerc.com/files/Appendix\\_3A\\_StandardsProcessesManual\\_20120131.pdf](http://www.nerc.com/files/Appendix_3A_StandardsProcessesManual_20120131.pdf).



would not require contacting the TOP to state that the AVR is in manual for this time period. Other regions have taken the approach that all status changes of the AVR from automatic, regardless of industry practice and stability, needs to be communicated to the TOP.

Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time.

On January 13, 2012, NERC Staff submitted a Standards Authorization Request (“SAR”) proposing to modify VAR-002-1b, Requirement R1. In April 2012, the drafting team received approval from the Standards Committee to modify the SAR to allow for revisions to Requirement R2 and the VSLs as a result of comments received during the initial comment period and ballot as explained in further detail below.

#### **IV. JUSTIFICATION FOR APPROVAL OF THE PROPOSED RELIABILITY STANDARD**

##### **a. Basis and Purpose of Reliability Standard and Improvements in this Revision**

VAR-002 is part of the Voltage and Reactive body of Reliability Standards. VAR-001 is dedicated to Voltage and Reactive Control and VAR-002 is dedicated to Generator Operation for Maintaining Network Voltage Schedules. VAR-001 ensures that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real-time to protect equipment and the reliable operation of the Interconnection. VAR-002 ensures that generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection. These two Reliability Standards,

along with two regional standards (VAR-002-WECC-1 and VAR-501-WECC-a) form the VAR Reliability Standards.

i. VAR-002-2b

The Commission approved Reliability Standard VAR-002-1 in Order No. 693.<sup>12</sup> On February 6, 2009, NERC submitted VAR-002-1.1a to the Commission for approval in Docket No. RD09-2-000, in order to address errata changes identified in the Reliability Standard. VAR-002-1.1a was accepted by the Commission via unpublished letter order on May 13, 2009. VAR-002-1.1b was approved by the Commission on September 16, 2010.<sup>13</sup>

The proposed Reliability Standard achieves the specific reliability goal of ensuring that the VAR-002 Reliability Standard is applied in the same manner across all regions. The proposed Reliability Standard ensures that generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.<sup>14</sup> In accordance with the criteria set forth in Order No. 672, the proposed Reliability Standard does not restrict the available transmission capability or limit use of the bulk-power system in a preferential manner.<sup>15</sup> The proposed Reliability Standard applies throughout North America and

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<sup>12</sup> Order No. 693 at P 1884 and Appendix A.

<sup>13</sup> *North American Electric Reliability Corp.*, 132 FERC ¶ 61,220 (2010).

<sup>14</sup> Order No. 672 at P 321 (“The proposed Reliability Standard must address a reliability concern that falls within the requirements of section 215 of the FPA. That is, it must provide for the reliable operation of Bulk-Power System facilities. It may not extend beyond reliable operation of such facilities or apply to other facilities. Such facilities include all those necessary for operating an interconnected electric energy transmission network, or any portion of that network, including control systems. The proposed Reliability Standard may apply to any design of planned additions or modifications of such facilities that is necessary to provide for reliable operation. It may also apply to Cybersecurity protection.”).

<sup>15</sup> Order No. 672 at P 332 (“As directed by section 215 of the FPA, FERC itself will give special attention to the effect of a proposed Reliability Standard on competition. The ERO should attempt to develop a proposed Reliability Standard that has no undue negative effect on competition. Among other possible considerations, a proposed Reliability Standard should not unreasonably restrict available transmission capability on the Bulk-Power System beyond any restriction necessary for reliability and should not limit use of the Bulk-Power System in an unduly preferential manner. It should not create an undue advantage for one competitor over another.”).

does not favor one geographic area or regional model.<sup>16</sup> The proposed Reliability Standard achieves its reliability goals effectively and efficiently and does not reflect a “lowest common denominator” approach in accordance with Order No. 672.<sup>17</sup> To the contrary, the proposed standard represents a significant improvement over the previous version as described herein.

### **Proposed Requirements<sup>18</sup>**

**R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]

- That the generator is being operated in start-up<sup>[FN1]</sup> or shutdown<sup>[FN2]</sup>
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.

[FN1: Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.]

[FN2: Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.]

**R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>[FN3]</sup> (within applicable Facility Ratings<sup>[FN4]</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]

**R2.1.** When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

**R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

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<sup>16</sup> Order No. 672 at P 331 (“A proposed Reliability Standard should be designed to apply throughout the interconnected North American Bulk-Power System, to the maximum extent this is achievable with a single Reliability Standard. The proposed Reliability Standard should not be based on a single geographic or regional model but should take into account geographic variations in grid characteristics, terrain, weather, and other such factors; it should also take into account regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.”).

<sup>17</sup> Order No. 672 at P 328 (“The proposed Reliability Standard does not necessarily have to reflect the optimal method, or “best practice,” for achieving its reliability goal without regard to implementation cost or historical regional infrastructure design. It should however achieve its reliability goal effectively and efficiently.”).

<sup>18</sup> Please note that Requirements R3 through R5 are substantively unchanged as described in further detail below.

[FN3: The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.]

[FN4: When a Generator is operating in manual control, Reactive Power capability may change based on stability considerations and this may lead to a change in the associated Facility Ratings.]

**R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*

**R3.1.** 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.

**R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.

**R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*

**R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:

**R4.1.1.** Tap settings.

**R4.1.2.** Available fixed tap ranges.

**R4.1.3.** Impedance data.

**R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.

**R5.** 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: Medium] [Time Horizon: Real-time Operations]*

**R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

## **Requirement R1**

Requirement R1 has been modified to add two bullets to clarify that a communication between a Generator Operator and a Transmission operator is not necessary during start-up or shutdown of a generator. Two footnotes were added to define what is considered a start-up and

shutdown. The drafting team determined that requiring a Generator Operator to communicate that the Automatic Voltage Regulator (“AVR”) is in manual during start-up/shutdown is an unnecessary distraction at a time when the unit is unstable for the following reasons:

- During start-up and shutdown of a generator, it is industry practice to have a generator’s AVR in the manual mode.
- A Generator Operator already communicates to the Transmission Operator that the unit is being started up or is shutting down and any additional communication would impose a redundant task when the Generator Operator is focused on controlling the unit and ensuring reliability.
- Due to the instabilities associated with the changes in the generator field during these times, it is more reliable to have a Generator Operator control the generator than to utilize the AVR.
- Further, an AVR’s response is slower and more unreliable when the generator field current is low, which is the case during start-up and shutdown.
- Both the Balancing Authority and Transmission Operator are aware that during start-up and shutdown the real and reactive power from that generator cannot be relied upon for system stability.

The proposed revisions to VAR-002-2b will ensure that the VAR-002 Reliability Standard is interpreted and applied in the same manner across regions.<sup>19</sup>

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<sup>19</sup> As stated in the Request for Interpretation, there is an inconsistent view among Regional Entities regarding compliance with Requirement R1. Such inconsistencies are contrary to the intent of NERC’s Compliance Monitoring Enforcement Program and could expose entities to inconsistent evaluations.

## Requirement R2

Based on stakeholder comments received during the initial ballot, revisions were made to Requirement R2 and its VSLs. Requirement R2 of VAR-002-2b is intrinsically linked to VAR-001-2, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

[FN1: The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.]

VAR-001 applies to Transmission Operators, Purchasing-Selling Entities; Load Serving Entities and Generator Operators within the Western Interconnection. VAR-002 applies to Generator Operators and Generator Owners. VAR-001 is dedicated to Voltage and Reactive Control and Requirement R4 uses the terminology “Reactive Power schedule.” VAR-002-2b, R2 was revised to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2 and to ensure consistency across the VAR body of standards. A revised version of the footnote in VAR-001-2, which explains the use of the term “schedule,” was added to VAR-002-2b, R2 as footnote 3.

[FN3: The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.]

The VSLs for Requirement R2 are also proposed to be revised to utilize a time-based methodology in lieu of the current percentage-based methodology which evaluates how far off from the directed voltage or reactive power output that the generator was operated. While a voltage schedule may be conducive to a VSL that uses percentage deviations, a Reactive Power

schedule is not, because where the Reactive Power schedule is very small (*e.g.*, 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. Since generator terminal voltage often fluctuates, even in automatic voltage control mode, the drafting team determined to utilize time-based methodology for the VSLs, evaluating how long a generator is operated outside the voltage or reactive power schedule.

### **Requirements R3 – Requirements R5**

Requirements R3 through R5 have been revised to include bracketed references to their associated VRFs and Time Horizons but are otherwise unaltered since the Commission’s prior approval.

#### **b. Enforceability of the Proposed Reliability Standard**

The proposed Reliability Standard contains measures that support each standard requirement by clearly identifying what is required and how the requirement will be enforced. These measures help provide clarity regarding how the requirements will be enforced, and ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.<sup>20</sup> Measure 1 has been revised to reflect the proposed changes to Requirement R1. The VSLs also provide further guidance on the way that NERC will enforce the requirements of the standard.

The proposed VAR-002-2b Reliability Standard applies to Generator Operators and Generator Owners and is clear and unambiguous as to what is required and who is required to

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<sup>20</sup> Order No. 672 at P 327 (“There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner.”).

comply, in accordance with Order No. 672.<sup>21</sup> Further, the proposed Reliability Standard includes clear and understandable consequences for a violation.<sup>22</sup>

i. Violation Risk Factors and Violation Severity Levels

The approved VRFs and VSLs for each requirement were incorporated into the standard during this revision. These approved compliance elements were not included in the previously approved and posted version of the standard.

The currently-effective VRFs for VAR-002-1.1b were approved by the Commission on May 18, 2007 and August 9, 2007.<sup>23</sup> No changes are proposed to the currently-effective Commission VRFs. The VRFs have been incorporated into the Reliability Standard itself, however, and therefore appear as redlined changes in **Exhibit B**.

The currently-effective VSLs for VAR-002-1.1a were approved by the Commission on May 19, 2011.<sup>24</sup> A filing to revise various VSLs, including for VAR-002-1.1a, is pending with the Commission in Docket No. RR08-4-000. The instant filing proposes modifications to VAR-002-1.1a and therefore supersedes the VSLs proposed in that proceeding. The revisions proposed in VAR-002-2b required one change to the VSL for Requirement R2. The VRFs and VSLs for the proposed standard comports with NERC and Commission guidelines related to their assignment. For a detailed review of the VRFs, the VSLs, and the analysis of how the VRFs and VSLs were determined using these guidelines, please see **Exhibit E**.

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<sup>21</sup> Order No. 672 at P 322 (“The proposed Reliability Standard may impose a requirement on any user, owner, or operator of such facilities, but not on others.”).

<sup>22</sup> Order No. 672 at P 326 (“The possible consequences, including range of possible penalties, for violating a proposed Reliability Standard should be clear and understandable by those who must comply.”).

<sup>23</sup> *North American Electric Reliability Corp.*, 119 FERC ¶ 61,145 (2007), *order on reh’g*, 120 FERC ¶ 61,145 (2007).

<sup>24</sup> *North American Electric Reliability Corp. et al.*, 135 FERC ¶ 61,166 (2011).



## V. SUMMARY OF THE RELIABILITY STANDARD DEVELOPMENT PROCEEDINGS

The development record for proposed Reliability Standard VAR-002-2b is summarized below. **Exhibit D** contains the Consideration of Comments Reports created during the development of the Reliability Standards. **Exhibit F** contains the complete record of development for the standards.

### a. Overview of the Drafting Team

When evaluating proposed Reliability Standards, the Commission is expected to give “due weight” to the technical expertise of the ERO.<sup>25</sup> The technical expertise of the ERO is derived from the standard drafting team. The VAR-002-2b drafting team is comprised of 4 members and is chaired by John Simpson, an independent transmission consultant. A detailed set of biographical information for each of the team members is included along with the standard development team roster in **Exhibit G**.

### b. The First Posting, Initial Ballot

The first draft of VAR-002-2b was posted for a formal comment period from February 8, 2012 to March 23, 2012 and for an initial ballot from March 14, 2012 to March 23, 2012. A mapping document was provided to industry to assist in the review of the standard, along with the original request for interpretation.<sup>26</sup> There were 51 sets of comments received from 133 different individuals from 90 different companies, representing each of the 10 Industry Segments within NERC’s stakeholder structure. Commenters provided feedback on the rapid revision

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<sup>25</sup> Section 215(d)(2) of the Federal Power Act; 16 U.S.C. § 824o(d)(2) (2011).

<sup>26</sup> The revision to VAR-002-2b was prompted by a request for an interpretation from Constellation Power Generation on Requirement R1 of VAR-002-2.2b, but NERC determined that the Rapid Revision was the best way to resolve the issue presented in the interpretation request.

process as well as the specific requirement language proposed to address the interpretation request. Based on the comments received, modifications were made to the standard, including:

- Revising the wording of Requirement R1 and Measure M1 to add further clarity to the standards.
- Revised Requirement R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The standard drafting team also added a footnote to VAR-002-2b, R2.
- Revised the VSLs for R2 to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or reactive schedule range.

**c. The Second Posting, Successive Ballot**

The second draft of VAR-002-2b was posted for formal comment from May 22, 2012 to June 27, 2012 and for a successive ballot from June 18, 2012 to June 27, 2012. A mapping document was again provided to industry to assist in the review of the standard. Thirty-five sets of comments were received, including comments from 112 different individuals from 76 companies, and representing each of the 10 Industry Segments within NERC’s stakeholder structure.

NERC received comments on revisions to the standard and VSL language and in response made revisions to the timing element of the VSL for Requirement R2. The standard drafting team revised the VSLs so that the moderate VSL for Requirement R2 begins at more than 45 minutes after the first violation of the requirement and the High and Severe VSLs increase in severity by 15 minute intervals thereafter. The 15 minute intervals replace the percentages used in VAR-002 VSLs, which the standard drafting team determined to be

impossible to calculate given the varying Reactive Power schedules that could be created for different size units on the BES.

NERC decided that the remaining comments on the standard language would be best addressed in Project 2008-01 in further revisions to the VAR-002 standard. The NERC standard drafting team has added the comments received to the NERC Issues database for the VAR-002 standard.

**d. The Third Posting, Recirculation Ballot**

A third and final draft of VAR-002-2b was posted for a recirculation ballot and a non-binding poll of VFS and VSLs from July 18, 2012 to July 27, 2012. A mapping document was again provided to industry to assist in the review of the standard. The ballot for the standard achieved a quorum of 90.97%, and an approval of 69.81%, and the non-binding poll received a quorum of 81.31%, with supportive opinions provided by 60.93% of the ballot body.

**e. Board of Trustees Approval**

The final draft of VAR-002-2b was presented to NERC's Board of Trustees for approval on August 16, 2012. NERC staff provided a summary of the improvements made to the standard, as well as a summary of minority issues and associated drafting team responses. NERC has identified no competing public interests regarding the request for approval of this proposed Reliability Standard. No comments were received that indicated the proposed standard conflicts with other vital public interests.<sup>27</sup> The Board of Trustees approved the standard directed that it be filed with applicable regulatory authorities. No negative factors relevant to

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<sup>27</sup> Order No. 672 at P 335 ("Finally, we understand that at times development of a proposed Reliability Standard may require that a particular reliability goal must be balanced against other vital public interests, such as environmental, social and other goals. We expect the ERO to explain any such balancing in its application for approval of a proposed Reliability Standard.").

whether the proposed Reliability Standard is just and reasonable were identified during the standard development process.<sup>28</sup>

## VI. CONCLUSION

For the reasons set forth above, NERC respectfully requests that the Commission:

- approve the proposed VAR-002-2b Reliability Standard included in **Exhibit B**, effective as proposed herein;
- approve the implementation plans included in **Exhibit C**;
- approve the retirement of Reliability Standards, effective as proposed herein.

Respectfully submitted,

*/s/ Stacey Tyrewala*

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Counsel for North American Electric  
Reliability Corporation

**Dated: November 21, 2012**

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<sup>28</sup> Order No. 672 at P 323 (“In considering whether a proposed Reliability Standard is just and reasonable, we will consider the following general factors, as well as other factors that are appropriate for the particular Reliability Standard proposed.”).

**CERTIFICATE OF SERVICE**

I hereby certify that I have served a copy of the foregoing document upon all parties listed on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C. this 21st day of November, 2012.

/s/ Stacey Tyrewala  
Stacey Tyrewala  
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## EXHIBIT A

### Order No. 672 Criteria

In Order No. 672,<sup>29</sup> the Commission identified a number of criteria it will use to analyze Reliability Standards proposed for approval to ensure they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. The discussion below identifies these factors and explains how the proposed Reliability Standard has met or exceeded the criteria:

**1. Proposed Reliability Standards must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve that goal.<sup>30</sup>**

The proposed standard achieves the specific reliability goal of ensuring that the VAR-002 Reliability Standard is applied in the same manner across all regions. The proposed Reliability Standard ensures that generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are

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<sup>29</sup> *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, FERC Stats. & Regs. ¶ 31,204, *order on reh'g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006).

<sup>30</sup> Order No. 672 at P 321. The proposed Reliability Standard must address a reliability concern that falls within the requirements of section 215 of the FPA. That is, it must provide for the reliable operation of Bulk-Power System facilities. It may not extend beyond reliable operation of such facilities or apply to other facilities. Such facilities include all those necessary for operating an interconnected electric energy transmission network, or any portion of that network, including control systems. The proposed Reliability Standard may apply to any design of planned additions or modifications of such facilities that is necessary to provide for reliable operation. It may also apply to Cybersecurity protection.

Order No. 672 at P 324. The proposed Reliability Standard must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve this goal. Although any person may propose a topic for a Reliability Standard to the ERO, in the ERO's process, the specific proposed Reliability Standard should be developed initially by persons within the electric power industry and community with a high level of technical expertise and be based on sound technical and engineering criteria. It should be based on actual data and lessons learned from past operating incidents, where appropriate. The process for ERO approval of a proposed Reliability Standard should be fair and open to all interested persons.

maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.

**2. Proposed Reliability Standards must be applicable only to users, owners and operators of the bulk power system, and must be clear and unambiguous as to what is required and who is required to comply.<sup>31</sup>**

The proposed revisions to this Reliability Standard apply to Generator Operators and Generator Owners and are clear and unambiguous as to what is required and who is required to comply, in accordance with Order No. 672.

**3. A proposed Reliability Standard must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.<sup>32</sup>**

The currently-effective VRFs for VAR-002-1.1b were approved by the Commission on May 18, 2007 and August 9, 2007.<sup>33</sup> No changes are proposed to the currently-effective Commission VRFs. The VRFs and VSLs for the proposed standard comports with NERC and Commission guidelines related to their assignment. The assignment of the severity level for each VSL is consistent with the corresponding Requirement and the VSLs should ensure uniformity and consistency in the determination of penalties. The VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

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<sup>31</sup> Order No. 672 at P 322. The proposed Reliability Standard may impose a requirement on any user, owner, or operator of such facilities, but not on others.

Order No. 672 at P 325. The proposed Reliability Standard should be clear and unambiguous regarding what is required and who is required to comply. Users, owners, and operators of the Bulk-Power System must know what they are required to do to maintain reliability.

<sup>32</sup> Order No. 672 at P 326. The possible consequences, including range of possible penalties, for violating a proposed Reliability Standard should be clear and understandable by those who must comply.

<sup>33</sup> *North American Electric Reliability Corp.*, 119 FERC ¶ 61,145 (2007), *order on reh'g*, 120 FERC ¶ 61,145 (2007).

For these reasons, the proposed Reliability Standard includes clear and understandable consequences in accordance with Order No. 672.

**4. A proposed Reliability Standard must identify clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner.**<sup>34</sup>

The proposed Reliability Standard contains measures that support each requirement by clearly identifying what is required and how the requirement will be enforced. These measures, included below, help provide clarity regarding how the requirements will be enforced, and ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.

**5. Proposed Reliability Standards should achieve a reliability goal effectively and efficiently — but do not necessarily have to reflect “best practices” without regard to implementation cost or historical regional infrastructure design.**<sup>35</sup>

The proposed Reliability Standard achieves its reliability goals effectively and efficiently in accordance with Order No. 672.

**6. Proposed Reliability Standards cannot be “lowest common denominator,” *i.e.*, cannot reflect a compromise that does not adequately protect Bulk-Power System reliability. Proposed Reliability Standards can consider costs to implement for smaller entities, but not at consequences of less than excellence in operating system reliability.**<sup>36</sup>

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<sup>34</sup> Order No. 672 at P 327. There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner.

<sup>35</sup> Order No. 672 at P 328. The proposed Reliability Standard does not necessarily have to reflect the optimal method, or “best practice,” for achieving its reliability goal without regard to implementation cost or historical regional infrastructure design. It should however achieve its reliability goal effectively and efficiently.

<sup>36</sup> Order No. 672 at P 329. The proposed Reliability Standard must not simply reflect a compromise in the ERO’s Reliability Standard development process based on the least effective North American practice — the so-called “lowest common denominator” — if such practice does not adequately protect Bulk-Power System reliability. Although FERC will give due weight to the technical expertise of the ERO, we will not hesitate to remand a proposed Reliability Standard if we are convinced it is not adequate to protect reliability.



The proposed Reliability Standard does not reflect a “lowest common denominator” approach. To the contrary, the proposed standard represents a significant improvement over the previous version as described herein.

**7. Proposed Reliability Standards must be designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one geographic area or regional model. It should take into account regional variations in the organization and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.<sup>37</sup>**

The proposed Reliability Standard applies throughout North America and does not favor one geographic area or regional model.

**8. Proposed Reliability Standards should cause no undue negative effect on competition or restriction of the grid beyond any restriction necessary for reliability.<sup>38</sup>**

The proposed Reliability Standard does not restrict the available transmission capability or limit use of the bulk-power system in a preferential manner.

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Order No. 672 at P 330. A proposed Reliability Standard may take into account the size of the entity that must comply with the Reliability Standard and the cost to those entities of implementing the proposed Reliability Standard. However, the ERO should not propose a “lowest common denominator” Reliability Standard that would achieve less than excellence in operating system reliability solely to protect against reasonable expenses for supporting this vital national infrastructure. For example, a small owner or operator of the Bulk-Power System must bear the cost of complying with each Reliability Standard that applies to it.

<sup>37</sup> Order No. 672 at P 331. A proposed Reliability Standard should be designed to apply throughout the interconnected North American Bulk-Power System, to the maximum extent this is achievable with a single Reliability Standard. The proposed Reliability Standard should not be based on a single geographic or regional model but should take into account geographic variations in grid characteristics, terrain, weather, and other such factors; it should also take into account regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.

<sup>38</sup> Order No. 672 at P 332. As directed by section 215 of the FPA, FERC itself will give special attention to the effect of a proposed Reliability Standard on competition. The ERO should attempt to develop a proposed Reliability Standard that has no undue negative effect on competition. Among other possible considerations, a proposed Reliability Standard should not unreasonably restrict available transmission capability on the Bulk-Power System beyond any restriction necessary for reliability and should not limit use of the Bulk-Power System in an unduly preferential manner. It should not create an undue advantage for one competitor over another.

**9. The implementation time for the proposed Reliability Standard is reasonable.<sup>39</sup>**

The proposed effective dates for the standard are just and reasonable and appropriately balance the urgency in the need to implement the standards against the reasonableness of the time allowed for those who must comply to develop necessary procedures, software, facilities, staffing or other relevant capability.

This will allow applicable entities adequate time to ensure compliance with the requirements. The proposed effective dates are explained in the proposed Implementation Plan, attached as **Exhibit C**.

**10. The Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.<sup>40</sup>**

The proposed Reliability Standard was developed in accordance with NERC's Commission-approved, ANSI- accredited processes for developing and approving Reliability Standards. Section V, *Summary of the Reliability Standard Development Proceedings*, below, details the processes followed to develop the standard (for a more thorough review, please see the complete development history included as **Exhibit F**).

These processes included, among other things, multiple comment periods, pre-ballot review periods, and balloting periods. Additionally, all drafting team meetings

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<sup>39</sup> Order No. 672 at P 333. In considering whether a proposed Reliability Standard is just and reasonable, FERC will consider also the timetable for implementation of the new requirements, including how the proposal balances any urgency in the need to implement it against the reasonableness of the time allowed for those who must comply to develop the necessary procedures, software, facilities, staffing or other relevant capability.

<sup>40</sup> Order No. 672 at P 334. Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about whether the ERO implemented its Commission-approved Reliability Standard development process for the development of the particular proposed Reliability Standard in a proper manner, especially whether the process was open and fair. However, we caution that we will not be sympathetic to arguments by interested parties that choose, for whatever reason, not to participate in the ERO's Reliability Standard development process if it is conducted in good faith in accordance with the procedures approved by FERC.

were properly noticed and open to the public. The initial and recirculation ballots both achieved a quorum and exceeded the required ballot pool approval levels.

**11. NERC must explain any balancing of vital public interests in the development of proposed Reliability Standards.<sup>41</sup>**

NERC has identified no competing public interests regarding the request for approval of this proposed Reliability Standard. No comments were received that indicated the proposed standard conflicts with other vital public interests.

**12. Proposed Reliability Standards must consider any other appropriate factors.<sup>42</sup>**

No other negative factors relevant to whether the proposed Reliability Standard is just and reasonable were identified.

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<sup>41</sup> Order No. 672 at P 335. Finally, we understand that at times development of a proposed Reliability Standard may require that a particular reliability goal must be balanced against other vital public interests, such as environmental, social and other goals. We expect the ERO to explain any such balancing in its application for approval of a proposed Reliability Standard.

<sup>42</sup> Order No. 672 at P 323. In considering whether a proposed Reliability Standard is just and reasonable, we will consider the following general factors, as well as other factors that are appropriate for the particular Reliability Standard proposed.

**Exhibit B**

Proposed Reliability Standard VAR-002-2b submitted for Approval

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
  - That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
  - R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this may lead to a change in the associated Facility Ratings.

output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - R3.1.** 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.
  - R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
  - R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
    - R4.1.1.** Tap settings.
    - R4.1.2.** Available fixed tap ranges.
    - R4.1.3.** Impedance data.
    - R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
  - R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### **C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.

- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator’s direction as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

**1.2. Data Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 4 and Measure 7 for the current and previous calendar year.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measures 5 and 6)

The Compliance Monitor shall retain any audit data for three years.

**1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

**Compliance Audit**

**Self-Certification**

**Spot Checking**

**Compliance Investigation**

**Self-Reporting**

**Complaint**

**1.4. Additional Compliance Information**

None



2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1

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			R3.1 or R3.2	and R3.2
R4.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
2b	TBD	Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.	Revised
2b	August 16, 2012	Adopted by Board of Trustees	

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## **Appendix 2**

### **Interpretation of VAR-002-1a**

#### **Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-~~1.1b2b~~
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.

~~5. **Effective Date:** Immediately after approval of applicable regulatory authorities.~~

5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator ~~of one of the following:~~ *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power ~~output~~ schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this ~~will~~ may lead to a change in the associated Facility Ratings.

- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - R3.1.** 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.
  - R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
  - R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
    - R4.1.1.** Tap settings.
    - R4.1.2.** Available fixed tap ranges.
    - R4.1.3.** Impedance data.
    - R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
  - R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### **C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. *If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.*



- M2. The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.
- M3. The Generator Operator shall have evidence to show that it responded to the Transmission Operator's ~~directives~~direction as identified in Requirement 2.1 and Requirement 2.2.
- M4. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5. The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6. The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator's documentation as identified in Requirement 5.
- M7. The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn't comply with the Transmission Operator's step-up transformer tap specifications as identified in Requirement 5.1.

## D. Compliance

### 1. Compliance Monitoring Process

#### 1.1. Compliance Monitoring Responsibility

~~For entities that do not work for the Regional Reliability Organization.~~

~~1.2. Entity, the Regional Entity shall serve as the Compliance Monitoring Period and Reset Time Frame Enforcement Authority.~~

~~One calendar year.~~

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

#### 1.3.1.2. Data Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure ~~5~~4 and Measure 7 for the current and previous calendar ~~years~~year.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (~~Measure~~(Measures 5 and 6)

The Compliance Monitor shall retain any audit data for three years.

#### 1.3. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

**1.4. Additional Compliance Information**

~~The Generator Owner and Generator Operator shall each demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.~~

None

**2. Violation Severity Levels of Non-Compliance for Generator Operator**

~~2.1. Level 1: There shall be a Level 1 non-compliance if any of the following conditions exist:~~

~~2.1.1 One incident of failing to notify the Transmission Operator as identified in R3.1, R3.2 or R5.1.~~

~~2.1.2 One incident of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.2. Level 2: There shall be a Level 2 non-compliance if any of the following conditions exist:~~

~~2.2.1 More than one but less than five incidents of failing to notify the Transmission as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.2.2 More than one but less than five incidents of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.3. Level 3: There shall be a Level 3 non-compliance if any of the following conditions exist:~~

~~2.3.1 More than five but less than ten incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.3.2 More than five but less than ten incidents of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.4. Level 4: There shall be a Level 4 non-compliance if any of the following conditions exist:~~

~~2.4.1 Failed to comply with the Transmission Operator’s directives as identified in R2.~~

~~2.4.2 Ten or more incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.4.3 Ten or more incidents of failing to maintain a voltage or reactive power schedule (R2).~~

**3. Levels of Non-Compliance for Generator Owner:**

~~3.1.1 Level One: Not applicable.~~

~~3.1.2 Level Two: Documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage was missing two of the data types identified in R4.1.1 through R4.1.4.~~

~~3.1.3 Level Three: No documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage~~

~~3.1.4 Level Four: Did not ensure generating unit step-up transformer settings were changed in compliance with the specifications provided by the Transmission Operator as identified in R5.~~

R.#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.

<p>R2.</p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</u> <u>OR</u> <u>When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</u> <u>OR</u> <u>The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</u> <u>OR</u> <u>When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</u></p>
<p>R3.</p>	<p><u>N/A</u></p>	<p><u>N/A</u></p>	<p><u>The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either R3.1 or R3.2</u></p>	<p><u>The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1 and R3.2</u></p>
<p>R4.</p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u> <u>OR</u> <u>The information was</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u> <u>OR</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4</u> <u>OR</u></p>

**Standard VAR-002-1.1b2b — Generator Operation for Maintaining Network Voltage Schedules**

	<u>provided in more than 30, but less than or equal to 35 calendar days of the request.</u>	<u>OR</u> <u>The information was provided in more than 35, but less than or equal to 40 calendar days of the request.</u>	<u>The information was provided in more than 40, but less than or equal to 45 calendar days of the request.</u>	<u>The information was provided in more than 45 calendar days of the request.</u>
<u>R5.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.</u>
<u>R5.1.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity failed to notify the Transmission Operator and to provide technical justification.</u>

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
<u>2b</u>	<u>TBD</u>	<u>Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.</u>	<u>Revised</u>
<u>2b</u>	<u>August 16, 2012</u>	<u>Adopted by Board of Trustees</u>	

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.



## Appendix 2

### Interpretation of VAR-002-1a

**Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

**Exhibit C**

Implementation Plan for Proposed Reliability Standard VAR-002-2b submitted for  
Approval

## Implementation Plan

### Project 2011-INT-02 Interpretation of VAR-002 for Constellation

#### **Implementation Plan for VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules**

##### **Approvals Required**

VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules

##### **Prerequisite Approvals**

None

##### **Revisions to Glossary Terms**

None

##### **Applicable Entities**

Generator Operator

Generator Owner

##### **Conforming Changes to Other Standards**

None

##### **Effective Dates**

In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

##### **Retirements**

VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules should be retired at midnight of the day immediately prior to the Effective Date of VAR-002-2b in the particular jurisdiction in which the new standard is becoming effective.

## **Exhibit D**

### Consideration of Comments

## Project 2011-INT-02 Rapid Revision of VAR-002 to address Constellation Request for Interpretation

### Related Files

**Status:**

Adopted by the Board of Trustees August 16, 2012, pending regulatory approval.

**Purpose/Industry Need:**

VAR-002-1.1b is being revised in response to a request for interpretation.

Draft	Action	Dates	Results	Consideration of Comments
<p style="text-align: center;"><b>Draft 3 VAR-002-2b</b></p> <p>Clean   <a href="#">Redline to Last Posting</a>   <a href="#">Redline to Last Approved</a></p> <p style="text-align: center;">Implementation Plan Clean</p> <p style="text-align: center;"><a href="#">Mapping Document</a></p> <p><b>Supporting Documents:</b></p> <p><a href="#">Unofficial Comment Form (Word) for VSL Changes</a></p> <p><a href="#">Justification for Assignment of VSLs</a></p>	<p style="text-align: center;">Recirculation Ballot and Non-binding Poll of VRFs and VSLs</p> <p style="text-align: center;"><a href="#">Info</a></p> <p style="text-align: center;"><a href="#">Vote&gt;&gt;</a></p> <p style="text-align: center;"><a href="#">Submit Comments on VSL Changes&gt;&gt;</a></p>	<p style="text-align: center;">07/18/12 - 07/27/12 (closed)</p>	<p style="text-align: center;"><a href="#">Summary</a></p> <p style="text-align: center;"><a href="#">Ballot Results</a></p> <p style="text-align: center;"><a href="#">Non-binding Poll Results</a></p>	
<p style="text-align: center;"><b>Draft 2 VAR-002-2b</b></p> <p>Clean   <a href="#">Redline to Last Posting</a>   <a href="#">Redline to Last Approved</a></p> <p><b>Supporting Documents:</b></p> <p><a href="#">Unofficial Comment Form</a></p>	<p style="text-align: center;">Successive Ballot</p> <p style="text-align: center;"><a href="#">Updated Info</a></p> <p style="text-align: center;"><a href="#">Vote&gt;&gt;</a></p>	<p style="text-align: center;"><b>Updated dates on 5/29/12</b></p> <p style="text-align: center;">06/18/12 - 06/27/12 (closed)</p>	<p style="text-align: center;"><a href="#">Summary</a></p> <p style="text-align: center;"><a href="#">Ballot Results</a></p>	

<p>(Word)</p> <p>Implementation Plan Clean   Redline to Last Posting</p> <p>Mapping Document</p> <p>Draft SAR Clean   Redline to Last Posting</p>	<p>Comment Period</p> <p>Info</p> <p>Submit Comments&gt;&gt;</p>	<p>Updated dates on 5/29/12</p> <p>05/22/12 - 06/27/12 (closed)</p>	<p>Comments Received</p>	<p>Consideration of Comments(2)</p>
<p><b>Draft 1</b> <b>VAR-002-2b</b> Clean   Redline to last approved (updated 2/9/12 to correct an omitted word)</p> <p>Implementation Plan</p> <p>Draft SAR</p> <p><b>Supporting Documents:</b> Request for Interpretation of VAR-002-1b</p> <p>Unofficial Comment Form (Word)</p> <p>Mapping Document (updated 2/9/12 to match the requirement)</p>	<p>Initial Ballot</p> <p>Info (March 14) Updated Info (Feb 9) Info</p> <p>Vote&gt;&gt;</p>	<p>03/14/12 - 03/23/12 (closed)</p>	<p>Summary</p> <p>Full Record</p>	
	<p>Formal Comment Period</p> <p>Submit Comments&gt;&gt;</p>	<p>02/08/12 - 03/23/12 (closed)</p>	<p>Comments Received</p>	<p>Consideration of Comments(1)</p>
	<p>Ballot Pool</p> <p>Join&gt;&gt;</p>	<p>02/08/12 - 03/08/12 (closed)</p>		

To download a file click on the file using your right mouse button, then save it to your computer in a directory of your choice.

## Consideration of Comments

### Rapid Revision to Address Request for Interpretation of VAR-002 for Constellation Project 2011-INT-02

The VAR-002-02b - Generator Operation for Maintaining Network Voltage Schedules Rapid Revision Drafting Team thanks all commenters who submitted comments on the proposed revisions to VAR-002 for Constellation (Project 2011-INT-02). The proposed revisions to VAR-002 were posted for a 45-day public comment period from February 8, 2012 through March 23, 2012. Stakeholders were asked to provide feedback on VAR-002-2b and associated documents through a special electronic comment form. There were 51 sets of comments, including comments from approximately 133 different people from approximately 90 companies representing all 10 Industry Segments, as shown in the table on the following pages.

All comments submitted may be reviewed in their original format on the standard's project page:

[http://www.nerc.com/filez/standards/Project\\_2011-INT-02\\_Int\\_of\\_VAR-002\\_for\\_Const.html](http://www.nerc.com/filez/standards/Project_2011-INT-02_Int_of_VAR-002_for_Const.html)

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President of Standards and Training, Herb Schrayshuen, at 404-446-2560 or at [herb.schrayshuen@nerc.net](mailto:herb.schrayshuen@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>1</sup>

### Summary Consideration

The drafting team received feedback from stakeholders concerning the rapid revision process, as well as the specific language that was proposed to address the interpretation request. The intent of the rapid revision is to add clarity to the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee (SC) and the SDT felt that a rapid revision was necessary to address the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard.

In response to industry comments on the rapid revision, the SDT has revised the wording of Requirement R1 and Measure M1 to add further clarity to the standard. The revised requirement and measure now read:

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<sup>1</sup> The appeals process is in the Standard Processes Manual:  
[http://www.nerc.com/files/Appendix\\_3A\\_Standard\\_Processes\\_Manual\\_Rev%201\\_20110825.pdf](http://www.nerc.com/files/Appendix_3A_Standard_Processes_Manual_Rev%201_20110825.pdf).

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown.

<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is preparing to go offline.

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode, as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure; such as an electronic message or a transmittal letter with the procedure included or attached.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2, and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).



The footnote associated with the above requirement states: The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period. The SDT has revised VAR-002-2b, R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]

R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 for R2 above is a revision of the footnote from VAR-001-2, R4 above: <sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.

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

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**The Industry Segments are:**

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

Group/Individual		Commenter	Organization		Registered Ballot Body Segment									
					1	2	3	4	5	6	7	8	9	10
1.	Group	Jesus Sammy Alcaraz	Imperial Irrigation District (IID)		X		X	X	X					
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Jose Landeros	IID	WECC	1, 3, 4, 5, 6										
2.	Chris Reyes	IID	WECC	1, 3, 4, 5, 6										
3.	John Quinonez	IID	WECC	1, 3, 4, 5, 6										
2.	Group	Guy Zito	Northeast Power Coordinating Council											X
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Alan Adamson	New York State Reliability Council, LLC	NPCC	10										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
2.	Greg Campoli	New York Independent System Operator	NPCC	2																
3.	Sylvain Clermont	Hydro-Quebec TransEnergie	NPCC	1																
4.	Donald Weaver	New Brunswick System Operator		2																
5.	Gerry Dunbar	Northeast Power Coordinating Council	NPCC	10																
6.	Mike Garton	Dominion Resources Services, Inc.	NPCC	5																
7.	Kathleen Goodman	ISO - New England	NPCC	2																
8.	Chantel Haswell	FPL Group, Inc.	NPCC	5																
9.	David Kiguel	Hydro One Networks Inc.	NPCC	1																
10	Michael R. Lombardi	Northeast Utilities	NPCC	1																
11	Randy MacDonald	New Brunswick Power Transmission	NPCC	9																
12	Bruce Metruck	New York Power Authority	NPCC	6																
13	Lee Pedowicz	Northeast Power Coordinating Council	NPCC	10																
14	Robert Pellegrini	The United Illuminating Company	NPCC	1																
15	Si-Truc Phan	Hydro-Quebec TransEnergie	NPCC	1																
16	David Ramkalawan	Ontario Power Generation, Inc.	NPCC	5																
17	Ben Wu	Orange and Rockland Utilities	NPCC	1																
18	Saurabh Saksena	National Grid	NPCC	1																
19	Michael Schiavone	National Grid	NPCC	1																
20	Wayne Sipperly	New York Power Authority	NPCC	5																
21	Tina Teng	Independent Electricity System Operator	NPCC	2																
3.	Group	Emily Pannel	Southwest Power Pool Regional Entity																	X
	<b>Additional</b>	<b>Additional Organization</b>	<b>Regio</b>	<b>Segment</b>																

Group/Individual		Commenter	Organization		Registered Ballot Body Segment									
					1	2	3	4	5	6	7	8	9	10
<b>Member</b>			<b>n</b>	<b>Selection</b>										
1.	John Allen	City Utilities of Springfield	SPP	1, 4										
2.	Greg McAuley	Oklahoma Gas & Electric	SPP	1, 3, 5										
3.	Nick McCarty	Kansas City Power & Light	SPP	1, 3, 5, 6										
4.	Stephen McGie	City of Coffeyville	SPP	NA										
5.	Bill Nolte	Sunflower Electric Power Corporation	SPP	1										
6.	Valerie Pinamonti	American Electric Power	SPP	1, 3, 5										
7.	Terri Pyle	Oklahoma Gas & Electric	SPP	1, 3, 5										
8.	Randy Root	Grand River Dam Authority	SPP	1, 3, 5										
9.	Sean Simpson	Board of Public Utilities, City of McPherson	SPP	1, 3, 5										
10.	Michael Wech	Southwestern Power Administration	SPP	1, 5										
4.	Group	Chris Higgins	Bonneville Power Administration		X		X		X	X				
<b>Additional Member</b>		<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Tedd	Snodgrass	WECC	1										
5.	Group	Don Jones	Texas RE											X
<b>Additional Member</b>		<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Curtis Crews	Texas RE	ERCOT	10										
2.	David Penney	Texas RE	ERCOT	10										
6.	Group	Robert Rhodes	SPP Standards Review Group			X								
<b>Additional Member</b>		<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	John Allen	City Utilities of Springfield	SPP	1, 4										
2.	Greg McAuley	Oklahoma Gas & Electric	SPP	1, 3, 5										
3.	Nick McCarty	Kansas City Power & Light	SPP	1, 3, 5, 6										
4.	Stephen McGie	City of Coffeyville	SPP	NA										
5.	Bill Nolte	Sunflower Electric Power Corporation	SPP	1										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment											
			1	2	3	4	5	6	7	8	9	10		
6.	Valerie Pinamonti	American Electric Power	SPP	1, 3, 5										
7.	Terri Pyle	Oklahoma Gas & Electric	SPP	1, 3, 5										
8.	Randy Root	Grand River Dam Authority	SPP	1, 3, 5										
9.	Sean Simpson	Board of Public Utilities, City of McPherson	SPP	1, 3, 5										
10.	Michael Wech	Southwestern Power Administration	SPP	1, 5										
7.	Group	Brent Ingebrigtsen	LG&E and KU Services		X		X		X	X				
No additional members listed.														
8.	Group	Frank Gaffney	Florida Municipal Power Agency		X		X	X	X	X				
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Timothy Beyrle	City of New Smyrna Beach	FRCC	4										
2.	Jim Howard	Lakeland Electric	FRCC	3										
3.	Greg Woessner	Kissimmee Utility Authority	FRCC	3										
4.	Lynne Mila	City of Clewiston	FRCC	3										
5.	Joe Stonecipher	Beaches Energy Services	FRCC	1										
6.	Cairo Vanegas	Fort Pierce Utility Authority	FRCC	4										
7.	Randy Hahn	Ocala Utility Services	FRCC	3										
9.	Group	Sam Ciccone	FirstEnergy		X		X	X	X	X				
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Brian Orians	FE	RFC											
2.	Rusty Loy	FE	RFC											
3.	Doug Hohlbaugh	FE	RFC											

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
4	Kevin Querry	FE	RFC																	
5	Chris Lassak	FE	RFC																	
10.	Group	Mike Garton	Dominion	X		X		X	X											
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1	Michael Gildea	Dominion Resources Services, Inc.	MRO	5, 6																
2	Louis Slade	Dominion Resources Services, Inc.	RFC	5, 6																
3	Connie Lowe	Dominion Resources Services, Inc.	NPCC	5, 6																
4	Michael Crowley	Virginia Electric and Power Company	SERC	1, 3																
11.	Group	Michael Gammon	Kansas City Power & Light	X		X		X	X											
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1	Nick McCarty	Kansas City Power & Light	SPP	1, 3, 5, 6																
2	Brett Holland	Kansas City Power & Light	SPP	1, 3, 5, 6																
12.	Group	Howard Rulf	We Energies			X	X	X												
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1	Power Generation	We Energies	RFC	3, 4, 5																
13.	Group	Gregory Campoli	ISO/RTO Standards Review Committee		X															
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1	Albert DiCaprio	PJM	RFC	2																
2	Mark Thompson	AESO	WECC	2																
3	Garv DeShazo	CAISO	WECC	2																

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																		
			1	2	3	4	5	6	7	8	9	10									
4	Steven Myers	ERCOT	ERCOT	2																	
5	Ben Li	IESO	NPCC	2																	
6	Matt Goldberg	ISO-NE	NPCC	2																	
7	Bill Phillips	MISO	RFC	2																	
8	Donald Weaver	NBSO	NPCC	2																	
9	Charles Yeung	SPP	SPP	2																	
14.	Group	Marie Knox	MISO Standards Collaborators			X															
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																	
1	Jim Cyrulewski	JDRJC Associates, LLC	RFC	8																	
15.	Group	Annette M. Bannon	PPL Electric Utilities and PPL Supply NERC Registered Organizations		X					X	X										
	<b>Additional Member</b>	<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>																
1	Mark Heimbach	PPL EnergyPlus, LLC		MRO	6																
2	Annette Bannon	PPL Generation, LLC on Behalf of its NERC Registered		RFC	5																
3	Brenda Truhe	PPL Electric Utilities Corporation		RFC	1																
16.	Group	Jason Mashall	ACES Power Marketing Standards Collaborators								X										
	<b>Additional Member</b>	<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>																
1	Mark Ringhausen	Old Dominion Electric Cooperative		RFC	3, 4																
2	Scott Brame	North Carolina Electric Membership		SERC	1. 3. 4. 5																



Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
		Corporation											
3	Shari Heino	Brazos Electric Power Cooperative	ERCO T 1										
4	Bob Solomon	Hoosier Energy	RFC 1										
17.	Individual	David Thompson	Tennessee Valley Authority	X		X		X	X				
18.	Individual	Sandra Shaffer	Pacificorp	X		X		X	X				
19.	Individual	Janet Smith	Arizona Public Service Company	X		X		X	X				
20.	Individual	Jim Eckelkamp	Progress Energy	X		X		X	X				
21.	Individual	Thomas E Washburn	FMPP						X				
22.	Individual	Joesph Zerbo	Salt River Project	X		X		X	X				
23.	Individual	Frederick R Plett	Massachusetts Attorney General								X		
24.	Individual	Keira Kazmerski	Xcel Energy	X		X		X	X				
25.	Individual	Dan Roethemeyer	Dynegy					X					
26.	Individual	Rich Salgo	NV Energy	X		X		X	X				
27.	Individual	Julie Lux	Westar Energy	X		X		X	X				
28.	Individual	Martin Kaufman	ExxonMobil Research and Engineering	X				X					
29.	Individual	Terri Pyle	Oklahoma Gas & Electric	X		X		X					
30.	Individual	Michelle R. D'Antuono	Ingleside Cogeneration LP					X					
31.	Individual	Michael Falvo	Independent Electricity System Operator		X								
32.	Individual	RoLynda Shumpert	South Carolina Electric and Gas	X		X		X		X			
33.	Individual	Joe Petaski	Manitoba Hydro	X		X		X	X				
34.	Individual	Greg Rowland	Duke Energy	X		X		X	X				
35.	Individual	David Youngblood	Luminant					X					
36.	Individual	David Thorne	Pepco Holdings	X		X							
37.	Individual	Edward	Davis	X		X		X	X				
38.	Individual	Scott Berry	Indiana Municipal Power Agency				X						

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
39.	Individual	Brian J Murphy	NextEra Energy. Inc.	X		X		X	X				
40.	Individual	Thad Ness	American Electric Power	X		X		X	X				
41.	Individual	Patrick Brown	Essential Power, LLC	X				X					
42.	Individual	Michael Moltane	ITC	X									
43.	Individual	Terry Harbour	MidAmerican Energy	X		X		X	X				
44.	Individual	Kirit Shah	Ameren	X		X		X	X				
45.	Individual	Brad Jones	EFH Luminant Energy						X				
46.	Individual	Daniel Duff	Liberty Electric Power LLC					X					
47.	Individual	Andrew Z. Puztai	American Transmission Company	X									
48.	Individual	Anthony Jablonski	ReliabilityFirst										X
49.	Individual	James R. Keller	We Energies			X							
50.	Individual	John Bee on Behalf of the Exelon Companies	Exelon	X		X		X	X				
51.	Individual	DANA SHOWALTER	E.ON CLIMATE & RENEWABLES					X					

1. Do you agree with the use of this “Rapid” approach to clarify the standard, rather than clarifying the standard through an Interpretation? If No, please explain your concerns.

**Summary Consideration:** The majority of stakeholders agree with the rapid revision approach. Some commenters expressed concerns with the approach because they identified other issues with VAR-002-1.1b that need to be addressed, as well. In particular, several stakeholders raised concerns with Requirement R2 and its VSLs.

The SDT received approval from the Standards Committee to address deficiencies in Requirement R2, and has made further changes to R2 to address concerns that were expressed. Requirement R2 is intrinsically linked to VAR-001-2 – Voltage and Reactive Control, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised VAR-002-2b Requirement R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added footnote 3 to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]

R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 is a revision of the footnote for Requirement R4 in VAR-001-2: “<sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.”

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

“When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.”

Organization	Yes or No	Question 1 Comment
Madison Gas and Electric Co.	Negative	VAR-002 does not need a Rapid Revision. R1 states you need to be in AVR when the unit is connected unless you notify the TOP. R2 gives you an exemption to R1 and R3 states that within 30 minutes you inform the TOP the change in status or capability. A simple interpretation what work but is not required.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard.</p>		
Wisconsin Electric Power Co.	Negative	We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT modified Requirement R1 to remove the need for the GOP to notify the TOP about the AVR operation during start-up and</p>		

Organization	Yes or No	Question 1 Comment
shutdown, as you suggested.		
Wisconsin Electric Power Marketing	Negative	We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.
Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT modified Requirement R1 to remove the need for the GOP to notify the TOP about the AVR operation during start-up and shutdown, as you suggested.		
Wisconsin Energy Corp.	Negative	We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated. NOTE: other comments submitted in the comment form.
Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT modified Requirement R1 to remove the need for the GOP to notify the TOP about the AVR operation during start-up and shutdown, as you suggested.		

Organization	Yes or No	Question 1 Comment
Xcel Energy, Inc.	Negative	<p>Q1: Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, “minimum load”</p> <p>Additional Comments: Xcel Energy would request that the VSL’s be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.</p>
<p>Response: Thank you for your comment. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available. The term “minimum load” was further clarified, and changes were made to R2 and the VSL’s to address your concerns.</p>		
Florida Municipal Power Agency	No	<p>Constellation is essentially asking “what does ‘notify’ mean as used in the standard”, and asking if previously arranged operating procedures between the GOP and TOP is notification, including operating procedures for start-up and shutdown of a unit during which an AVR would be put into manual mode. An interpretation of what ‘notify’ means as used in the standard is more appropriate as opposed to changing the standard. The response to the request is too specific and introduces new terms into the standards that are ambiguous and will cause confusion depending on the type of generator being considered (e.g., start-up and shutdown), possibly spurring additional requests for interpretation of what start-up and shutdown mean for, say, a wind of solar farm, etc. In addition, while R1 has become clearer as to the</p>

Organization	Yes or No	Question 1 Comment
		<p>intent, it leaves R3 unclear with the same question concerning the word 'notify'. An interpretation essentially saying that pre-arranged, mutually agreed upon operating procedures or similar documentation of pre-arranged, conditional notification, between the GOP and TOP acts as notification in regards to both R1 and R3 is a preferably approach to a rapid revision (e.g., every time the unit is on outage, the AVR is out of service; every time the unit is below XX MW of output, the AVR is in manual mode, etc.).</p>
<p>Response: Thank you for your comment. The first bullet under R1 has been modified to provide additional clarity regarding the term "notify", as you suggest.</p> <ul style="list-style-type: none"> <li>That the generator is being operated in start-up or shutdown mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator.</li> </ul> <p>This provides information regarding what is meant by the word "notify". R3 is outside the scope of the rapid revision process.</p>		
We Energies	No	<p>We strongly disagree with this approach and believe it does not properly address the concerns which prompted the request for an Interpretation. A clear and useful Interpretation would serve the industry better than a vague "rapid revision" of this standard.</p>
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT has made further revisions to the language to provide additional clarity.</p>		
Xcel Energy	No	<p>Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, "minimum load".</p>

Organization	Yes or No	Question 1 Comment
<p>Response: Thank you for your comment. Additional language has been added to clarify “minimum load.” The footnotes now read:</p> <p><sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum <b>continuously sustainable</b> load and the generator is prepared for continuous operation.</p> <p><sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum <b>continuously sustainable</b> load and the generator is prepared to go offline.</p>		
Dynergy	No	I don't know that I understand the differences between the two options.
<p>Response: Thank you for your comment. The NERC Board of Trustees has provided direction that any interpretation of a NERC standard must restrict itself to the words contained in the standard. If clarity cannot be provided without referencing additional work, and the clarity is still necessary, then the words of the standard must be modified to provide that clarity. A rapid revision is a tool to make a small adjustment to the wording to clarify the intent of the standard. Since it is a modification to the standard, it must follow the process for standard revision. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request.</p>		
ExxonMobil Research and Engineering	No	NERC has already established an SDT to review and modify the VAR standards. By stepping outside the normal process for drafting standards, regardless of the intent or end product, NERC is setting a precedent for superseding a pre-qualified SDT and the ANSI approved process for drafting standards. For the time being, a Generator Operator’s verbal notification to the Transmission Operator that a unit is being brought online or offline and is in manual control should be sufficient notification that its AVR is not in service.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes. The SDT believes that your suggestion is allowed by the language of the requirement. If a Generator Operator provides a Transmission</p>		



Organization	Yes or No	Question 1 Comment
Operator with its AVR procedures during start-up and shutdown, then no further notifications are required.		
Luminant	No	In this instance, Luminant believes that this should have been a simple interpretation by the SDT and not turned into a standard revision. An arbitrary call by individuals unaware of the impact to implement a “Rapid” approach could end up doing more harm to the BES than what was originally anticipated. Luminant also feels that if NERC wants to use the Rapid response for a standard revision, then that should be put forth to the industry for a ballot to ensure there are no major issues are being overlooked.
Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes.		
Indiana Municipal Power Agency	No	IMPA still likes the “Rapid” approach with some additional changes, such as having a SDT made up of six to eight members and with the focus of just performing the work to clarify the requirement within the standard that the request for interpretation is addressing.
Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes.		
NextEra Energy. Inc.	No	On the February 16, 2012 Standards Committee’s call, it was generally agreed that Rapid Revision procedure was still in the pilot phase and that it should only be used for minor revisions to a Reliability Standard. The revisions proposed changes create a new category of pre-notification via the use of procedures and attempts to clarify when notification is required. Neither of these revisions appears to be minor. Also, the proposed clarifications appear to be beyond the plain language of the Reliability Standard, and, therefore, are not appropriate for consideration as an interpretation. Thus, it is suggested that a new SAR be drafted, and that the

Organization	Yes or No	Question 1 Comment
		<p>issues raised by Constellation be assigned to a Standards Drafting Team, so that the issues raised can be considered by a diverse group of technical experts, and that a revision to VAR-002 can be processed consistent with the Standards Process Manual.</p>
<p>Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes contained in the Standards Process Manual.</p>		
<p>EFH Luminant Energy</p>	<p>No</p>	<p>In this instance, Luminant believes that this should have been a simple interpretation by the SDT and not turned into a standard revision. An arbitrary call by individuals unaware of the impact to implement a “Rapid” approach could end up doing more harm to the BES than what was originally anticipated. Luminant also feels that if NERC wants to use the Rapid response for a standard revision, then that should be put forth to the industry for a ballot to ensure there are no major issues are being overlooked.</p>
<p>Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope).</p>		
<p>American Transmission Company</p>	<p>No</p>	<p>An interpretation would allow a thorough vetting of the issue at hand, rather than opening up the entire Standard to revision.</p>
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope).</p>		
<p>We Energies</p>	<p>No</p>	<p>We strongly disagree with this approach and believe it does not properly</p>

Organization	Yes or No	Question 1 Comment
		address the concerns which prompted the request for an Interpretation. A clear and useful Interpretation would serve the industry better than a vague “rapid revision” of this standard.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT has made further revisions to the language to provide additional clarity.</p>		
Exelon	No	<p>Exelon/Constellation recognizes and supports the effort to more “rapidly” resolve less controversial issues with a standard revision. However, Exelon/Constellation does not believe that the “rapid” approach to clarify the standard is the proper way to address this interpretation request for two reasons - the role of an interpretation versus a standard revision and the analysis to judge this issue as qualified for a rapid revision. The role of an interpretation versus a standard revision: An interpretation fulfils a different function than a standard revision. In this case, the interpretation request targeted VAR-002-1.1b Requirement 1 to address a narrow concern with the standard language that created auditing inconsistency across regions. Constellation felt that an interpretation to clarify the intent behind the language would more clearly reflect current reliable operational practices within the industry and aid in compliance clarity. Following development of the interpretation request, Constellation reviewed all the requirements in the standard language and considered developing a SAR to address the many issues that exist within the current standard language, others more urgent than that of R1. Revision to VAR-002-1.1b Requirement 2 is urgently needed as well as to the companion language in VAR-001-2 Requirement 4. Clearly a standard revision project is needed for VAR-001 and VAR-002, but the “rapid” approach is limited to only the issue raised in the interpretation request. Exelon/Constellation still believes that the concerns with VAR-001-2 R2 and VAR-002-1.1b R2 warrant a revision project. VAR-002-1.1b</p>

Organization	Yes or No	Question 1 Comment
		<p>Requirement 2 states that each GOP shall maintain the generator voltage or Reactive Power output as directed, and Measure 2 further clarifies this requirement stating that a GOP shall have evidence to show it controlled its generator voltage or Reactive Power output to meet the voltage or Reactive Power schedule provided by the TOP. However, in certain situations, a GOP may not be able to meet the schedule because of system variations outside of the GOP’s control. In this situation, a GOP may be non-compliant with this requirement because of issues out of its control. This requirement should be revised to allow the GOP to contact the TOP when outside the schedule to follow the TOP’s instruction. VAR-001-2 Requirement 4 is closely tied to VAR-002-1.1b Requirement 2. It states that each TOP shall specify a voltage or Reactive Power schedule at the interconnection point between the generator facility and the TO’s facilities. However, some GOPs do not have metering capability at the point of interconnection and are not mandated to do so. Therefore, a TOP must give instruction to GOPs who potentially have no way of proving compliance with the instruction. This requirement should change to allow the TOP to give instruction to the GOP based on an agreed upon point, regardless of the interconnection point. Analysis to judge this issue as qualified for a rapid revision: The front end assessment of the issues was insufficient to identify the technical complexities underlying VAR-002-1.1b R1. Constellation requested that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. While greater clarity is needed regarding the obligations around such events as it concerns notification to interconnected parties, the technical aspects associated with the operational practice warrant sufficient latitude within the standard language. Starting up and shutting down a unit is dependent upon many variables such as the type of unit, the fuel used, and the unit specific operating procedures, to name a few, and means different things to different players in the connected</p>

Organization	Yes or No	Question 1 Comment
		<p>system. Defining the terms “start up” and “shut down” was not part of the request and creates more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague. The VAR-002-1.1b R1 language may not need to be revised if an interpretation properly clarifies the compliance obligation at start up and shut down. If a generator has to start up and shut down in manual mode, it should be compliant to do so under the current R1 requirement. For example, a blanket notification that certain generators start up and shut down in manual mode should be sufficient to comply with the communication of the situation. Pursuing the rapid revision of VAR-002-1.1b R1 without understanding the technical complexities behind R1 or addressing the issues in VAR-002-1.1b R2 and VAR-001-2 R4 creates a risk that a series of revisions will be needed rather than conducting a coherent standard revision project. Every iteration of a standard imposes cost and compliance risk to entities. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. Further, it is unclear who makes the judgments. Enabling stakeholders to better understand the process may make for a more effective deployment of this expedited revision process. However, for this VAR-002 interpretation request, Exelon/Constellation requests that work cease on this “rapid” approach and an interpretation of VAR-002-1.1b be submitted for industry review, with industry input in the development process.</p>
<p>Response: Thank you for your comment. The NERC Board of Trustees has provided direction that any interpretation of a NERC standard must restrict itself to the words contained in the standard. If clarity cannot be provided without referencing additional work, and the clarity is still necessary, then the words of the standard must be modified to provide that clarity. A Rapid Revision is a tool to make a small adjustment to the wording to clarify the intent of the standard. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address this interpretation request. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope). The SDT has recognized the link between VAR-001-2, R4 and VAR-002-2b, R2, and has included revisions in VAR-002b to add clarity. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address your concerns. Requirement R2 is intrinsically linked to VAR-</p>		

Organization	Yes or No	Question 1 Comment
		<p>001-2, Requirement R4:</p> <p>R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule <sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).</p> <p>The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:</p> <p>R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power <del>output</del> <b>schedule</b><sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p>R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p>Footnote 3 is a revision of the footnote above:</p> <p><sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.</p> <p>The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:</p> <p>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.</p> <p>The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the Interpretation request.</p>

Organization	Yes or No	Question 1 Comment
<p>This approach provides additional clarity to the entities subject to the standard. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
<p>E.ON CLIMATE &amp; RENEWABLES</p>	<p>No</p>	<p>E.ON Climate &amp; Renewables supports the effort to quickly resolve less controversial issues with a “rapid” revision of a standard and is willing to accept the proposed changes. However, E.ON Climate &amp; Renewables does not believe that this is the proper way to address this issue. An interpretation to clarify the intent behind the language would be sufficient, as the purpose of an interpretation is to address a concern with standard language that may create auditing or performance inconsistencies across the regions. In addition, this revision only partially addresses the issues of and concerns with the VAR standards. A standard revision project is needed for VAR-002, however the revision should address all of the known issues that exist within the current standard language and not just the narrow scope raised in the interpretation request. In regards to the proposed modifications, which attempt to provide greater clarity, additional complications may have been added. Using the terms “start up” and “shut down” creates more confusion than it resolves, as the proposed definitions in the footnotes are unclear and vague. The standard language may not need to be revised if an interpretation properly clarifies the compliance obligation at start up and shutdown. While E.ON Climate &amp; Renewables is willing to accept the proposed changes, E.ON Climate &amp; Renewables would prefer that work cease on the “rapid” approach and proceed with the requested interpretation of VAR-002 be submitted for industry review, with industry input in the development process.</p>
<p>Response: Thank you for your comment. The NERC Board of Trustees has provided direction that any interpretation of a NERC standard must restrict itself to the words contained in the standard. If clarity cannot be provided without referencing additional work, and the clarity is still necessary, then the words of the standard must be modified to provide that clarity. A rapid Revision is</p>		

Organization	Yes or No	Question 1 Comment
<p>a tool to make a small adjustment to the wording to clarify the intent of the standard. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope). The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The term “minimum load” was further clarified to address start-up and shutdown concerns. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Texas RE	Yes	We don’t believe there is any basis in the Standard for effectively answering this question through an interpretation.
<p>Response: Thank you for your comment.</p>		
FirstEnergy	Yes	We believe that the rapid revision approach is appropriate for this change. Furthermore, we believe that NERC should take advantage of this opportunity to expand the revisions slightly to address all the issues presented in CAN-0022 so that the CAN can be subsequently retired. Please see our comments and suggestions in Questions 2, 3, and 4.
<p>Response: Thank you for your comment. Please see our responses to your other comments. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. Any further modifications go beyond the scope of a rapid revision. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Progress Energy	Yes	We prefer the “rapid” approach if it provides clarification only and does not add any additional requirements. For example, the additional requirements have been added in Section R1 and M3.



Organization	Yes or No	Question 1 Comment
Response: Thank you for your comment.		
Massachusetts Attorney General	Yes	The wording of the standard should be changed to say "under normal operating conditions", or "except during startup and shut down"
Response: Thank you for your comment. The drafting team believes that the wording of R1 meets the intent of your comment. R1 also allows the GOP to operate the generator without the automatic voltage regulator in service and controlling voltage if he has notified the TOP. This may be required under what may still be termed "normal operating conditions."		
NV Energy	Yes	This was a good solution to the discovery of an inadequacy in the language of the existing Standard, and it was implemented in an efficient fashion.
Response: Thank you for your comment.		
Ingleside Cogeneration LP	Yes	We agree that the consistent identification of the points in the start-up and shutdown process would help clarify the intent and application of VAR-002 R1. Each Region seems to have its own concept of the appropriate time to engage the AVR in the automatic voltage control mode; which has led to inconsistent treatment by auditors. Some will assess a violation if the TOP is not notified of an AVR status change during every start-up and shutdown action - other Regions accept that the GOP will use generally acceptable business practices to engage the AVR at the correct time. In our view, this explains one of the reasons why the notification of a change in AVR status continues to be one of NERC's most violated requirements. This in of itself is important enough to justify a rapid revision of VAR-002, as it will carry much greater authority with auditors than an interpretation will.
Response: Thank you for your comment.		
American Electric Power	Yes	In general, we have no objections to using the Rapid approach as long as industry's comments and concerns are vetted and acknowledged in no less

Organization	Yes or No	Question 1 Comment
		way than they would be in any other process. That being said, this appears to be the third interpretation request in circulation regarding these requirements, so perhaps more clarity is needed within the language of the standard itself.
<p>Response: Thank you for your comment. The standard drafting team is following the NERC standards development process, and will address all comments submitted regarding this standard. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Imperial Irrigation District (IID)	Yes	
Northeast Power Coordinating Council	Yes	
Southwest Power Pool Regional Entity	Yes	
Bonneville Power Administration	Yes	
SPP Standards Review Group	Yes	
Dominion	Yes	
Kansas City Power & Light	Yes	
ISO/RTO Standards Review Committee	Yes	
MISO Standards Collaborators	Yes	

Organization	Yes or No	Question 1 Comment
ACES Power Marketing Standards Collaborators	Yes	
Tennessee Valley Authority	Yes	
Arizona Public Service Company	Yes	
Salt River Project	Yes	
Westar Energy	Yes	
Oklahoma Gas & Electric	Yes	
Independent Electricity System Operator	Yes	
South Carolina Electric and Gas	Yes	
Manitoba Hydro	Yes	
Duke Energy	Yes	
Pepco Holdings	Yes	
Davis	Yes	
Essential Power, LLC	Yes	
ITC	Yes	
MidAmerican Energy	Yes	

Organization	Yes or No	Question 1 Comment
Ameren	Yes	
ReliabilityFirst	Yes	
PPL Electric Utilities and PPL Supply NERC Registered Organizations		<p>While the PPL Companies think the change to Reliability Standard VAR-002 may result in an improvement compared to the current VAR-002, we believe that the proposed revised Reliability Standard should have been vetted with stakeholders through the Standard Development Team (SDT) process. The proposed revised standard raises questions that could have been avoided with additional vetting by stakeholders. For example, a change was made in VAR-002, R.1 but a corresponding change was not made in R.2. Is this an intentional distinction? Additionally, as discussed in our response to question 3, the new footnotes that were added to define start-up and shutdown, introduce the term “minimum load,” which can have different meanings under varying circumstances. Had the SDT process been used it is likely that such issues would have been vetted and clarified by stakeholders.</p>
<p>Response: Thank you for your comment. The standard drafting team is following the NERC standards development process and will address all comments submitted regarding this standard. The intent of the rapid revision is to add clarity to the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. Some industry comments addressed other aspects of VAR 002-1.</p>		

2. Does the language in the SAR adequately represent the issue raised in the interpretation request? If No, please provide your suggestions to modify the SAR.

**Summary Consideration:** The vast majority of stakeholders agree that the SAR adequately represents the issue raised in the interpretation request. One stakeholder suggested adding testing as a condition to R1 exclusions. The SDT believes that testing is already addressed under the condition described in the second bullet under R1 and it is not necessary to include it explicitly in the standard. Another stakeholder expressed concerns with R2 and its VSLs, and thought revisions to it were necessary.

Organization	Yes or No	Question 2 Comment
FirstEnergy	No	Pursuant to our suggested changes to the standard as shown in our comments to question 3, the SAR should be clear with respect to clarifying the intent of Requirement R1 and R3. We also suggest that testing should be added in addition to start-up and shut-down in R1 of the standard thus eliminating the need for CAN-0022.
<p>Response: Thank you for your comment. Please see our responses to your comments in Question 3. Testing certainly falls under the condition described in the second bullet under R1. As long as the GOP has notified the TOP, operation with the automatic voltage regulator not in service controlling voltage is allowed. Periods of testing should not be nearly as frequent as start-up and shutdown, and the separate notification requirements are not determined to be a burden to either the GOP or TOP. Revisions to Requirement R3 are outside the scope of this rapid revision project.</p>		
ACES Power Marketing Standards Collaborators	No	While the request for interpretation may have focused on Requirement R1, Requirement R2 should also be included in the SAR to fully address the issues in the interpretation. Constellation correctly points out in their request for interpretation that generating units that are in start up or shut down mode are not counted upon for reactive power or voltage support. Since Requirement R2 compels the Generator Operator to operate a generator to a voltage or reactive power schedule unless exempted by the Transmission Operator, the Generator Operator will still have to seek an exemption from the Transmission Operator for not controlling voltage during startup and shut down mode. If the Generator Operator is actually expected to

Organization	Yes or No	Question 2 Comment
		<p>maintain a voltage or reactive power schedule while the generating unit is not stable, reliability will be negatively affected because the generating unit is more likely to trip during these unstable operating modes. Ultimately, addressing Requirement R1 without addressing Requirement R2 still leaves the Generator Operator with the burden of an extra communication during the unstable startup and shutdown modes.</p>
<p>Response: Thank you for your comment. The SDT received approval from the SC to address deficiencies in Requirement R2, and has made further changes to R2 to address your concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4:</p> <p>R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule <sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).</p> <p>The footnote associated with the requirement states: "The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period." The SDT has revised R2 to change the word "output" to "schedule" to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:</p> <p>R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power <del>output</del> schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>), as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p>R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p>Footnote 3 is a revision of the footnote above:</p> <p><sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.</p>		

Organization	Yes or No	Question 2 Comment
NextEra Energy. Inc.	No	It is unclear that the SAR represents the issues raised in the interpretation, because it appears that one of the concerns was regional consistency, and it is not clear that the proposed language adequately provides for a uniform approach, particularly when notice is provided outside the context of start-up or shutdown.
<p>Response: Thank you for your comment. The SDT feels the proposed revisions to R1 will provide regional consistency by making the clarification in the actual standard language. The periods of start-up and shutdown were specifically addressed in the interpretation request.</p>		
Progress Energy	Yes	Partially
<p>Response: Thank you for your comment.</p>		
Exelon	Yes	The SAR language closely matches the interpretation request. However, as stated in response to Question 1, Exelon/Constellation feels that an interpretation on this issue raised is more appropriate than a rapid revision. There are larger concerns with VAR-002-1.1b as well as VAR-001-2 that need to be addressed. The scope of the SAR was limited to an interpretation request of a single requirement. The “rapid” process in developing the SAR did not include industry expertise which would have directed focus to these issues. Exelon/Constellation requests that work cease on this “rapid” approach and an interpretation of VAR-002-1.1b be submitted for industry review, with industry input in the development process.
<p>Response: Thank you for your comment. Please refer to the response provided in Question 1.</p>		
E.ON CLIMATE & RENEWABLES	Yes	Yes but the SAR only addresses the interpretation request. While the scope of an interpretation should only address the request, a standard revision should address and improve on issues within the entire standard. Limiting the revision to the single requirement makes a statement that the rest of the requirements are acceptable as written, which, from the opinions of many, is not the case for the VAR standards.

Organization	Yes or No	Question 2 Comment
<p>Response: Thank you for your comment. The project scope was recently revised to include R2 and its VSLs. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Imperial Irrigation District (IID)	Yes	
Northeast Power Coordinating Council	Yes	
Southwest Power Pool Regional Entity	Yes	
Bonneville Power Administration	Yes	
SPP Standards Review Group	Yes	
LG&E and KU Services	Yes	
Florida Municipal Power Agency	Yes	
Dominion	Yes	
Kansas City Power & Light	Yes	
We Energies	Yes	
ISO/RTO Standards Review Committee	Yes	



Organization	Yes or No	Question 2 Comment
MISO Standards Collaborators	Yes	
PPL Electric Utilities and PPL Supply NERC Registered Organizations	Yes	
Tennessee Valley Authority	Yes	
Arizona Public Service Company	Yes	
Salt River Project	Yes	
Massachusetts Attorney General	Yes	
Xcel Energy	Yes	
Dynegy	Yes	
NV Energy	Yes	
Westar Energy	Yes	
ExxonMobil Research and Engineering	Yes	
Oklahoma Gas & Electric	Yes	
Ingleside Cogeneration LP	Yes	

Organization	Yes or No	Question 2 Comment
Independent Electricity System Operator	Yes	
South Carolina Electric and Gas	Yes	
Manitoba Hydro	Yes	
Duke Energy	Yes	
Luminant	Yes	
Pepco Holdings	Yes	
Davis	Yes	
Essential Power, LLC	Yes	
ITC	Yes	
MidAmerican Energy	Yes	
Ameren	Yes	
EFH Luminant Energy	Yes	
Liberty Electric Power LLC	Yes	
American Transmission Company	Yes	

Organization	Yes or No	Question 2 Comment
ReliabilityFirst	Yes	
We Energies	Yes	
Indiana Municipal Power Agency		no comment

3. Does the proposed revision resolve the issue raised in the interpretation request? If No, please provide your suggestions to modify the standard.

**Summary Consideration:** Most stakeholders agree with the revisions, but many stakeholders made suggestions for revisions that add clarity to the standard. The intent of the rapid revision is to add clarity to the existing -approved standard regarding the AVR status during generator start up and shut down. The Standards Committee (SC) and the SDT felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request than would be possible with an Interpretation. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard.

Some industry comments addressed other aspects of VAR 002-1. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01 – Voltage and Reactive Planning and Control. In response to industry comments on the rapid revision, the SDT has revised the wording to add further clarity. The SDT has revised the wording of Requirement R1 and Measure M1 to add further clarity to AVR status during generator startup and shut down in the standard. The revised requirement and measure now read:

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown.

<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is preparing to go offline.

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being

started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2, and has made further changes to R2 to address concerns that were expressed by stakeholders. VAR-002-2b Requirement R2 is intrinsically linked to VAR-001-2 – Voltage and Reactive Control, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>), as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 for R2 above is a revision of the footnote from VAR-001-2, R4 above: <sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or Reactive Power schedule, the Generator Operator failed to meet the directed values for more than 15 minutes.

Organization	Yes or No	Question 3 Comment
Alliant Energy Corp. Services, Inc.	Negative	Alliant Energy believes this proposed revision will drive up the number of violations as it tries to define startup and shutdown modes for a generator, and there are so many different types of generators that it is not reasonable.
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. The SDT believes that by allowing the GOP to provide the TOP a procedure on AVR operation, compliance with VAR-002 R1 shall be simplified and the number of violations will decrease.</p>		
City and County of San Francisco	Negative	This revision is unnecessary and further complicates NERC Standard VAR-002. CAN-022 already addresses the acceptability of a Generator providing "blanket notification" regarding the operation of AVR during start-up and shut-down. If ramping time is to be specifically addressed in this Standard, then why not every other potential reason for having AVR out of service, such as testing.
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator startup and shut down. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach</p>		

Organization	Yes or No	Question 3 Comment
<p>provides additional clarity to the entities subject to the standard. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. The SDT believes that this clarification will minimize the need to refer to the CAN 022.</p>		
Midwest ISO, Inc.	Negative	<p>While it doesn't impact us directly, the VAR interpretation does not address the question raised by Constellation and the change to the standard adds no value and causes confusion.</p>
<p>Response: Thank you for your comment. The SDT cannot act on your comment without specific concerns with language that was developed to address the interpretation request. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing -approved standard regarding the AVR status during generator start-up and shut down. In that regard the SDT believes that it has directly addressed Constellations' issues. However, in response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service. The scope of the rapid revision project was also expanded to include R2 and its VSLs.</p>		
Tenaska, Inc.	Negative	<p>It would be preferred to simply write R1 as follows: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. The GOP is not required to be controlling voltage during periods of startup and shutdown, so the GOP shall provide the TOP with a statement specifying the MW level above which the generator will be operating with its AVR in service and controlling voltage. If the drafting team does not believe that change will satisfy the request for interpretation, then it is suggested that footnotes 1 and 2 be modified as follows: 1. Start-up is deemed to have ended when the unit is ramped up to a minimum continuously sustainable load level where all operational and environmental specifications are met, the AVR becomes operational in automatic mode per OEM specifications and the unit for entering continuous operation. 2. Shutdown is deemed to begin when the unit is ramped down to a load level where all operational and environmental specifications can no longer be met, the AVR is no longer operational in automatic mode per OEM specifications and the unit is</p>

Organization	Yes or No	Question 3 Comment
		preparing to go offline.
<p>Response: The SDT thanks you for your comments, and agrees that further clarification can be incorporated into the footnote. The SDT believes adding the words “continuously sustainable” addresses the environmental and OEM concerns. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service.</p>		
<p>Wisconsin Electric Power Co., Wisconsin Electric Power Marketing, Wisconsin Energy Corp.</p>	<p>Negative</p>	<p>We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shut down. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. The SDT believes that R1 has been clarified by allowing the GOP to provide procedures to the TOP, thereby improving the knowledge between the two entities.</p>		
<p>SPP Standards Review Group</p>	<p>No</p>	<p>While we like the direction that the two bullet points in R1 have taken, we feel the language could be modified to make the exceptions clearer. We would propose the following language.R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: o the Generator Operator has previously notified the Transmission Operator that the unit is being operated in start-up1 or shutdown2 mode pursuant to a procedure previously provided to the Transmission Operator; or, o the Generator Operator has</p>



Organization	Yes or No	Question 3 Comment
		<p>previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up or shutdown, or the unit is not equipped with an automatic voltage regulator. Our intent is to provide an exception to operating the automatic voltage regulator in automatic mode when a unit is in the start-up/shutdown mode, or when the automatic voltage regulator may not be available for service, which does not require the Generator Operator to provide real time notification to the Transmission Operator. Given this and the proposed changes above, NERC should consider providing a similar exclusion for the Transmission Operator in VAR-001-2, R6.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>Florida Municipal Power Agency</p>	<p>No</p>	<p>Please see comments to Question 1</p>
<p>Response: Thank you for your comment. Please see our responses to your comments in Question 1.</p>		
<p>FirstEnergy</p>	<p>No</p>	<p>We believe the wording is on the right track to clarifying the requirement. However, we believe that there needs to be more clarification with regard to the tie between Requirement R1 and R3. It should be clear that R1 is allowing an exception during start-up, shut-down, or testing, while R3 should be related to a generator unit status or capability change when the unit is already connected to the bulk electric system. Therefore, we suggest the following wording for R1 and R3 along with their respective measures:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up1, shutdown2 or testing mode pursuant to a real-time</p>

Organization	Yes or No	Question 3 Comment
		<p>communication to the Transmission Operator or a procedure previously provided to the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up, shut down, or tested with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]R3.1. A status or capability change (other than start-up, shut-down, or testing) 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.R3.2. A status or capability change (other than start-up, shut-down, or testing) on any other Reactive Power resources under the Generator Operator’s control and the expected duration of the change in status or capability.M4. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes (other than start-up, shut-down, or testing) identified in Requirement 3.</p>
<p>Response: The SDT thanks you for your comments. The rapid revision process addresses AVR during start-up and shutdown. The second bullet in R1 provides for other reasons, such as testing, that the AVR may be taken out of service. The SDT believes that R1 captures the issue and there is no need to re-enforce the language in other requirements. Since the words regarding testing were not incorporated, the changes to the measurements that you suggested are not required. The drafting team did modify M1 to add clarity. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		

Organization	Yes or No	Question 3 Comment
Dominion	No	<p>Per the Interpretation Request, Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time. The existing language in Requirement R1 states: “The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.” Dominion believes the existing standard language is clear and covers any situation when the generators automatic voltage regulator is not in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage). Dominion submits that the definition of start-up and shutdown (Footnotes 1 and 2 respectively) is unnecessary and inappropriate. Therefore, Dominion suggests retaining the existing language in Requirement 1 and Measure 1.</p>
<p>Response: The SDT thanks you for your comments, and agrees that you have captured Constellations’ concern. However, the industry agrees with Constellations’ concern that, as written, there is ambiguity in the exiting language and better clarity is desired. The Standards Committee and the SDT felt that a rapid revision provided greater clarity by allowing the GOP to provide the TOP with a procedure. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service.</p>		
Kansas City Power & Light	No	<p>While we like the direction that the two bullet points in R1 have taken, we feel the language could be modified to make the exceptions clearer. We would propose the following language.R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: o the Generator Operator has previously notified the Transmission Operator that the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure</p>

Organization	Yes or No	Question 3 Comment
		<p>previously provided to the Transmission Operator; or, o the Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up or shutdown, or the unit is not equipped with an automatic voltage regulator. Our intent is to provide an exception to operating the automatic voltage regulator in automatic mode when a unit is in the start-up/shutdown mode, or when the automatic voltage regulator may not be available for service, which does not require the Generator Operator to provide real time notification to the Transmission Operator. Given this and the proposed changes above, NERC should consider providing a similar exclusion for the Transmission Operator in VAR-001-2, R6.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
We Energies	No	<p>It is well known that compliance with this standard has been an issue in the industry. If the standard is opened up for revision, the entire standard should be reviewed, not just Requirement 1. The SDT definitions added for “start-up” and “shutdown” is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. There needs to be full industry input on any revisions to this standard.</p>
<p>Response: Thank you for your comments. We agree that GOP can “best determine when a unit is stable,” and we assume that if the unit is not stable, the GOP will not synchronize the unit until the unit controls prove to be stable. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown</p>		

Organization	Yes or No	Question 3 Comment
<p>parameters for any particular generator. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue while, providing operational flexibility for other reason for having an AVR out of service.</p>		
<p>MISO Standards Collaborators</p>	<p>No</p>	<p>While it doesn't impact us directly, the VAR interpretation does not address the question raised by Constellation and the change to the standard adds no value and causes confusion. We recommend the following language: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the unit is operated in start-up or shutdown mode or it notifies the Transmission Operator of the reason that the unit is not being operated in automatic voltage control mode.</p>
<p>Response: Thank you for your comment. The drafting team believes that the language contained in the requirements meets the intent of your suggested revision.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>No</p>	<p>The changes do not offer clarity on whether the Generator Operator must communicate to the Transmission Operator that it will not operate in automatic voltage control mode during start up or shut down. The previous version of Requirement R1 was open- ended and required the Generator Operator to notify the Transmission Operator when it cannot operate a generator in automatic voltage control mode. The changes only make it clear that one reason the Generator Operator may notify the Transmission Operator is that the generator is in start up or shut down mode. It attempts to subject this reason to a previously provided procedure. However, this only adds confusion because the main body of Requirement R1 still indicates that the Generator Operator has to notify the Transmission Operator. It is not clear if that is through the previously supplied procedure or if Generator Operator has to notify the Transmission Operator each time. The request does not address the ultimate issue in the request for interpretation. Constellation is seeking an exemption to the notification requirement during start up and shut down mode and we agree that it should be provided. Constellation states directly in the request for interpretation that the</p>

Organization	Yes or No	Question 3 Comment
		<p>generating units are not counted upon for voltage or reactive power during startup mode. While any reactive power that the unit supplies in startup or shutdown mode will certainly provide voltage support, Constellation is correct that they are not counted upon during startup and shutdown. It is obvious that a unit shutting down should not be required to control voltage as it will not even provide voltage support once it is off-line. Thus, asking it to support voltage does not further reliability. Because a unit is in startup mode, the Generator Operator should be given flexibility to get the unit to a stable operating point before putting the unit in automatic voltage control mode. Otherwise, the unit may trip and offer no voltage support. The ultimate issue in the request for interpretation can actually be addressed by adding an exception to the standard requirement. Adding an exception (or an “unless” clause) to NERC standards requirements is a long standing practice. Many requirements in NERC standards have a clause that states actions must be taken unless such action would violate safety, equipment, regulatory and statutory requirements. Some examples include IRO-001-1.1 R8, IRO-014-2 R8, and TOP-001-1a R3, R4, and R6. There are also other “unless” clauses for other reasons. One approach here that would solve the ultimate issue would be to simply add “unless the unit is in startup mode or shutdown mode” to both Requirements R1 and R2.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service and to incorporate the “unless start –up, shutdown mode” language in R1. The second bullet in R1 provides for other reasons, such as testing, that the AVR may be taken out of service. The SDT believes that R1 has been clarified by allowing the GOP to provide procedures to the TOP, thereby improving the knowledge between the two entities. This also allows the GOP to change their operations (i.e. AVR operations prior to synchronizing, or immediately after synchronizing, etc.).</p>		
Tennessee Valley Authority	No	<p>During startup, the defining point for start-up and shut down should be at the point of dispatch, not the minimum load point. Point of dispatch is more appropriate than the minimum load point because some units are still in an unstable operating zone at minimum load point, and it may be hours or longer before being dispatched. The footnotes under section B, R1, should be changed to the following: Start-up is</p>

Organization	Yes or No	Question 3 Comment
		deemed to have ended when the unit is released for dispatch by the Generator Operator. Shutdown is deemed to begin when the unit is released from dispatch by the Transmission Operator.
Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. "Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation."		
Massachusetts Attorney General	No	The request is for an interpretation. The standard ought to be made more explicit to say "except during startup and shutdown conditions", or "during normal operating conditions"
Response: The SDT thanks you for your comments. The drafting team believes that the wording of R1 meets the intent of your comment. R1 also allows the GOP to operate the generator without the automatic voltage regulator in service and controlling voltage if he has notified the TOP. This may be required under what may still be termed "normal operating conditions."		
Dynergy	No	It would be simpler to make R1 read as ".....unless the GOP has either notified the TOP or is in the startup or shutdown mode." Delete the new proposed language.
Response: The SDT thanks you for your comments. The drafting team believes that the wording of R1 meets the intent of your comment. R1 also allows the GOP to operate the generator without the automatic voltage regulator in service and controlling voltage if he has notified the TOP. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue.		
Westar Energy	No	Please clarify within the requirement that notification is not required with each start-up and shutdown if a procedure has been previously provided to the Transmission Operator. With the language "the Generator Operator has notified the Transmission Operator" before the bullets, it implies that notification is required with each start-up and shutdown.
Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has		

Organization	Yes or No	Question 3 Comment
<p>revised the proposed language to add clarity to this issue. The wording “previously notified” contained within R1 addresses your concern regarding the need to notify during each change of status.</p>		
<p>ExxonMobil Research and Engineering</p>	<p>No</p>	<p>Generator Operators do not provide a Transmission Operator with a startup or shutdown procedure. Startups and shutdowns are typically coordinated through an outage scheduling process which is akin to a simple notification and, in some cases, approval process. In the past, NERC has specifically stated that they would like to utilize standard requirements that provide a clear benefit to the bulk electric system. Outage scheduling and verbal notifications in conjunction with real time telemetry adequately communicate the state of a generator's operation to the Transmission Operator. Evidence of such coordination be sufficient to attend to the reliability concern addressed by Requirement R1 and demonstrate compliance with the inherent requirement to coordinate generator startups and shutdowns as it relates to the operation of the generator's AVR.</p>
<p>Response: Thank you for your comments. The SDT did not include verbiage stating that start-up or shutdown procedures are required; only procedures on how the AVR will be operated. In addition, in start-up and shutdowns are not coordinated through the BA outage scheduling process, but is a BA dispatch schedule.</p>		
<p>Oklahoma Gas &amp; Electric</p>	<p>No</p>	<p>The language in R1 should provide more clarity regarding the exceptions for operating a generating unit in automatic voltage control mode. The draft is still not as clear as it could be; therefore, the following language is suggested:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: o The unit is in start-up1 or shutdown2 mode and the Generator Operator has previously notified the Transmission Operator by providing a procedure that indicates the unit is operated in a mode other than automatic during start-up1 or shutdown2; o The Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up1 or shutdown2; or, o The Generator Operator has previously notified the Transmission Operator that</p>



Organization	Yes or No	Question 3 Comment
		the unit is not equipped with an automatic voltage regulator.
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator. The SDT does not believe that the proposed third bullet is necessary, as a generator that does not have an AVR is addressed in the second bullet.</p>		
Ingleside Cogeneration LP	No	<p>We believe that there are two clarifications that the project team needs to add in order to ensure industry-wide consistency. First, there should be no ambiguity around the “minimum load” point where start-up ends (footnote 1) and shutdown begins (footnote 2). It seems to make sense to tie it to the value that must be validated during the generator capacity testing required under MOD-025-2. Even though that Standard is still under development (Project 2007-09), both the MOD-025-2 validated value and the VAR-002 minimum load point define where stable generator operations begin and end. Second, as obvious as it may seem, the project team should clarify the point where the generation unit is no longer “connected to the interconnected transmission system.” We believe this is the point where the generator breaker is open, but other descriptions may be more technically accurate. Once a break-point has been decided, VAR-002 R1 should clearly indicate that a notification to the TOP of any kind is not necessary if the AVR is fully engaged and controlling voltage up through that time.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator. Based on the comments received, the drafting team revised the footnotes to:</p> <p><sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.</p> <p><sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator</p>		

Organization	Yes or No	Question 3 Comment
is prepared to go offline.		
Duke Energy	No	<ul style="list-style-type: none"> <li>o The revision to the standard did not go far enough to resolve the request for interpretation. Constellation sought clarification of R1 as to whether or not a communication must be conducted between a GOP and TOP during start-up or shutdown of a generator. We agree with the SDT’s proposed change to R1 which provides for two different types of notification from the GOP to the TOP for situations when the unit is not being operated in automatic voltage control mode. However R3 still requires a 30 minute notification on status or capability changes. The following language from approved CAN-0022 allows GOPs to provide a blanket advance notification to the TOP in lieu of separate notifications for each change in status. “Advance Notification: In the event that a registered entity did not notify its TOP in every instance that it operated in a mode other than automatic, CEAs are to verify whether a registered entity opted to provide a blanket notification to its TOP regarding when it would be operating in a mode other than automatic voltage control mode. For example, a blanket notification could refer to the appropriate times during: 1) generator testing, 2) generator start-up, and 3) generator shut-down. If the registered entity acted on this option, the CEA is to verify that the registered entity’s TOP received the blanket notification in lieu of separate notifications for each change in status.”The Standard Drafting Team should revise R3 similarly to R1, to fully incorporate the provisions of CAN-0022 into the standard. The following phrase from R1 should be added at the beginning of R3: “Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator,”</li> <li>o For clarity, we also suggest adding the phrase “of AVR status is made” after the word “notification” in Measure M1, and delete the phrase “is made” after “Transmission Operator”.</li> </ul>
Response: Thank you for your comments. The SDT tried to capture the concepts in CAN-022, allowing for advance notification by		

Organization	Yes or No	Question 3 Comment
		<p>incorporating procedures into R1. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator. The SDT believes that R1 captures the issue and there is no need to re-enforce the language in other requirements. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Revisions to R3 are outside the scope of this project. We have revised the measure M1, as you suggested.</p>
<p>Davis</p>	<p>No</p>	<p>Entergy - believes the Transmission Operator should not be required to have, be required to update or maintain, nor be required to know the startup / shutdown procedures of all of the generators connected to its system. TOPs should not be required to dig through a procedure to find out if the AVR “should be” in manual or automatic mode during startup or shutdown. We also think it is not the best operation of the system for the TOP to “assume” the status of the AVR. All of the proposed changes, especially the provision of startup / shutdown procedures, places additional burdens on the TOP. These burdens also place unwritten requirements on the TOP which auditors will definitely “explore” during the next review, in any form, of the TOP. We view the requirement that the TOP receive the startup / shutdown procedures as placing new requirements on the TOP, in violation of the Interpretation process. Per Constellation in its Request for Interpretation “A generator operator already communicates to the TOP that the unit is being started up or shutting down.”. It would appear that a GOP could include in its procedures a requirement that the TOP be informed of the status of the AVR when the GOP is communicating to the TOP that the unit is starting up or shutting down. TOPs only want to know the status of a generating unit’s AVR, is it in automatic or manual mode. That information can be provided when the startup / shutdown information is being communicated. Therefore we recommend the following changes to VAR-002-2b:Delete both of the new bullet points added to R1, including associated footnotes. Delete: o That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than</p>

Organization	Yes or No	Question 3 Comment
		<p>start-up or shutdown. And:1 Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline. Also delete the new wording in M1:If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>
<p>Response: Thank you for your comments. The revised requirement allows for notification to be made prior to Real-time operations using a procedure. In all likelihood, the generator is not going to be operated in AVR mode during start-up or shutdown. This is the basis for the revision to the standard. The requirement also allows for Real-time notifications and provides flexibility in operations during a time when the Generator Operator is more appropriately focused on maintaining generator stability and reliability. As per TOP-001, the TOP has significant reliability authority and is aware of the generators synchronized within its service area, as well as their Real and Reactive Power capabilities and limits (i.e., load limits, AVR status, etc). The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shut down. The majority of industry comments have been supportive and provide suggestions for further clarity, rather than deletion of the proposed changes. The SDT does not believe this clarifying language imposes additional burden on the TOP. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>Indiana Municipal Power Agency</p>	<p>No</p>	<p>IMPA believes that the SDT has introduced more ambiguity to the requirement by trying to define start up and shut down to cover all the generating units in the fleet under all operating conditions. In addition, a generating unit may be at its minimum load when going into shutdown which does not require any ramping down to minimum load (this condition does not meet the definition of shutdown per footnote 2).</p>
<p>Response: The SDT thanks you for your comments. Footnote 2 “ramped down to its minimum continuously-stable load and the</p>		

Organization	Yes or No	Question 3 Comment
<p>generator is preparing to go offline” does not include a time element. It does not preclude a generator that had been operating at minimum load for some time period to then begin preparing to go offline. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator.</p>		
<p>American Electric Power</p>	<p>No</p>	<p>It does not appear that the revisions to R1 fully address the concerns of the requestor. The response actually complicates rather than clarifies VAR-002. In addition, the first bullet point added to R1 is covered by other standards. Using only the second bullet along with its footnote, and removing the first bullet, would be a more appropriate change. The proposed changes in the first bullet point to requirement 1 provide no additional benefit either in terms of clarity or by increasing the reliability of the BES. In addition, these revisions assume that an entity actually needs to be notified of such procedures. Requirements which presuppose the needs or wants of an entity are to be avoided and would be a source of confusion.</p>
<p>Response: Thank you for your comment. The SDT does not believe that the first bullet under R1 is addressed in other standards. This scenario is the basis for the interpretation request that we received. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The majority of industry comments has been supportive and provides suggestions for further clarity, rather than deletion of the proposed changes. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>MidAmerican Energy</p>	<p>No</p>	<p>MidAmerican has reviewed the Background and Drafting Team Considerations and has concerns of the proposed Project 2011-INT-02. As stated in the Drafting team considerations; “The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode”. By stating (and it will be viewed by the industry as defining) what “start up and shut down” is, the SDT is expanding the technical issues that they have stated they would not do. The drafting team should not attempt to define,</p>

Organization	Yes or No	Question 3 Comment
		<p>start up, shut down, ramp up, or ramp down or place those words within a Requirement. (Note that within the PJM market, ramp is something that is associated with a schedule where by a GOP may not “ramp up” until five minutes before top of the hour but could be on line producing real and reactive power. The use of “ramp” within foot note 1 and 2 is ambiguous and will cause confusion.)</p> <p>There are too many different generator designs for the SDT to capture all possibilities by simply adding the proposed foot notes and bullets. In addition, whenever a foot note is used to clarify a Requirement, the Requirement becomes more ambiguous. Recommend that foot note 1 and 2 be deleted since they only provide examples to a certain type of generator. The SDT needs to write the Requirement whereby it can be universally used by all applicable entities. The SDT further states, “The drafting team believes it is up to the Generator Operator to formally notify the Transmission Operator of its procedures for placing the unit into automatic voltage control mode”. MidAmerican agrees with the SDT. NERC requirements should allow GOPs (industry experts) to appropriately document exemptions and design conditions where units take automatic actions to switch modes and provide those in advance to the Transmission Operator. NERC has allowed stakeholders the authority to design their own programs based on their asset characteristics as in FAC-008, CIP-002, EOP-001, etc. The SDT should allow each applicable entity within this Standard the same authority. MidAmerican recommends R1 be left as is and not be changed to incorporate the “interpretation”. R1 is already well written to assure that Generator Operators operate each generator connected to the interconnected transmission system in automatic voltage control mode (unless exempt by R2).MidAmerican recommends that R3 is clearly suited for incorporation of the requested interpretation. R3.1 is written to capture “...status or capacity changes on any generator...”, such as when a generator is not in the desired voltage response mode. MidAmerican recommends R3 to be rewritten to capture the intent of the interpretation to read:R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes unless advanced notification, including but not limited to operating guidelines documenting expected</p>

Organization	Yes or No	Question 3 Comment
		<p>status and capability changes, has been provided for any of the following: The noted “advance notification” will allow GOPs to establish an individual process for each generators that do not comply with R1 or fall within scope of R2. This will also allow GOPs and TOPs on how this advance warning is to be provided. It may be via written procedure, a mutually agreed SCADA point, etc.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The majority of industry comments have been supportive and provide suggestions for further clarity, rather than deletion of the proposed changes. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>Liberty Electric Power LLC</p>	<p>No</p>	<p>The use of the footnoted terms to define start-up and shutdown has the potential to create more compliance issues than are solved by the revision. Suggest removing the footnotes, remove the bullet points in R1 and change to read as follows: The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the generator is starting up or shutting down; or the Generator Operator has notified the Transmission Operator that the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. This formulation eliminates the confusion which will be caused when different auditors interpret "minimum load" and "preparing". Further, it eliminates records retention issues surrounding the data needed from each start-up or shutdown event for proof of compliance.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator.</p>		

Organization	Yes or No	Question 3 Comment
American Transmission Company	No	<p>The issue raised by the RFI is an inconsistent application of the Standard across the regions. The Rapid Revision expands the Standard by offering specific language to deal with a specific exception, rather than set the stage for consistency. The other issue is a perceived necessity for a Generator Operator to take the additional action of notification to the TOP to mitigate a symptom of the first issue. When a broader view of the Standards is taken, it can be argued that the existing language in VAR-002-2b R1, and R2 captures the possibility of an exception with the provision for exemption. This situation does not relieve the Transmission Operator from obligations to VAR-001-2 R6, “The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.” If an interpretation is to be made regarding Generators with design concerns, a reference to Attachment 1-TOP-005 1.2.4 of TOP-005-2a should be made. This data would give the necessary means to the TOP with which to be compliant with VAR-001-2 R6, facilitate Contingency Analysis in Real-Time, and provide a vehicle enabling Generator Operators to convey status of AVR without a phone call. The potential for any Generator lacking ability to provide AVR status data, or having any other extenuating circumstances regarding communication of status, may be handled through the exemption provisions as noted in VAR-002-1.1b R2 between the TOP and the GOP, or “unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.” as stated in TOP-005-2a R2.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The majority of industry comments have been supportive and provide suggestions for further clarity, rather than deletion of the proposed changes. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue while providing operational flexibility for other reason for having an AVR out of service. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to</p>		



Organization	Yes or No	Question 3 Comment
define the start-up, shutdown parameters for any particular generator.		
ReliabilityFirst	No	<p>ReliabilityFirst abstains on this ballot and offers the following comments for consideration:1. ReliabilityFirst fundamentally agrees that the included bullets somewhat resolve the issue raised in the interpretation request, though believes the first bullet is missing one key component. ReliabilityFirst believes the GOPs procedure for start-up/shutdown not only needs to be provided to the TOP but needs to be accepted by the corresponding TOP as well. ReliabilityFirst recommends the following language for consideration: “That the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to and accepted by the Transmission Operator; or.”</p>
<p>Response: The SDT thanks you for your response. However, the SDT does not believe that TOP acceptance should be incorporated into the requirements. Equipment status and limitations are identified by the GOP and are the responsibility of the GOP to transmit this information to the TOP.</p>		
Exelon	No	<p>Exelon/Constellation does not believe that the proposed revision resolves the issue raised in the interpretation request. Constellation requested that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. Defining the terms “start up” and “shut down” was not part of the request and created more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague.</p> <p>Footnote 1 attempts to define start up of a unit. However, there are several issues with this definition. First, the term “ramped up” is a qualifier that is not needed. Secondly, the term “minimum load” is too vague.</p> <p>The minimum load in a generator user manual may be different than the minimum load defined in a start up procedure. Lastly, the language stating “the unit is preparing for continuous operation” does not match any generator operator language and is unclear. The operator is the one who would prepare for continuous</p>

Organization	Yes or No	Question 3 Comment
		<p>operation, not “the unit.” The operator prepares for continuous operation long before reaching synch speed, so per Footnote 1, start up would end when the call is made to start up the unit. Footnote 2 attempts to define shut down of a unit. However, the definition used is only one of numerous ways a unit may be brought offline. Every unit has a unique sequence in which it is shut down. Therefore, Footnote 2 is too prescriptive. R.1 has been revised to state “pursuant to a procedure previously provided to the Transmission Operator.” The SDT has not considered that there are other forms of communication that could be utilized to meet the requirement R1. For example, a formal letter of understand between the GO and the TOP rather than having a procedure to satisfy the requirement. R.1 and the associated M.1 imply that this requirement is only applicable to the automatic voltage regulator. The SDT has not addressed “startup” and “shutdown” provisions for other reactive power resources (e.g. power system stabilizers). M.1 currently states “and no notification to the Transmission Operator is made” gives the impression that this applies to all notifications to the Transmission Operator related to unit “startup” or “shutdown”. This is ambiguous and needs to be clear that that the notification is related only to the status of the reactive resource (e.g., automatic voltage regulator).Exelon/Constellation maintains that this “rapid” revision should cease and an interpretation to VAR-002-1.1b be developed.</p>

Organization	Yes or No	Question 3 Comment
<p>Response: Thank you for your comments. The SDT agrees with your comment on “the generator is preparing.” We have edited this to state, “the generator is prepared.” The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. Flexibility has been given to the Generator Operators to provide documentation to the TOP that allows the GOP to define the start-up, shutdown parameters for any particular generator. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service. M1 has been changed to add clarity. In addition, the Power System Stabilizer is a component of the AVR. If the stabilizer is taken out of service, it will be the decision of the GOP to determine if the AVR can be operated without it; therefore, the SDT believes M1 as written is acceptable. Some industry comments addressed other aspects of VAR 002-1. Comments not within the scope of the rapid revision that you have addressed will be considered by the drafting team established to complete project 2008-01.</p>		
ISO/RTO Standards Review Committee	No	
Alberta Electric System Operator	Affirmative	While the AESO can agree with the proposed standard as written, we suggest the drafting team consider the revisions to R1 recommended by the Standards Review Committee of the ISO/RTO Council.
<p>Response: The SDT thanks you for your comment. In response to industry comments, the SDT has revised the proposed language to add clarity.</p>		
Detroit Edison Company	Affirmative	In the first condition of R1, "procedure" should be replaced by "notification." Same for M1. Condition will likely be caused by physical limitations of equipment and notification should provide TOP with all necessary information without requiring release of internal documents. Definitions of Start-up and Shut-down should be better defined. "...unit is preparing for..." leaves too much room for interpretation. Would suggest using "...unit is released for dispatch by electrical system control by plant operator" or similar. Same for Shut-down, "...unit is released by electrical

Organization	Yes or No	Question 3 Comment
		<p>system control to plant control to come offline" or similar. Footnote #3- not sure why this statement is in the VAR-002 standard. I suggest removing this statement. (Comments by Eizans, Depriest &amp; Kujala)</p>
<p>Response: The SDT thanks you for your comment. In response to industry comments, the SDT has revised the proposed language to add clarity.</p>		
Progress Energy	Yes	<p>Yes - partially. It is to be appreciated that Constellation’s interpretation question was addressed at the time when the standard was being revised. However, at the same time, new stipulations were added in Requirements R1 and measures M3.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service. Some industry comments addressed other aspects of VAR 002-1. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
Ameren	Yes	<p>We agree that the proposed revision addresses the issue raised for VAR-002, R1 interpretation.</p>
<p>Response: The SDT thanks you for your comment.</p>		
E.ON CLIMATE & RENEWABLES	Yes	<p>E.ON Climate &amp; Renewables believes the proposed revision, which attempt to provide greater clarity, addresses the interpretation request, may result in additional confusion based on unit needs and terminology. Using the terms “start up” and “shut down” creates more confusion than it resolves, as the proposed definitions in the footnotes are unclear and vague.</p>

Organization	Yes or No	Question 3 Comment
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service.</p>		
<p>PPL Electric Utilities and PPL Supply NERC Registered Organizations</p>		<p>As previously stated, the term “minimum load” has various meanings depending upon the circumstances. There is, for example, the “min-load pickup” needed to prevent a newly-synchronized generator from slipping into a reverse-power situation, the “minimum stable load” for unit operation (this is what we think the SDT had in mind), the “minimum environmentally-compliant load,” and the “minimum commercial load” a unit may cycle-to at night when power prices fall. We believe such issues could have been vetted during the SDT process.</p>
<p>Response: The SDT thanks you for your comment. The footnotes have been revised for clarity to include the term “continuously sustainable,” to address your concern.</p>		
<p>Imperial Irrigation District (IID)</p>	<p>Yes</p>	
<p>Northeast Power Coordinating Council</p>	<p>Yes</p>	
<p>Southwest Power Pool Regional Entity</p>	<p>Yes</p>	
<p>Bonneville Power Administration</p>	<p>Yes</p>	
<p>Texas RE</p>	<p>Yes</p>	
<p>LG&amp;E and KU Services</p>	<p>Yes</p>	

Organization	Yes or No	Question 3 Comment
PacifiCorp	Yes	
Arizona Public Service Company	Yes	
Salt River Project	Yes	
Xcel Energy	Yes	
NV Energy	Yes	
Independent Electricity System Operator	Yes	
South Carolina Electric and Gas	Yes	
Manitoba Hydro	Yes	
Luminant	Yes	
Pepco Holdings	Yes	
Essential Power, LLC	Yes	
ITC	Yes	
EFH Luminant Energy	Yes	

4. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here.

**Summary Consideration:** Several stakeholders provided suggested enhancements to the language of R1 and R2 to provide additional clarity. The SDT has revised R1 and R2 to address these comments.

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode, as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off, and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

VAR-002-2b Requirement R2 is intrinsically linked to VAR-001-2 – Voltage and Reactive Control, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule 1 at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added footnote 3 to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power ~~output~~ **schedule**<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 for R2 is a revision of the footnote from VAR-001-2, R4:

<sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.

Organization	Yes or No	Question 4 Comment
AEP, AEP Marketing	Negative	Comments are being submitted via electronic form by Thad Ness on behalf of American Electric Power.
Response: Thank you for your comment. Please see response to those comments.		
AEP Service Corp.	Negative	Comments are being submitted via electronic form by Thad Ness on behalf of American Electric Power



Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. Please see response to those comments.		
Brazos Electric Power Cooperative, Inc.	Negative	Please see the formal comments submitted by ACES Power Marketing.
Response: Thank you for your comment. Please see response to those comments.		
City Utilities of Springfield, Missouri	Negative	City Utilities of Springfield, Missouri supports the comments submitted by the SPP Standards Development group.
Response: Thank you for your comment. Please see response to those comments.		
Dominion Resources Services	Negative	Dominion believes the existing standard language is clear and covers any situation when the generators automatic voltage regulator is not in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage). Dominion submits that the definition of start-up and shutdown (Footnotes 1 and 2 respectively) is unnecessary and inappropriate. Therefore, Dominion suggests retaining the existing language in Requirement 1 and Measure 1.
Response: Thank you for your comment. The SDT believes the proposed language, as modified based on industry comments, provides greater clarity and a more clear understanding of the requirements and the measures.		
Dynergy Inc.	Negative	See my previous comments submitted 3/1/12.
Response: Thank you for your comment. Please see response to those comments.		
Electric Power Supply Association	Negative	EPSA concurs with the comments provided by Constellation.

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. Please see response to those comments.		
Energy Services, Inc.	Negative	Comments submitted from Entergy.
Response: Thank you for your comment. Please see response to those comments.		
FirstEnergy Corp., FirstEnergy Energy Delivery, FirstEnergy Solutions	Negative	Please see FirstEnergy's comments submitted through the formal comment period.
Response: Thank you for your comment. Please see response to those comments.		
Great River Energy	Negative	Please see the formal comments submitted by the MRO NSRF.
Response: Thank you for your comment. The SDT did not receive the comments from the MRO NSRF.		
MidAmerican Energy Co.	Negative	See the MidAmerican and MRO NSRF comments. It is inappropriate to define "start up" and "shut down". The drafting team cannot appropriately capture all of the varied power plant and combustion turbine designs governing how and when units will automatically switch into and out of Automatic Voltage Regulation. The SDT should not change R1, but should add the following to R3 after the words 30 minutes, "...unless advanced notification including but not limited to operating guides describing the expected status and capability changes was made for any of the following: "
Response: Thank you for your comments. The SDT believes that start-up and shutdown can be defined in a footnote for this standard. The language in R1 does not attempt to define when an AVR is switched into or out of operation as that is the responsibility of the GOP. R1 provides the obligation for the GOP to notify the TOP of when he is operating the generator without the AVR in automatic operation controlling voltage. The SDT did not receive the comments from the MRO NSRF.		
Nebraska Public Power	Negative	NPPD is joining comments submitted by the MRO NSRF (NERC Standards Review

Organization	Yes or No	Question 4 Comment
District		Forum).
Response: Thank you for your comment. The SDT did not receive the comments from the MRO NSRF.		
New York Independent System Operator	Negative	comments have been submitted, we support the change except for the need of the generator to provide procedures to the TOP.
Response: Thank you for your comment. The language inR1 has been modified to include the option of a “Real-time communication” or procedure to the TOP.		
North Carolina Electric Membership Corp.	Negative	Please see the formal comments submitted by ACES Power Marketing
Response: Thank you for your comment. Please see response to those comments.		
Occidental Chemical	Negative	See comment form submitted by Ingleside Cogeneration LP
Response: Thank you for your comment. Please see response to those comments.		
Ohio Edison Company	Negative	Please see FirstEnergy's comments submitted through the formal comment period.
Response: Thank you for your comment. Please see response to those comments.		
Oklahoma Gas and Electric Co.	Negative	See comments by OG&E and SPP
Response: Thank you for your comment. Please see response to those comments.		
Old Dominion Electric Coop.	Negative	See comments supplied by ACES Power Marketing.
Response: Thank you for your comment. Please see response to those comments.		
Omaha Public Power District	Negative	OPPD is supporting MRO (Regional Entity) comments. Please see MRO NSRF

Organization	Yes or No	Question 4 Comment
		comments.
Response: Thank you for your comments. The SDT did not receive the comments from the MRO NSRF.		
PacifiCorp	Negative	<p>Comment on Footnote 1: Footnote 1 currently reads “Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operations.” PacifiCorp strongly suggests that footnote 1 be re-written to read as follows: “Start-up is deemed to have ended when the unit is ramped up to its minimum stable load...” Revising the footnote in this manner would remove the ambiguity around the meaning of the phrase “and the unit is preparing for continuous operation” which does not provide any additional clarity to the concept of “minimum load.” Adding the clarification of “minimum stable load,” however, defines a specific point in time that is likely to be vary among systems.</p> <p>Comment on Severe VSL for R1: PacifiCorp does not believe that it is appropriate that all violations of R1 should be treated as “severe” violations for at least two separate reasons: 1. A mere failure of the responsible entity to give notice to the Transmission Operator should not be treated as a severe violation on its own. Absent an actual reliability risk to the BES, a mere clerical error, a failure to timely report, or a failure to document the timely report, should never be raised to the level of a severe violation.</p> <p>Designating a clerical error for a single unit in an otherwise robust VAR-002 compliance regime to be a “severe” violation seems contrary to the current effort to focus limited industry and regulatory resources on elements of compliance that will make the most significant impact on the reliability of the BES. Violations that are of a minimal risk to reliability (such as clerical and single unit errors) should be treated in the VSL table in the “Lower” category, with appropriate escalations towards “severe” as multiple units or habitual or willful non-compliance is identified. This should particularly be the case as NERC moves to a compliance enforcement initiative, the Find, Fix, Track and Report mechanism, that permits no finding of penalty for lesser-risk violations related to documentation or administrative errors. 2. Treating all violations as “severe” does not provide flexibility to NERC or the Regional Entities (REs) to address actual severe violations that impact the reliability of the Bulk Electric</p>

Organization	Yes or No	Question 4 Comment
		<p>System (BES), and it fails to provide appropriate incentives/disincentives for either the registered entities with robust compliance programs or a compliance history with repeat violations. The registered entity that habitually operates in manual mode or never reports an AVR or PSS outage should not be treated by the RE in the same manner as a conscientious operator who experiences an uncharacteristic reporting lapse (which may occur while attention is rightfully diverted to fixing actual system problems). It takes multiple units operating in manual mode to negatively affect the reliability of the BES, and the VSL table should be modified to reflect higher potential sanctions for repeat offenders and/or those registered entities without a robust VAR-002 compliance program. An escalating VSL table will serve as a better incentive for all registered entities to develop a meaningful VAR-002 compliance regime. The same reasoning should be applied to the VSLs for R3.</p>
<p>Response: Thank you for your comments. Footnote 1 has been modified to include the language “minimum continuously sustainable load and the generator is prepared for continuous operation” to address your concern. The SDT agrees with your concerns on the VSLs, and the VSL table has been modified accordingly.</p>		
<p>PSEG Energy Resources &amp; Trade LLC, PSEG Fossil LLC, Public Service Electric and Gas Co.</p>	<p>Negative</p>	<p>PSEG entities support Constellation’s separately-submitted comments.</p>
<p>Response: Thank you for your comment. Please see response to those comments.</p>		
<p>Southern Company Generation</p>	<p>Negative</p>	<p>See comments submitted by Antonio Grayson on behalf of Southern company.</p>
<p>Response: Thank you for your comment. Please see response to those comments.</p>		
<p>Tennessee Valley Authority</p>	<p>Negative</p>	<p>Please see TVA's comments submitted through the electronic comment form.</p>

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. Please see response to those comments.		
U.S. Army Corps of Engineers	Negative	See MRO- NSRF comments
Response: Thank you for your comments. The SDT did not receive the comments from the MRO NSRF.		
Westar Energy	Negative	Agree with the concept, disagree with wording in the Requirement
Westar Energy	Negative	While we agree with the concept, we do not agree with the language in the requirement
Response: Thank you for your comment. The language in Requirement R1 has been modified to provide additional clarity.		
Westar Energy	Negative	Please see Westar Energy comments submitted electronically.
Response: Thank you for your comment. Please see response to those comments.		
Xcel Energy, Inc.	Negative	<p>Q1: Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, “minimum load”</p> <p>Additional Comments: Xcel Energy would request that the VSL’s be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.</p>

Organization	Yes or No	Question 4 Comment
<p>Response: The SDT has modified the term “minimum load” to the term “minimum continuously sustainable load” to provide additional clarity. The SDT agrees with Xcel’s comment on the VSL’s for R2, and the VSL table has been modified to address this concern.</p>		
SPP Standards Review Group	No	None
Oklahoma Gas & Electric	No	No additional comments on the SAR or proposed Standard.
Luminant	No	<p>With respect to R1 VSL - The original standard had varying amounts of incidents (failure to notify the TO that the AVR is not in voltage control mode) and was replaced with one failed incident under the Severe category. Varying amount of incidents should be placed in the VSL as follows: Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p> <p>With respect to R3 VSL - The original standard had varying amounts of incidents (failure to notify status change in AVR/PSS/reactive power source within 30 minutes) and was replaced with one incident under High (R3.1 or R3.2) and Severe category (R3.1 and R3.2). Varying amount of incidents should be placed in the VSL as follows: Level 1: One incident of failing to notify the Transmission Operator; Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p>
<p>Response: Thank you for your comment. R1: Failure to notify the TOP is a violation of the requirement. Since this is a binary type requirement, the VSL guidelines require only a single Severe VSL. R3 is outside the scope of the drafting team.</p>		
We Energies	No	The revisions to the standard do not adequately address the industry concerns in the Interpretation request. The SDT did recognize that there are sound reasons for some

Organization	Yes or No	Question 4 Comment
		<p>generators to be operated in the manual AVR mode during startup or shutdown, and the standard should allow for this. The standard and its bullets added to R1 provide the flexibility needed in the operation of turbine-generator AVR's to ensure stability of the unit and overall system reliability. However, the definitions added for "start-up" and "shutdown" is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. The standard does need definitions for these terms, which may vary from unit to unit. We Energies recommend Requirement 1, bullet footnotes 1 and 2, define minimum load as 20 Megawatts when starting or stopping a unit. Also, there is a need to clearly address the requirements for wind farms, which need flexibility in the operating mode due to the generator AVR technology, generator size and intermittent nature. We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, elimin</p>
<p>Response: Thank you for your comments. The SDT believes that the use of 20 MWs to place the AVR in service is inappropriate. This may be applicable to some units in the We Energies service area, but is inappropriate for a North American standard. The SDT believes the standard, as modified, allows the flexibility for the GOP to operate the generator with the AVR in manual during the start-up and shutdown periods, as long as he has communicated this information to the TOP. That communication can be either in Real-time or by a procedure that is given to the TOP in advance. This minimizes the need for notifications between the GOP and the TOP during the start-up and shutdown periods, as desired by the interpretation request.</p>		
Imperial Irrigation District (IID)	No	
Bonneville Power	No	



Organization	Yes or No	Question 4 Comment
Administration		
Tennessee Valley Authority	No	
Arizona Public Service Company	No	
Salt River Project	No	
Massachusetts Attorney General	No	
Dynergy	No	
NV Energy	No	
Westar Energy	No	
ExxonMobil Research and Engineering	No	
South Carolina Electric and Gas	No	
Duke Energy	No	
Pepco Holdings	No	
Essential Power, LLC	No	
Liberty Electric Power LLC	No	

Organization	Yes or No	Question 4 Comment
Bonneville Power Administration	Affirmative	please refer to BPA’s submitted comments
Response: Thank you for your comment. Please see the response to those comments.		
Electric Reliability Council of Texas, Inc.	Affirmative	ERCOT supports the comments submitted by the IRC SRC.
Response: Thank you for your comment. Please see the response to those comments.		
Manitoba Hydro	Affirmative	Please see comments submitted by Joe Petaski (Manitoba Hydro)
Response: Thank you for your comment. Please see the response to those comments.		
PPL EnergyPlus LLC	Affirmative	Please refer to comments filed by PPL Supply
Response: Thank you for your comment. Please see the response to those comments.		
PPL Generation LLC	Affirmative	Although PPL Generation is voting affirmative, we submitted comments for the Standard Drafting Team's consideration under the group name PPL Electric Utilities and PPL Supply NERC Registered Organizations.
Response: Thank you for your comments. Please see the response to those comments.		
Northeast Power Coordinating Council	Yes	NERC has indicated that footnotes should not be used in a standard. Footnotes 1, 2, and 3 (not included as part of this proposed revision) should be removed. Footnotes 1 and 2 define start-up and shutdown. Neither term is defined in the NERC Glossary and the terms as used in this standard should be prefaced with “generator” to eliminate any confusion with the start-up or shutdown of a network or load. If generator start-up and generator shutdown are unique to this standard, then they can be defined in the wording of the requirement. If they are not unique to this

Organization	Yes or No	Question 4 Comment
		<p>standard, they must be included in the NERC Glossary. To support this “rapid revision”, the process for including the terms in the NERC Glossary should be made to accommodate a “rapid revision”. Footnote 3 is a technical explanation, and should not be included in this standard.</p>
<p>Response: Thank you for your comments. NERC advised the SDT that the use of footnotes was acceptable for the “rapid revision” process. However, it is possible to use these terms in the requirement. The SDT considered this change, but decided to keep the terms as footnotes. (2) Footnote 3 is a technical explanation, and the SDT believes it doesn’t do any harm to leave the footnote in place. Further consideration of removing this footnote can be given during the activities of Project 2008-01.</p>		
<p>Southwest Power Pool Regional Entity</p>	<p>Yes</p>	<p>This has been our practice in assessing compliance in that we ask for verification in the entities procedures that the GOP has communicated to the TOP those units that start up or shut down in manual mode. We view this procedure provided to the TOP in advance as the means of notification and further communication at each manual start up and shut down is not necessary.</p>
<p>Response: Thank you for your comment.</p>		
<p>Texas RE</p>	<p>Yes</p>	<p>We support the intent and direction of this revision, but we provide several suggestions and corrections that should be addressed.</p> <ol style="list-style-type: none"> <li>1. When a unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown, the GOP should be required to provide the reason to the TOP as part of its notification.</li> <li>2. We suggest deleting footnotes 1 and 2, which attempt to define “start-up” and “shut-down.” There are differences in start-up and shut-down procedures and terminology in different regions and markets that make any attempt to globally define them problematic. These definitions are not needed here, and the details can be left to local practice, GOP procedures, and agreements between GOPs and TOPs.</li> <li>3. In footnote 3, we suggest changing “this WILL lead to a change in the associated Facility Ratings” to “this MAY lead to a change in the associated Facility Ratings,”</li> </ol>

Organization	Yes or No	Question 4 Comment
		<p>because the reactive power capability may not be the most limiting factor considered in a Facility Rating methodology.</p> <p>4. In Requirement R5, there appears to be a disconnect between the “Generator Owner’s” obligations in the first paragraph, and the reference to “Generator Operator” in subrequirement R5.1. It appears that these references should refer to the same entity - which one is it supposed to be? The Measures will need to be revised to match the requirement.</p> <p>5. The Data Retention provisions don’t refer to the correct measures, and they should be corrected and updated as needed. (For example, M5 applies to GO but is not referenced in Data Retention.) Also, the reference to “Compliance Monitor” should be updated to “Compliance Enforcement Authority.”</p> <p>6. We understand that revisions to the VSLs may be considered outside of the scope of this project, but some of the VSLs are technically insufficient and need to be corrected. In particular, the 5-10-15% limits in the VSL for R2 are much too large for this technical context, and a high or severe VSL should apply for a much smaller voltage variation.</p>
<p>Response: Thank you for your comment. (1) We agree, and this is addressed in the 2<sup>nd</sup> bullet of R1. (2) The SDT team was assigned the task of addressing the generator AVR status during start-up and shutdown; therefore, it was necessary to define these terms. (3) The SDT concurs, and has made the revision to Footnote 3. (4) This is a valid point; however, this is outside the scope of the rapid revision assigned to the SDT. These revisions can be considered under Project 2008-01. (5) This has been corrected, as per your suggestion. (6) The VSL table has been modified for R2 based on timing rather than percentage.</p>		
LG&E and KU Services	Yes	<p>LG&amp;E and KU Services recommend the proposed additions to R1 also be applied to R2 using the following language: R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o</p>

Organization	Yes or No	Question 4 Comment
		<p>That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p>
<p>Response: Thank you for your comment. The SDT was not originally assigned the task of addressing R2. Since then, we have made some minor changes to this requirement. We feel that it is redundant to add this verbiage to R2 since it is a repetitive to R1.</p>		
FirstEnergy	Yes	<p>We believe that the proposed implementation plan does not afford entities adequate time to develop any required procedures pursuant to Requirement R1. We suggest the implementation plan effective date be “The first day of the 2nd calendar quarter after applicable regulatory approval”.</p>
<p>Response: Thank you for your comment. The use of the word “procedure” was intended to mean as the dictionary defines it. “Procedure” is defined as a particular way of accomplishing something, or a series of steps to accomplish something. This can be detailed steps, or merely a few simple steps (i.e., when the generator reaches minimum load, the AVR will be placed into service and the TOP shall be formally informed). The SDT believes that compliance with the modification by the GOP is part of normal operating procedures for all generators. The SDT also added the option of using a “Real-time communication” for the notification to the TOP if “procedures” have not been communicated to the TOP.</p>		
Dominion	Yes	<p>If the language proposed in the Project is adopted, then Dominion suggests in the bullets added under R1, M1, and in footnotes 1 and 2; that the word ‘unit’ be replaced with ‘generator’, for consistency, as generator is already used in the Standard.</p>

Organization	Yes or No	Question 4 Comment
<p>Response: Thank you for your comment. The SDT agrees with your edit, and has modified the language accordingly.</p>		
<p>ISO/RTO Standards Review Committee</p>	<p>Yes</p>	<p>The IRC/SRC proposes the following changes to the draft:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or. o That it notifies the Transmission Operator the reason that the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. We agree with the proposal however, there is no need for the Generator Operator to provide its procedure to the Transmission Operator.</p>
<p>Response: Thank you for your comment. The use of the word “procedure” was intended to mean as the dictionary defines it. “Procedure” is defined as a particular way of accomplishing something, or a series of steps to accomplish something. This can be detailed steps, or merely a few simple steps (i.e., when the generator reaches minimum load, the AVR will be placed into service and the TOP shall be formally informed).</p>		
<p>MISO Standards Collaborators</p>	<p>Yes</p>	<p>Constellation noted that calling the TOP and notifying them that a generator has its voltage regulator off automatic during startup or shutdown is unnecessary and a distraction from the GOP’s primary task at hand. It is common practice to take the voltage regulator off automatic during startup and shutdown. The TOP is not relying on VAR support from the generator during startup or shutdown. A strict reading of the new R1 implies that the GOP must still make the phone call, but rather than saying the voltage regulator is out of automatic, they must call to say that the voltage regulator is out of automatic because the unit is starting up or shutting down in accordance with an established procedure.</p>

Organization	Yes or No	Question 4 Comment
<p>Response: Thank you for your comment. The SDT does not agree that R1 requires the GOP to notify the TOP during start-up or shutdown. If the GOP has provided its procedure for AVR operation during start-up or shutdown, then no additional notifications are required.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>Yes</p>	<p>We recommend modifying the version history slightly by adding “previously approved” as a description before the VSLs and VRFs. Someone reading this version history in the future may believe that the VSLs and VRFs were created during this posting and did not previously exist.</p>
<p>Response: Thank you for your comment. The SDT agrees. The SDT has made modifications to the VSL table to improve the VSLs.</p>		
<p>Progress Energy</p>	<p>Yes</p>	<p>Section B: Requirement R1: Revise bullet points in requirement R1 as under: o That the unit is being operated in start-up1 or shutdown2mode; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. Revise definitions of startup and shutdown as:Note 1 Start-up is deemed to have ended when the unit is being ramped up for continuous operation. Note 2 Shutdown is deemed to begin when the unit is being ramped down and is preparing to go offline. Section B: Requirement R3: Revise requirement R3 as under:R3. For remotely started units with no onsite control room operator, transmission of information via SCADA is an acceptable form of conveying the AVR operating mode to the TOP. However, for all other generating units, each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] Section C: Measures M3: Revise as under.Delete the sentence “If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or</p>

Organization	Yes or No	Question 4 Comment
		attached.”Section D: Violation Risk Factors: Putting the criteria for different levels of violation risk factor in a matrix form is fine but do not revise existing penalties.
Response: Thank you for your comments. The SDT has modified the language in R1 to provide greater clarity. Revisions other than those required to address the interpretation request through a rapid revision are outside the scope of this process and can be addressed under Project 2008-01.		
FMPP	Yes	The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator has notified the Transmission Operator.Why is "Operator" deleted? It now states the Generator has notified the TOP. A Generator is not an entity. How can a non-entity notify anyone?
Response: Thank you for your comment. The SDT version contains the word “Operator.”		
Xcel Energy	Yes	Xcel Energy would request that the VSL’s be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.
Response: Thank you for your comment. The VSLs for R2 have been revised to base the severity level on the time duration that the Generator Operator failed to maintain the voltage or Reactive Power schedule.		
Independent Electricity System Operator	Yes	The proposed implementation plan conflicts with Ontario regulatory practice respecting the effective date of the standard. It is suggested that this conflict be removed by appending to the implementation plan wording, after “applicable regulatory approval” in the Effective Dates Section A5 of the draft standard and P. 1



Organization	Yes or No	Question 4 Comment
		of the Implementation Plan, to the following effect:”, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.”
Response: Thank you for your comment. The SDT has made the revisions, as requested.		
Manitoba Hydro	Yes	<p>-Will attestations or other documentation be required to demonstrate that generating units are not operated in start-up or shut-down mode? If so, this adds an unnecessary compliance burden.</p> <p>-The data retention requirements are too uncertain for two reasons</p>
Response: Thank you for your comment. The SDT team change to R1 allows the GOP to submit a procedure to the TOP concerning the operation of the AVR. This will reduce the compliance burden. We cannot address your data retention concerns without the specific issues that you have.		
Indiana Municipal Power Agency	Yes	<p>IMPA believes the requirements for VAR-002 are very good and that the request by Constellation should have really been handled through the interpretation process. This was not a good request for the “Rapid” approach. An interpretation could have been used to clarify that an entity can used advance notice or a standing procedure with the TOP in order to give proper notice of the voltage regulator in manual during startup or shutdown. If requested by the TOP or if even needed, the GOP should be given the flexibility to define the startup or shutdown period for its generating units.</p>
Response: Thank you for your comment. The NERC Standards Committee felt this was a good candidate for the rapid revision process. Your comment will be forwarded to the NERC Standards Committee. The GOP does have the flexibility to define the star-up or shutdown period for its generating units.		
American Electric Power	Yes	<p>While we do not completely disagree with the proposed changes, the revisions beg the question if R1 is even necessary given the content of R2? Perhaps the best way to provide the clarity being sought is to remove R1 entirely and simply retain R2.How about simply stating that an entity shall operate in the agreed-upon mode unless</p>

Organization	Yes or No	Question 4 Comment
		<p>GOP notifies the TOP otherwise?</p>
<p>Response: Thank you for your comment. The SDT believes R1 provides direction to the GOP to operate with an AVR, while R2 provides direction to the GOP on how to operate the AVR.</p>		
<p>MidAmerican Energy</p>	<p>Yes</p>	<p>Delete the words “and the expected duration” to R3.1 and 3.2. Since this is a revision to the standard, the drafting team should consider deletions as wells as additions. MidAmerican contends that the words “and the expected duration” provide no practical Bulk Electric System reliability benefit and should be removed. Delete all added material to M1 or have M1 match revised wording in R1. Revise any VRFs or VSLs appropriately.</p>
<p>Response: Thank you for your comment. Revisions to R3 are outside the scope of this rapid revision process. Those modifications can be considered under Project 2008-01.</p>		
<p>Ameren</p>	<p>Yes</p>	<p>As stated above, we agree that the proposed revision addresses the issue raised for VAR-002, R1 interpretation. However, we suggest SDT to review how the proposed revision would impact VAR-001, R6. In particular, our concern is with regard to the first bullet in the proposed revision. The issue is while the GOP is required to provide the start-up and shutdown procedure, we believe that it would not be enough for the TOP to meet VAR-001-2, R6. This requirement is: R6. The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers. R6.1. When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule. Our concern is, to meet the above requirement, now TOP has to keep track of all generating units which is in a start-up and/or shut down mode, keep monitoring units' dispatch level, and when the unit reaches this pre-defined dispatch level (provided in the GOP procedure in advance) then assume that the status of AVR will change and provide a directive to the GOP. If our concern is not valid, please address it and clarify it in the next round of the revision. Assuming that</p>

Organization	Yes or No	Question 4 Comment
		<p>our concern is valid, we suggest the following changes to the proposed draft:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup>mode pursuant to a procedure previously provided to the Transmission Operator; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown, or o That the unit is being operated in start-up or shut down mode with automatic voltage control mode contrary to the procedure previously provided to the Transmission Operator.<sup>1</sup> Start-up is deemed to have ended when the unit is ramped up to its minimum load (specified in the GOP procedure) and the unit is preparing for continuous operation. <sup>2</sup> Shutdown is deemed to begin when the unit is ramped down to its minimum load (specified in the GOP procedure) and the unit is preparing to go offline.</p>
<p>Response: Thank you for your response. We agree with your concern; however, we feel by including a requirement that the GOP shall provide a procedure to the TOP, we have minimized work for both the GOP and the TOP and improved communications. In some regions, this method of using procedures is already being done.</p>		
EFH Luminant Energy	Yes	<p>R1 VSL - The original standard had varying amounts of incidents (failure to notify the TO that the AVR is not in voltage control mode) and was replaced with one failed incident under the Severe category. Varying amount of incidents should be placed in the VSL as follows: Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p> <p>R3 VSL - The original standard had varying amounts of incidents (failure to notify status change in AVR/PSS/reactive power source within 30 minutes) and was replaced with one incident under High (R3.1 or R3.2) and Severe category (R3.1 and</p>

Organization	Yes or No	Question 4 Comment
		<p>R3.2). Varying amount of incidents should be placed in the VSL as follows: Level 1: One incident of failing to notify the Transmission Operator; Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p>
<p>Response: Thank you for your comment. R1 calls for the GOP to notify the TOP each time that the generator is not operated in AVR mode. This is a binary requirement and the VSL reflects this. R3 is outside the scope of the rapid revision project.</p>		
<p>American Transmission Company</p>	<p>Yes</p>	<p>Constellation asked for an interpretation for consistent application of the Standard by the regions. The “Rapid Revision” and the scope of the changes went beyond what was originally raised in the RFI and actually changed the Standard. As stated in the Drafting Team Considerations; “The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode”. (an example of how it changed the Standard)By stating (and it will be viewed by the industry as defining) what “start up and shut down” is in footnotes 1 and 2 below, the SDT is expanding the technical issues that they have stated they would not do. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. Footnote 1 - Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. Footnote 2 - Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.</p>
<p>Response: Thank you for your comment. The SDT believes that the only way to address the interpretation was to reference when start-up and shutdown begin and end. In this manner, the GOP can provide a procedure to the TOP on the unit status for this operating period.</p>		
<p>Exelon</p>	<p>Yes</p>	<p>To reiterate, a standard revision is not preferable to an interpretation on VAR-002-1.1b R1. However, a standard revision project is much needed for VAR-001-2 R4 and</p>

Organization	Yes or No	Question 4 Comment
		VAR-002-1.1b R2. The Constellation interpretation request should be reconsidered, this rapid revision project should be remanded and a new project should be created to revise VAR-001-2 R4 and VAR-002-1.1b R2
<p>Response: Thank you for your comment. The scope of the rapid revision project has been expanded to include R2 and its VSL. The SDT has tied VAR-001-2, R4 with VAR-002-2b, R2 by revising the language of R2 and adding a footnote about the voltage schedule range. Further revisions of VAR-001 and VAR-002 will be handled under Project 2008-01.</p>		
E.ON CLIMATE & RENEWABLES	Yes	Going forward, it would be helpful if the SAR quoted the interpretation request it is resolving. In addition, it would be helpful to highlight (even in the clean version) the sections changed within the SAR. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. Furthermore, it is unclear who makes the judgments. Enabling stakeholders to better understand the process may make for a more effective deployment of this expedited revision process. While E.ON Climate & Renewables believes a full review and revision of the VAR standards is necessary in the near future.

Organization	Yes or No	Question 4 Comment
<p>Response: Thank you for your comment. The SAR contains the exact language from the Interpretation Request. The “Detailed Description” section of the SAR contains the following language:</p> <p style="padding-left: 40px;">NERC received a request to interpret this requirement. The requester stated:</p> <p style="padding-left: 80px;">“During startup and shutdown of a generator, it is industry practice to have a generator’s...</p> <p>The Standards Committee determines, in conjunction with drafting teams, if a request for an interpretation of a standard would be better addressed by changing the language in the associated standard. At this point the Standards Committee is paying close attention to the teams that are making modifications to standards using the “Rapid Revision” process. The Standards Committee is still working to fine-tune the details of the rapid revision process. The rapid revision process is not different from the process already described in the Standard Processes Manual, it is the application of the standard development process as an alternative to processing an interpretation that is ‘new’.</p> <p>A drafting team was formed from the inactive Project 2008-01 team to work on this rapid revision. NERC has plans to reactivate Project 2008-01 in 2013 to perform a full review and revision of both VAR standards.</p>		
<p>Kansas City Power &amp; Light</p>		<p>M1 is in need of modification to clearly state that a generator that has the AVR in any other mode other than automatic as a routine process of shutting down or starting up a generator, a submission of the procedure stating such is sufficient and no other notification by the generator is required. Recommend the following for clarity to replace the current M1 description: If a generator is being started up or shut down with the automatic voltage control off, the Generator Operator must provide evidence that the generator either notified the Transmission Operator each time the generator was started up or shut down of the AVR status, or the Generator Operator will have evidence it provided the generators procedure for placing the unit into automatic voltage control mode during start-up and placing the automatic voltage control mode to off during shutdown to the Transmission Operator. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. In any other operating condition, the generator shall provide evidence it notified its associated Transmission Operator any time the generator failed to operate a generator in the automatic voltage control mode as specified in</p>

Organization	Yes or No	Question 4 Comment
		Requirement 1.
<p>Response: Thank you for your comment. The SDT agrees with your comment, and has modified the language in R1 and M1 to read as follows:</p> <p>R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <ul style="list-style-type: none"> <li>• That the generator is being operated in start-up or shutdown mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or</li> <li>• That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.</li> </ul> <p>M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>		
Ingleside Cogeneration LP		It should be a goal of every Interpretation Drafting Team to eliminate related Compliance Application Notices (CANs) wherever possible. In our view, CANs are not fully vetted by the industry to the extent required of a viable regulatory program. If too many CANs are in effect at any one time, it diminishes the legitimacy of NERC’s compliance effort. In this case, CAN-0022 “VAR-002 R1 and R3 Generator AVR Operation in Alternative Mode” covers much of the same ground as this rapid revision. We see this as an excellent opportunity to set a helpful precedent for the interpretations process.

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. CANs are retired upon approval of standards that address or clarify them.		



## Consideration of Comments

### Project 2011-INT-02 Interpretation of VAR-002 for Constellation

The 2011-INT-02 Drafting Team thanks all commenters who submitted comments on Draft 2 of VAR-002-2b, rapid revision project. These standards were posted for a 38-day<sup>1</sup> formal comment period from May 22, 2012 through June 27, 2012, with a successive ballot during the last ten days of the comment period. Stakeholders were asked to provide feedback on the standards and associated documents through a special electronic comment form. There were 35 sets of comments, including comments from approximately 112 different individuals from approximately 76 companies representing all 10 Industry Segments as shown in the table on the following pages.

All comments submitted may be reviewed in their original format on the standard's project page:

[http://www.nerc.com/filez/standards/Project\\_2011-INT-02\\_Int\\_of\\_VAR-002\\_for\\_Const.html](http://www.nerc.com/filez/standards/Project_2011-INT-02_Int_of_VAR-002_for_Const.html)

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President of Standards and Training, Herb Schrayshuen, at 404-446-2560 or at [herb.schrayshuen@nerc.net](mailto:herb.schrayshuen@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>2</sup>

**Summary Consideration:** The Standard Drafting Team received several suggestions for revisions to the language of the standard. The SDT believes that stakeholder consensus has been achieved with respect to standard language and does not believe further edits are necessary at this time. The SDT does acknowledge that there may be room for improvement in the language and will have these comments included in the NERC Issues database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.

Several commenters suggested revisions to the VSL for Requirement R2. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the "floor" must be at zero (not 30 minutes). Still, the SDT agrees that the timeframes in the VSL for Requirement R2 should be extended and has revised the timing elements of the VSLs as follows:

<sup>1</sup> The posting was for a 30-day comment period, but the period was extended when NERC learned that a technology malfunction had resulted in the announcement of the opening of the comment not being properly distributed.

<sup>2</sup> The appeals process is in the Standard Processes Manual:  
[http://www.nerc.com/files/Appendix\\_3A\\_StandardsProcessesManual\\_20120131.pdf](http://www.nerc.com/files/Appendix_3A_StandardsProcessesManual_20120131.pdf)

Lower: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.

Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.

High: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.

Severe: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.

A couple of commenters suggested that the VSLs include a percentage deviation from the schedule. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed for the different size units on the BES. Therefore, the SDT decided to remove the percentage-based VSLs.

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

- 1. The scope of the SDT has been revised to address deficiencies in Requirement R2 and its associated VSLs. Do you agree with the proposed revisions to Requirement R2 and its VSLs? If No, please explain your concerns..... 9
- 2. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here. .... 27

**The Industry Segments are:**

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

Group/Individual		Commenter	Organization	Registered Ballot Body Segment											
				1	2	3	4	5	6	7	8	9	10		
1.	Group	Guy Zito	Northeast Power Coordinating Council												X
Additional Member		Additional Organization		Region	Segment Selection										
1.	Alan Adamson	New York State Reliability Council, LLC		NPCC	10										
2.	Greg Campoli	New York Independent System Operator		NPCC	2										
3.	Sylvain Clermont	Hydro-Quebec TransEnergie		NPCC	1										
4.	Chris de Graffenried	Consolidated Edison Co. of New York, Inc.		NPCC	1										
5.	Gerry Dunbar	Northeast Power Coordinating Council		NPCC	10										
6.	Mike Garton	Dominion Resources Services, Inc.		NPCC	5										
7.	Kathleen Goodman	ISO - New England		NPCC	2										
8.	Michael Jones	National Grid		NPCC	1										
9.	David Kiguel	Hydro One Networks Inc.		NPCC	1										
10.	Michael R. Lombardi	Northeast Utilities		NPCC	1										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
11. Randy MacDonald	New Brunswick Power Transmission	NPCC	9																	
12. Bruce Metruck	New York Power Authority	NPCC	6																	
13. Silvia Parada Mitchell	NextEra Energy, LLC	NPCC	5																	
14. Lee Pedowicz	Northeast Power Coordinating Council	NPCC	10																	
15. Robert Pellegrini	The United Illuminating Company	NPCC	1																	
16. Si Truc Phan	Hydro-Quebec TransEnergie	NPCC	1																	
17. David Ramkalawan	Ontario Power Generation, Inc.	NPCC	5																	
18. Brian Robinson	Utility Services	NPCC	8																	
19. Michael Schiavone	National Grid	NPCC	1																	
20. Wayne Sipperly	New York Power Authority	NPCC	5																	
21. Tina Teng	Independent Electricity System Operator	NPCC	2																	
22. Donald Weaver	New Brunswick System Operator	NPCC	2																	
23. Ben Wu	Orange and Rockland Utilities	NPCC	1																	
24. Peter Yost	Consolidated Edison Co. of New York, Inc.	NPCC	3																	
2.	Group	Robert Rhodes	SPP Standards Review Group		X															
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	John Allen	City Utilities of Springfield	SPP	1, 4																
2.	Ron Gunderson	Nebraska Public Power District	MRO	1, 3, 5																
3.	Tara Lightner	Sunflower Electric Power Corporation	SPP	1																
4.	Dan Lusk	Xcel Energy	SPP	1, 3, 5, 6																
5.	Jerry McVey	Sunflower Electric Power Corporation	SPP	1																
6.	Randy Root	Grand River Dam Authority	SPP	1, 3, 5																
7.	Chad Wasinger	Sunflower Electric Power Corporation	SPP	1																
8.	Terri Pyle	Oklahoma Gas & Electric	SPP	1, 3, 5																
3.	Group	Greg Rowland	Duke Energy		X		X		X	X										
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	Doug Hils	Duke Energy	RFC	1																
2.	Ed Ernst	Duke Energy	SERC	3																
3.	Dale Goodwine	Duke Energy	SERC	5																
4.	Greg Cecil	Duke Energy	RFC	6																
4.	Group	Will Smith	MRO NSEF		X	X	X	X	X	X										

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5.	Group	Steve Rueckert	Western Electricity Coordinating Council									X																																																																								
No additional members listed.																																																																																				
6.	Group	Sam Ciccone	FirstEnergy	X		X	X	X	X																																																																											
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7.	Group	Mike Garton	Dominion	X		X		X	X																																																																											
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3.	Connie Lowe	Dominion Resources Services, Inc. NPCC	5, 6																	
4.	Michael Crowley	Dominion Virginia Power	SERC	1, 3, 5, 6																
8.	Group	Chris Higgins	Bonneville Power Administration		X			X		X	X									
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.	Tim	Loepker	WECC	1																
2.	Don	Watkins	WECC	1																
9.	Group	Stephen J. Berger	PPL Corporation NERC Registered Affiliates		X					X										
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.	Annette Bannon	PPL Generation, LLC on behalf of its NERC Registered Entities	RFC	5																
2.			WECC	5																
3.	James Bedick	PPL Electric Utilities Corporation	RFC	1																
10.	Group	Brenda Hampton	Luminant								X									
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.	Mike Laney	Luminant Generation Company LLC	ERCOT	5																
11.	Group	Jason Marshall	ACES Power Marketing Standards Collaborators									X								
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.	Mark Ringhausen	Old Dominion Electric Cooperative	RFC	3, 4																
2.	Scott Brame	North Carolina Electric Membership Corporation	SERC	1, 3, 4, 5																
3.	Michael Brytowski	Great River Energy	MRO	1, 3, 4, 5																
4.	Shari Heino	Brazos Electric Power Cooperative, Inc.	ERCOT	1																
5.	Megan Wagner	Sunflower Electric Power Corporation	SPP	1																
12.	Group	Frank Gaffney	Florida Municipal Power Agency		X			X	X	X	X									
<b>Additional Member Additional Organization Region Segment Selection</b>																				
1.	Timothy Beyrle	City of New Smyrna Beach	FRCC	4																
2.	Jim Howard	Lakeland Electric	FRCC	3																
3.	Greg Woessner	Kissimmee Utility Authority	FRCC	3																
4.	Lynne Mila	City of Clewiston	FRCC	3																
5.	Joe Stonecipher	Beaches Energy Services	FRCC	1																
6.	Cairo Vanegas	Fort Pierce Utility Authority	FRCC	4																

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
7.	Randy Hahn	Ocala Utility Services	FRCC	3																
13.	Individual	Jim Eckelkamp	Progress Energy	X		X		X	X											
14.	Individual	David Thompson	Tennessee Valley Authority - GO/GOP	X		X		X	X											
15.	Individual	Antonio Grayson	Southern Company	X		X		X	X											
16.	Individual	Michael Falvo	Independent Electricity System Operator		X															
17.	Individual	Kenneth A Goldsmith	Alliant Energy				X													
18.	Individual	Michelle R D'Antuono	Ingleside Cogeneration LP					X												
19.	Individual	Thad Ness	American Electric Power	X		X		X	X											
20.	Individual	Don Schmit	NPPD	X		X		X												
21.	Individual	Kirit Shah	Ameren	X		X		X	X											
22.	Individual	Ed Davis	Entergy Services	X		X		X	X											
23.	Individual	Anthony Jablonski	ReliabilityFirst																	X
24.	Individual	Daniel Duff	Liberty Electric Power					X												
25.	Individual	John Seelke	Public Service Enterprise Group	X		X		X	X											
26.	Individual	Howard Rulf	Wisconsin Electric dba We Energies			X	X	X												
27.	Individual	Dale Fredrickson	Wisconsin Electric Power Company			X	X	X												
28.	Individual	Terri Pyle	Oklahoma Gas & Electric	X																
29.	Individual	Martin Kaufman	ExxonMobil Research & Engineering	X				X			X									
30.	Individual	Tony Kroskey	Brazos Electric Power Cooperative	X																
31.	Individual	Andrew Z. Pusztai	American Transmission Company	X																
32.	Individual	John Babik	JEA	X		X		X												
33.	Individual	Maggy Powell	Exelon Corporation and its affiliates	X		X		X	X											
34.	Individual	Brett Holland	Kansas City Power & Light	X		X		X	X											
35.	Individual	Alice Ireland	Xcel Energy	X		X		X	X											



1. **The scope of the SDT has been revised to address deficiencies in Requirement R2 and its associated VSLs. Do you agree with the proposed revisions to Requirement R2 and its VSLs? If No, please explain your concerns.**

**Summary Consideration:** The Standard Drafting Team received several suggestions for revisions to the language of the standard. The SDT believes that stakeholder consensus has been achieved with respect to standard language and does not believe further edits are necessary at this time. The SDT does acknowledge that there may be room for improvement in the language and will have these comments included in the NERC Issues data base for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.

Several commenters suggested revisions to the VSL for Requirement R2. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). Still, the SDT agrees that the timeframes in the VSL for Requirement R2 should be extended and has revised the timing elements of the VSLs as follows:

**Lower:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.

**Moderate:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.

**High:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.

**Severe:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.

A couple of commenters suggested that the VSLs include a percentage deviation from the schedule. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed for the different size units on the BES. Therefore, the SDT decided to remove the percentage-based VSLs.

Organization	Yes or No	Question 1 Comment
SPP Standards Review Group	No	<p>The zero-tolerance for error interpretation presented in the VSLs for R2 is too restrictive. The Lower VSL is activated when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. That means if the GOP fails to stay on schedule 100% of the time, the GOP is non-compliant and subject to being penalized. We hope this was not the intent of the SDT and that the SDT will take action to correct this situation. While being off schedule can be a serious issue with possible repercussions for the reliability of the BES, typically the GOP would have time to make necessary adjustments and get back on schedule. RCs and TOPs are allowed to respond to an IROL exceedance within Tv (default of 30 minutes) without penalty. Exceeding an IROL is much more critical to the operation of the BES than a generator being off schedule. We suggest that allowances be incorporated into the VSLs which provide some flexibility for the GOP in maintaining voltage and Reactive Power schedules. For example, the appropriate section of the Lower VSL could be changed to read: ‘...failed to meet the directed values for more than 30 minutes but less than 40 minutes.’ Similarly the Moderate VSL could be changed to read: ‘...for 40 minutes or more but less than 50 minutes.’ The High VSL could be changed to read: ‘...for 50 minutes or more but less than 60 minutes.’ The Severe VSL could be changed to read: ‘...for 60 minutes or more.’ This would give the GOP 30 minutes without penalty to respond to whatever the issue is that is keeping it from maintaining the assigned schedule. When modifying the VSLs, the SDT may also want to factor in the amount of deviation from schedule. Being a few percentage points off schedule is not as critical as being 10-15% off schedule.</p>
NPPD	No	<p>The zero-tolerance for error interpretation presented in the VSLs for R2 is too restrictive. The Lower VSL is activated when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. That means if the GOP fails to stay on schedule 100% of the time, the GOP is non-compliant and subject</p>

Organization	Yes or No	Question 1 Comment
		<p>to being penalized. We hope this was not the intent of the SDT and that the SDT will take action to correct this situation. While being off schedule can be a serious issue with possible repercussions for the reliability of the BES, typically the GOP would have time to make necessary adjustments and get back on schedule. RCs and TOPs are allowed to respond to an IROL exceedance within Tv (default of 30 minutes) without penalty. Exceeding an IROL is much more critical to the operation of the BES than a generator being off schedule. We suggest that allowances be incorporated into the VSLs which provide some flexibility for the GOP in maintaining voltage and Reactive Power schedules. For example, the appropriate section of the Lower VSL could be changed to read: ‘...failed to meet the directed values for more than 30 minutes but less than 40 minutes.’ Similarly the Moderate VSL could be changed to read: ‘...for 40 minutes or more but less than 50 minutes.’ The High VSL could be changed to read: ‘...for 50 minutes or more but less than 60 minutes.’ The Severe VSL could be changed to read: ‘...for 60 minutes or more.’ This would give the GOP 30 minutes without penalty to respond to whatever the issue is that is keeping it from maintaining the assigned schedule. When modifying the VSLs, the SDT may also want to factor in the amount of deviation from schedule. Being a few percentage points off schedule is not as critical as being 10-15% off schedule.</p>
<p><b>Response:</b> SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended, so it has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the</p>		

Organization	Yes or No	Question 1 Comment
<p>Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p>Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p>High: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p>Severe: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p> <p>With respect to deviation from the scheduled value, the SDT agrees that in some cases, a significant deviation from the schedule is a concern. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage-based VSLs.</p>		
PPL Corporation NERC Registered Affiliates	No	Footnote 4 to R2 does not adequately explain limitations on being able to maintain system voltage within the schedule bandwidth. This generally has nothing to do with GO Facility Ratings. The constraint is instead variation of the generation plant medium or low voltage bus from normal (typically max +/- 5%). Such limits are encountered well before approaching the generator OEM's D-curve boundary.
<p>Response: The SDT thanks you for your comment. The SDT agrees that footnote 4 does not necessarily address all potential limitations. This footnote was in the original VAR-002 standard and the SDT will have your comment included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		
Luminant	No	The VSL string (Lower and High) should be modified in the following manner to eliminate always being non-compliant under the Lower VSL scenario.

Organization	Yes or No	Question 1 Comment
		<p>Lower VSL should be "... the Generator Operator failed to meet the directed values within the 5 minutes or; When a generator’s automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator or; The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</p>
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>No</p>	<p>(1) We agree with changing “output” to “schedule” for consistency with VAR-001-2 R4.</p> <p>(2) We do not agree with the VSLs. As written, they are open-ended and subject the Generator Operator to rapidly escalating sanctions. The VSLs do not define the time period over which the failure to maintain the generator voltage or Reactive Power schedule is measured. Is the time period a year,</p>

Organization	Yes or No	Question 1 Comment
		<p>the audit period, or something else? The audit period for a GOP is six years. Thus, if a GOP experienced 16 minutes of failing to meet its voltage or reactive power schedule, it would achieve success for 99.99949% of the minutes over the six year period but still be assessed a severe violation. This success rate approaches the maximum theoretical availability/success of the Six Sigma process which is used by many industries for managing industrial processes. It does not seem reasonable to consider approaching a theoretical maximum a severe violation.</p> <p>(3) We appreciate that the drafting team included R2 in the revised SAR scope but we believe the changes still do not go far enough to satisfy the request for interpretation. The issue that Constellation identifies is essentially that the TOP may not grant an exemption for following the voltage or reactive power schedule pursuant to R2 during start up and shut down. The GOP can provide the TOP with a Real-Time communication or a procedure and the TOP may still not grant an exemption. Per R2 (since it is an independent requirement), unless the TOP grants an exemption, the GOP still must follow the voltage or reactive power schedule regardless of what R1 states. The GOP needs not only the changes to R1 but also changes to R2 that provide a blanket exemption during start-up or shut-down. They should not be put into a position to rely on the TOP providing an exemption during start up or shut down especially considering that the voltage or reactive power schedule provided by the TOP most likely assumed full unit capability.</p>
<p><b>Response: The SDT thanks you for your comment.</b></p> <p><b>1) Thank you for your comment.</b></p> <p><b>2) Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30</b></p>		

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<p>minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p> <p>3) The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		
<p>Tennessee Valley Authority - GO/GOP</p>	<p>No</p>	<p>The proposed VSLs for R2 are unreasonable. In order to track and respond to the system voltage on 5-minute intervals, the generator operator would have to be solely dedicated to the function of monitoring system voltage. This places an unrealistic burden on the generator operator, who has other duties besides just monitoring system voltage. The VSLs should increment in 2-hour intervals, not 5-minute intervals. This proposed change is a major revision to the 5% intervals presently in the standard, and is not an interpretation as the title suggests.</p>
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and</p>		

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<p>American Electric Power</p>	<p>No</p>	<p>If Requirement 1 were removed from VAR-002, what reliability objective would *not* be met by the combination of VAR-001 and VAR-002? AEP strongly believes that the existing Requirement 1 can be eliminated if VAR-002 Requirement 2 has minor enhancements (or maybe no changes are required). The requirements of VAR-001 require the TOP to communicate the voltage schedule or Reactive Power schedule (or exempt the facility). In addition, the TOP is required to direct the units in real-time as necessary. Through this coordination initiated by the TOP and the language in VAR-002 Requirement 2, the GOP is required to follow the instructions of the TOP and be in the mode of operation the TOP deems necessary. For example, the TOP could provide guidance on startup and shutdown expectations for AVR modes, and the GOP would then be obligated to comply with these expectations via Requirement 2. Fundamentally, the problem with VAR-002 Requirement 1 and why it is subject to so many interpretations request is that it may conflict with the directions provided by the TOPs as required by VAR-001. The changes in this project and past interpretation requests do not address this fundamental issue. Furthermore, these proposed changes introduce additional complexities that will continue to create challenges. For example, it would be better for the TOP to provide procedures for</p>



Organization	Yes or No	Question 1 Comment
		reporting startup and shutdown expectations rather than the GOPs develop and provide the procedures.
<p>Response: The Standard Drafting Team thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		
Ameren	No	<p>We strongly believe that the VSLs should remain as a percentage of the voltage deviation as approved earlier by FERC. We also believe that the VSLs in the draft conflict with the statement provided in footnote 3, that the TOP is allowed to set a specified time period for following voltage schedules. In addition, we believe that the draft VSLs are not clearly defined. For example, it includes 5 minutes time frame as a lower VSL; is this a continuous 5 minute increment or it is an accumulated 5 minutes over a period? Again the GOP should follow the directives given by the TOP and VSL should be appropriately defined rather than as prescribed presently.</p>
<p>Response: The SDT thanks you for your comment. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage VSLs.</p> <p>Several commenters suggested similar revisions to the VSL. It was also suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p>		

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<p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
Liberty Electric Power	No	I agree with the comments submitted by Exelon regarding the use of time criteria in the VSLs for a requirement which does not have a time component.
<p><b>Response:</b> The SDT thanks you for your comment. Please see the response to Exelon’s comments.</p>		
Oklahoma Gas & Electric	No	The VSLs for R2 is too restrictive. The Lower VSL is applicable when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. While maintaining these schedules is important, we do not believe that the SDT intended for this requirement to have virtually zero-tolerance. We would request that the SDT reconsider the timeframes for the VRLs to be more reflective of the potential impact and be in line with those that are currently active for IROLs.
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p>		

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<p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
Brazos Electric Power Cooperative	No	Please see the formal comments submitted by ACES Power Marketing.
<p><b>Response:</b> The SDT thanks you for your comment. Please responses to the comments submitted by ACES.</p>		
JEA	No	<p>The VSLs changed using time and removed the percentages this change is unrealistic and have no merit to reliability.</p> <p>Footnote 3 states The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period. The footnote should state 'a tolerance band within which the target percentage value is to be maintained'. We recommend changing the VSL's back to percentages for both reactive power output and voltage.</p>
<p><b>Response:</b> The SDT thanks you for your comment. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove it. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage-based VSLs.</p>		

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<p>Exelon Corporation and its affiliates</p>	<p>No</p>	<p>The revisions made to R2 fail to address the concerns present. VAR-002 version 1.1b and as proposed revision requires that each GOP shall maintain the generator voltage or Reactive Power output as directed and Measure R2 further clarifies that each GOP shall have evidence to show it controlled its generator voltage or Reactive Power schedule to meet the voltage or Reactive Power schedule provided by the TOP. However, in certain situations, a GOP may not be able to meet the schedule because of system variations outside of the GOP’s control or internal operational constraints. In this situation, a GOP may be non-compliant with this requirement because of issues out of its control. This requirement should be revised to allow the GOP to contact the TOP when outside the schedule and to follow the TOP’s instruction. The revisions to R2 do not address this compliance concern. Exelon concedes that use of the word “schedule” in place of “output” in R2 is more accurate. The proposed VSLs associated with VAR-002 Requirement</p>

Organization	Yes or No	Question 1 Comment
		<p>R2 were revised on this draft to be contingent on a specified time limit for failure to meet the directed values of the generator voltage (or Reactive Power) schedule. This change to the VSL criteria is not reasonable, has no relation to increased reliability, and is not feasible to be implemented by most if not all Generator Operators. Voltage schedules are provided by the Transmission Operator or Transmission Owner (if delegated by the Transmission Operator) and vary from generator to generator based on the Transmission Operator/Owner methodology for maintaining system wide grid voltages and on generator location. Although it is an expectation that the voltage schedule be maintained, the voltage monitored is dynamic and regularly (and sometimes constantly) fluctuates. Once a Generator Operator has identified that the voltage has drifted outside of the voltage schedule, then it is reasonable to expect the Generator Operator to make timely adjustments (unless constrained by operating parameters) to bring the voltage back within the prescribed voltage schedule and to contact the Transmission Operator/Owner if attempts to bring the voltage back within the prescribed schedule are unsuccessful or not possible. It should be up to the discretion of the Transmission Operator/Owner, in consultation with the Generator Operator, to set the expectation for monitoring the voltage, time allowed to adjust the voltage back within band, and communications required in the event voltage cannot be brought back within the voltage schedule. The VSLs as currently proposed impose a time limit that has no technical justification or relation to increased reliability and is inconsistent with Requirement R2, which does not impose a time requirement. If approved as currently proposed, this Standard will require continual monitoring by a dedicated operator 24 hours a day/7 days a week/365 days a year. In addition, even if a dedicated operator is continuously monitoring, a Generator Operator will be in violation of the Standard if there is any deviation from the voltage schedule, regardless of the magnitude or duration of the voltage excursion or success of the operator in bringing the</p>

Organization	Yes or No	Question 1 Comment
		voltage back within the prescribed voltage schedule. Such a result is unreasonable and provides no increased level of reliability.
<p>Response: The SDT thanks you for your comment. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage-based VSLs.</p> <p>Several commenters suggested similar revisions to the VSL. It was also suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p>Lower: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p>Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p>High: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p>Severe: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p> <p>The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		

Organization	Yes or No	Question 1 Comment
Kansas City Power & Light	No	<p>The VSL’s for Requirement 2 stipulate time frames that are within spans of time up to a maximum of 15 minutes. This is not a reasonable expectation and is not in alignment with Requirement 3 which stipulates a Generator Operator to notify its Transmission Operator within 30 minutes of a “status” or “capability” change. Requirement 3 allows the Generator Operator some time to determine a reactive production problem exists and to make a notification to the Transmission Operator. Requirement 2 should afford at least the same time for the Generator Operator to recognize a problem exists and to attempt to take corrective action to meet operating expectations. Recommend modifying the VSL for Requirement 2 as follows: Low at 30 minutes, Medium at 45 minutes, High at 60 minutes and Severe at 75 minutes or longer.</p>
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		

Organization	Yes or No	Question 1 Comment
Xcel Energy	No	<p>1) Xcel Energy appreciates that the SDT has attempted to address the concern about the ambiguity in the term “minimum load” by adding the words “continuously sustainable”, but we do not believe this solves the ambiguity since it is not a widely accepted industry term. Xcel believes that if the SDT wants to avoid ambiguity it will have to set an arbitrary load value (e.g. 30% of rated MW).</p> <p>2) Xcel Energy finds the VSL structure for Requirement R2 totally unworkable. The Lower VSL (less than five minutes) goes into effect for any deviation from the scheduled voltage band - even a one millisecond excursion would be a violation. The VSL, as written, would override any time allowance to correct for excursions given by the TOP in its Voltage Schedule provided to the GOP.</p>
<p><b>Response: The SDT thanks you for your comment.</b></p> <p><b>1) The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p> <p><b>2) Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</b></p> <p><b>Lower: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</b></p> <p><b>Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</b></p>		



Organization	Yes or No	Question 1 Comment
<p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
ExxonMobil Research & Engineering	No	
Ingleside Cogeneration LP	Yes	Ingleside Cogeneration LP agrees that a clear linkage should be established between the voltage or Reactive Power schedule developed by the TOP in VAR-001-2 R4. This clarifies the intent of the requirement and is consistent with our standard operating procedures.
<p><b>Response:</b> The SDT thanks you for your comment.</p>		
Northeast Power Coordinating Council	Yes	
Duke Energy	Yes	
MRO NSEF	Yes	
Western Electricity Coordinating Council	Yes	
FirstEnergy	Yes	
Dominion	Yes	
Progress Energy	Yes	
Southern Company	Yes	

Organization	Yes or No	Question 1 Comment
Independent Electricity System Operator	Yes	
Entergy Services	Yes	
Public Service Enterprise Group	Yes	
Wisconsin Electric Power Company	Yes	
American Transmission Company	Yes	

**2. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here.**

**Summary Consideration:** The SDT received several suggestions for revisions to the language of the standard. The SDT believes that stakeholder consensus has been achieved with respect to standard language and does not believe further edits are necessary at this time. The SDT does acknowledge that there may be room for improvement in the language and will have these comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.

Organization	Yes or No	Question 2 Comment
Southern Company		<p>i) For clarity, we suggest the middle portion of the first bullet of R1 be revised as follows: "...mode pursuant to either a Real-time communication or a procedure that was previously provided to..."</p> <p>ii) We suggest seven changes to M1. First, that the first sentence of M1 be changed to replace "failed to" with "did not"; Second, insert "Real-time communication" in the second sentence between "no" and "notification"; Third, change "will have evidence" to "should have evidence" in the second sentence; Fourth, replace "notified" with "previously provided" in the second sentence; Fifth, change "of its procedure" to "a procedure" in the second sentence; Sixth, change "procedure for placing" to "procedure indicating the normal practice for placing" in the second sentence; Seventh, add "during start up and shut down periods" at the end of the second sentence. With these changes, the second sentence will read as follows: "If a generator is being started up or shut down with the automatic voltage control off and no Real-time notification of the automatic voltage regulator status is made to the TOP, the GOP should have evidence that it previously provided the TOP a procedure indicating the normal practice for placing the unit into automatic voltage control mode during start up and shut down periods."</p> <p>iii) Does the wording of the data retention section D1.2 indicate that an open ended number of years that the data for M1-M4 and M7 must be retained?</p>

Organization	Yes or No	Question 2 Comment
		<p>The current wording seems to indicate that all records for all time must be retained.</p> <p>iv) We suggest that the tardiness time frame given for the VSL for R2 more closely match the 30 minutes reporting time frame of requirement R3, and that the four thresholds for the various VSLs of R2 be 30 min, 45 min, 60 min, rather than 5, 10, and 15 min. Generating plant operators are responsible for many other things in addition to substation voltage.</p> <p>v) The word "directives" found in M3 should be changed to "directions" to eliminate possible confusion with a Reliability Directive".</p> <p>vi) The following phrase from R1 should be added to R3: "Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator,". This phrase permits a blanket notification serve as adequate communication of the switching of the AVR mode during start up or shutdown periods in lieu of the 30 minute notification.</p>
<p><b>Response: The SDT thanks you for your comment.</b></p> <p><b>i), ii), vi) The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p> <p><b>iii) The intent is for the current year and previous year. The item has been revised to make this clear.</b></p> <p><b>iv) The SDT concurs and has made the suggested revision to the VSLs.</b></p> <p><b>v) The SDT concurs and has corrected the error.</b></p>		
Ameren		<p>(1) We would recommend that requirements not be addressed as footnotes. However, If the SDT elects to choose this approach and provide footnotes as requirements then we recommend Requirement 1, footnote 3 should include</p>

Organization	Yes or No	Question 2 Comment
		<p>“...specified period as directed by the Transmission Operator” at the end.</p> <p>(2) To keep the generator operators out of double jeopardy, we suggest the SDT to consider the following modified language for Measure M1 : The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no specific notification regarding automatic voltage control mode is made to the Transmission Operator, the Generator Operator will have evidence that it previously provided the Transmission Operator of its procedure for placing the unit into/or out of, automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Western Electricity Coordinating Council</p>		<p>As indicated by our Affirmative vote, we agree that the revisions add clarity. However, from an auditing and enforcement perspective, the term “minimum continuously sustainable load” in foot note R1 is not defined and leaves too much room for open interpretation and inconsistent auditing. For instance, does the term mean a time constant is applied that they are able to sustain it for 1 min or 1 hr, or is it a set and fixed number? It would be clearer and more manageable to audit to have a bench mark that state: the minimum continuously sustainable load is a load that is set by the GOP and agreed upon by the GOP and TOP.</p>
<p><b>Response: The SDT thanks you for your comment. While the suggestion is outside the scope of the SAR for this project, the SDT will have your comment included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of</b></p>		

Organization	Yes or No	Question 2 Comment
<p><b>work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>American Transmission Company</p>		<p>ATC endorses and supports the comments submitted by the MRO NERC Standards Review Forum (NSRF).</p>
<p><b>Response: The SDT thanks you for your comment. Please see responses to MRO NSRF comments.</b></p>		
<p>Florida Municipal Power Agency</p>		<p>Constellation is essentially asking "what does 'notify' mean as used in the standard", and asking if previously arranged operating procedures between the GOP and TOP is notification, including operating for start-up and shutdown of a unit during which an AVR would be put into manual mode. An interpretation of what 'notify' means as used in the standard is more appropriate as opposed to changing the standard. The response to the request is too specific and introduces new terms into the standards that are ambiguous and will cause confusion depending on the type of generator being considered (e.g., start-up and shutdown), possibly spurring additional requests for interpretation of what start-up and shutdown mean for, say, a wind or solar farm, etc. In addition, while R1 has become clearer as to the intent, it leaves R3 unclear with the same question concerning the word 'notify'. An interpretation essentially saying that pre-arranged, conditional notification, between the GOP and TOP acts as notification in regards to both R1 and R3 is a preferably approach to a rapid revision (e.g., every time the unit is on outage, the AVR is out of service; every time the unit is below XX MW of output, the AVR is in manual mode, etc.).</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Exelon Corporation and its affiliates</p>		<p>Content of the proposed Standard: o Constellation requested in their interpretation request that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic</p>

Organization	Yes or No	Question 2 Comment
		<p>voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. Defining the terms “start up” and “shut down” was not part of the request and creates more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague.</p> <ul style="list-style-type: none"> <li>o The first problem with Footnote 1 concerns the term “ramped up” that remains in the language. This is an unnecessary qualifier. Secondly, the term “minimum” is too vague. The minimum in a generator user manual may be different than the minimum defined in a start up procedure. Footnote 2 attempts to define shut down of a unit. However, the definition used is only one of numerous ways a unit may be brought offline. Every unit has a unique sequence in which it is shut down. Therefore, Footnote 2 is too prescriptive.</li> <li>o Furthermore, the footnotes are not consistent with those in VAR-001. This revision stands to create further confusion relative to VAR-001.</li> </ul> <p>Process Concerns:</p> <ul style="list-style-type: none"> <li>o Exelon/Constellation reiterates the process concerns raised in the previous comment period. The use of a rapid revision project in place of an interpretation was misguided and misrepresented.</li> <li>o The response to comments does not sufficiently address the process concerns raised. It does not justify using an alternative process to the interpretation process. The Constellation request for interpretation kept with the BOT direction by being restricted to the words contained in the standard. Constellation’s explanation of concerns with VAR-001 and VAR-002 should have sufficiently illustrated that a “small adjustment to the wording” as allowed within a rapid revision was inappropriate. In general, the details of what constitutes this rapid revision process are not clearly defined. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. It is unclear who makes the judgments. This new process is under utilization without proper rollout or justification and appears to be used in place of approved and better understood processes. The Standard Committee</li> </ul>

Organization	Yes or No	Question 2 Comment
		<p>elected to pursue the rapid revision process without understanding the interpretation request and without support of the interpretation requester.</p> <p>o As Constellation pointed out, there was a narrow question that an interpretation could have addressed while Project 2008-01 organized around the larger issues present in VAR-001 and VAR-002. Exelon/Constellation is optimistic that Project 2008-01 is able to efficiently and effectively address the problematic language in VAR-001 and VAR-002 and that NERC provide resources to Project 2008-01 to enable development of revision proposals in a timely manner.</p>
<p><b>Response:</b> The SDT thanks you for your comment.</p> <p><b>Content of the proposed Standard:</b> The SDT disagrees that the footnotes create confusion. The large majority of stakeholders support the use of the footnotes. Regarding the footnotes in VAR-002 matching those of VAR-001, the SDT included footnote 3 in VAR-002 to ensure the linkage between the VAR-001 and VAR-002. The language of the footnote in VAR-002 was changed for two reasons: First, the footnote in VAR-001 did not contain language about the Reactive Power schedule, which is clearly stated in the Requirement. Second, including the footnote in VAR-002 as worded in VAR-001 did not provide the necessary linkage between the two standards. The revised footnote 3 addresses both of these issues.</p> <p><b>Process Concerns:</b> The SDT recognizes that Exelon and Constellation have merged since this project began. The Standards Committee agreed to use the existing Rapid Revision process to address this interpretation request in January 2012. This was done with the consent of the requestor. It should be noted that the Rapid Revision process is limited in scope by the SAR and helps avoid having multiple interpretations attached to a standard such as the case with VAR-002.</p>		
Dominion		<p>Dominion maintains that the existing standard language is clear and the revision of Requirement 1 and the addition of footnotes 1 &amp; 2 are unnecessary.</p>
<p><b>Response:</b> The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		



Organization	Yes or No	Question 2 Comment
Entergy Services		<p>Entergy continues to believe R1 of this draft standard places undue burden and requirements on Transmission Operators and adds uncertainty on the operation of the BES. Therefore, we again submit our comments here that we submitted in response to the last posting of this draft standard: Entergy - believes the Transmission Operator should not be required to have, be required to update or maintain, nor be required to know the startup / shutdown procedures of all of the generators connected to its system. TOPs should not be required to dig through a procedure to find out if the AVR “should be” in manual or automatic mode during startup or shutdown. We also think it is not the best operation of the system for the TOP to “assume” the status of the AVR. All of the proposed changes, especially the provision of startup / shutdown procedures, places additional burdens on the TOP. These burdens also place unwritten requirements on the TOP which auditors will definitely “explore” during the next review, in any form, of the TOP. We view the requirement that the TOP receive the startup / shutdown procedures as placing new requirements on the TOP, in violation of the Interpretation process. Per Constellation in its Request for Interpretation “A generator operator already communicates to the TOP that the unit is being started up or shutting down.”. It would appear that a GOP could include in its procedures a requirement that the TOP be informed of the status of the AVR when the GOP is communicating to the TOP that the unit is starting up or shutting down. TOPs only want to know the status of a generating unit’s AVR, is it in automatic or manual mode. That information can be provided when the startup / shutdown information is being communicated. Therefore we recommend the following changes to VAR-002-2b: Delete both of the new bullet points added to R1, including associated footnotes. Delete:   <ul style="list-style-type: none"> <li>• That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or</li> <li>o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. And:1 Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline. Also</li> </ul> </p>

Organization	Yes or No	Question 2 Comment
		<p>delete the new wording in M1: If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues data base for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Ingleside Cogeneration LP</p>		<p>Ingleside Cogeneration LP appreciates the additional precision the project team has added to VAR-002-2b R1 and R2. We believe this will help drive consistent auditor findings - which have been inconsistent across the Regions. In addition, the allowance of blanket pre-notifications is a powerful means to address routine operating communications. Although each is important, many are so routine that it is easy to miss one. Too many times, this has resulted in a violation even if the AVR was properly online during generator start-up or shut-down - as the GOP cannot prove their compliance. However, we are concerned that the ERO is expending so much energy to address a topic which has questionable reliability benefit. There is no evidence that offline AVRs during generator start-up and shut-down have led to a BES event or extended its scope. Instead, this feels like an over-extended interpretation of a requirement well beyond its original intent. (We are aware that NERC’s Compliance Team began this process in CAN-022, but they are not supposed to drive the interpretations process.) Because of this factor, we cannot support this Interpretation of VAR-002. FERC has begun to recognize that low-priority tasks are consuming the attention of industry stakeholders and has asked for examples of requirements which distract from those which are far more critical. Frankly, we believe this is an example of such a distraction and will be providing that feedback to</p>

Organization	Yes or No	Question 2 Comment
		them.
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
ExxonMobil Research & Engineering		<p>NERC has already established an SDT to review and modify the VAR standards. By stepping outside the normal process for drafting standards, regardless of the intent or end product, NERC is setting a precedent for superseding a pre-qualified SDT and the ANSI approved process for drafting standards. For the time being, a Generator Operator’s compliance with its Transmission Operator’s established scheduling process or a Generator Operator’s verbal notification to the Transmission Operator that a unit is being brought online or offline and is in manual control should be sufficient notification that its AVR is not in service.</p>
<p><b>Response: The SDT thanks you for your comment. Members of the pre-qualified SDT were responsible for developing this rapid revision of VAR-002. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
Duke Energy		<p>NERC’s CAN Process document dated April 2012 states on page 8 under section J that “CANs are retired when a revised standard or interpretation that addresses the compliance application issue in the CAN is approved by FERC and is enforceable”. The SDT should take this opportunity to fully incorporate CAN-0022 into the standard and retire CAN-0022. In our March 23 comments, we pointed out that the SDT’s proposed revision to the standard did not go far enough to resolve the request for interpretation. While the proposed revision does provide clarification that manual AVR status can be communicated via a start-up or shutdown procedure notification (as does CAN-0022), this change alone does not relieve the GOP from the existing 30-</p>

Organization	Yes or No	Question 2 Comment
		<p>minute notification requirement under R3. Approved CAN-0022 allows the GOP to provide a blanket advance notification to the TOP in lieu of separate notifications for each change in status. In this instance, Constellation sought clarification of R1 as to whether or not a communication must be conducted between a GOP and TOP during start-up or shutdown of a generator. Thus we see a direct connection to CAN-0022 and R3 as well as R1. We agree with the SDT’s proposed change to R1 which provides for two different types of notification from the GOP to the TOP for situations when the unit is not being operated in automatic voltage control mode. The Standard Drafting Team should take this opportunity to fully incorporate the provisions of CAN-0022 into the standard, and retire CAN-0022. The following phrase from R1 should be added at the beginning of R3: “Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator.” If this or a similar change to R3 is not made, then CAN-0022 cannot be retired.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
MRO NSRF		<p>Please consider the following NSRF comments. Several commenters in the last posting expressed concern about the footnotes that seemed to attempt to define startup and shutdown. One of the standard drafting team responses included the following: “Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator” To better clarify that the operator is allowed to define start-up and shutdown parameters , the following change is recommended to R1: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the</p>

Organization	Yes or No	Question 2 Comment
		<p>following:</p> <ul style="list-style-type: none"> <li>o That the generator is being operated in start-up or shutdown pursuant to a Real-time communication</li> <li>o That the generator is being operated in accordance with a start-up or shutdown procedure that was previously provided to the Transmission Operator</li> <li>o That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown. With this change to R1 and the intent indicated in the above comments from the drafting team, the footnotes should not be needed. By stating (and it will be viewed by the industry as defining) what “start up and shut down” is, the SDT is expanding the technical issues. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. (Note that within the PJM market, ramp is something that is associated with a schedule where by a GOP may not “ramp up” until five minutes before top of the hour but could be on line producing real and reactive power. The use of “ramp” within foot note 1 and 2 is ambiguous and will cause confusion.) There are too many different generator designs within our industry for the SDT to capture all possibilities by simply adding the proposed foot notes and bullets. In addition, whenever a foot note is used to clarify a Requirement, the Requirement becomes more ambiguous. Recommend that foot note 1 and 2 be deleted since they only provide examples to a certain type of generator. The SDT needs to write the Requirement whereby it can be universally used by all applicable entities. The NSRF recommends that R3 is clearly suited for incorporation of the requested interpretation. R3.1 is written to capture “...status or capacity changes on any generator...”, such as when a generator is not in the desired voltage response mode. The NSRF recommends R3 to be rewritten to capture the intent of the interpretation to read: R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes unless advanced notification has been provided of any of the following: (note: underlined words have been added by the NSRF) The noted “advance notification” will allow GOPs to establish an individual process for each generators that do not comply with R1 or fall within scope of R2. This will also allow GOPs and TOPs on how this advance warning is to be provided. It may be via written procedure, a mutually agreed</li> </ul>

Organization	Yes or No	Question 2 Comment
		<p>SCADA point, etc. NERC has allowed stakeholders the authority to design their own programs based on their asset characteristics as in FAC-008, CIP-002, EOP-001, etc. The SDT should allow each applicable entity within this Standard the same authority. Delete the words “and the expected duration” to R3.1 and 3.2. Since this is a revision to the standard, the drafting team should consider deletions as wells as additions. The NSRF contends that the words “and the expected duration” provide no practical Bulk Electric System reliability benefit and should be removed. The TOP can request any “duration” during real time notification or by advance notice. Delete all added material to M1 or have M1 match revised wording in R1. Revise any VRFs or VSLs appropriately.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
Brazos Electric Power Cooperative		Please see the formal comments submitted by ACES Power Marketing.
<p><b>Response: The SDT thanks you for your comment. Please see responses to ACES’s comments.</b></p>		
Progress Energy		<p>progress Energy does not agree with the SDT definition of "Shutdown" and would propose the following. Shutdown - Unit load being decreased in local plant control with the intent to come offline with the unit. The reasoning is generators (i.e.CTs) will be given the order to shutdown when at various load levels including full load, and at which point the TOP will no longer rely on that unit for voltage control.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		

Organization	Yes or No	Question 2 Comment
Wisconsin Electric Power Company		<p>R1: The modifications to R1 do not serve to clarify the intent, but only make this standard more complex than it needs to be. We strongly assert that the standard is not an appropriate place to define the terms “start-up” and “shutdown”. Such definitions also have little meaning for facilities like wind farms and other intermittent resources. We also object to the requirement for either a “Real-time communication” or a “procedure” to be provided by the GOP to the TOP. There is no clear reliability-driven need to provide a procedure, which by definition is usually a more detailed and complex document. A simple “notification” by the GOP to the TOP of the circumstances and estimated timeframe that may require a generator being in an AVR mode other than Automatic is sufficient to assure coordination between the GOP and the TOP as it relates to the generator AVR status. We suggest that R1 be revised to remove the two bullets and add new wording as follows: The GOP shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (AVR in-service and controlling voltage) unless the GOP has notified the TOP (...SUGGESTED WORDING FOLLOWS...) "in advance by a Real-time communication or other previous notification." Likewise, we propose that M1 be revised to remove the 2nd sentence, which refers to startup or shutdown procedures. The 3rd sentence should be expanded to include "manual or electronic log entries."</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
ReliabilityFirst		<p>ReliabilityFirst votes in the Negative for this standard because the revision to standard does not address or include the TOPs acknowledgment of the receipt of the GOPs procedure (for the start-up/shutdown of their generator). ReliabilityFirst offers the following comments for consideration:1. ReliabilityFirst fundamentally agrees that the included bullets somewhat resolve the issue raised in the interpretation</p>

Organization	Yes or No	Question 2 Comment
		<p>request, though believes the first bullet is missing one key component. ReliabilityFirst believes it is crucial for the TOP to acknowledge receipt of the GOPs procedure for start-up/shutdown of their generators. Without required TOP acknowledgment of receipt of the procedure, there is a chance that vital information may not be communicated which could result in voltage levels, reactive flows, and reactive resources not being maintained.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
American Electric Power		See response to Question #1.
<p><b>Response: The SDT thanks you for your comment. Please see responses to question 1 comments.</b></p>		
Wisconsin Electric dba We Energies		<p>The Time Horizon for R1 is Real-time Operation, so it is reasonable to assume that the notifications in R1 take place in Real-time. R1 is worded such that even if a procedure was previously provided to the TOP as stated in the first bullet, a Real-time communication must be made to the TOP each time during startup or shutdown if the AVR is not in voltage control mode (AVR in service and controlling voltage). Please clarify that if the TOP has been provided a procedure, a Real-time communication is not necessary.</p>
<p><b>Response: The SDT thanks you for your comment. Your assessment is correct. If the TOP has been provided a procedure, a Real-time communication is not necessary.</b></p>		
Oklahoma Gas & Electric		<p>The VAR standards need to be updated to bring the language in line with the latest technologies in use today; i.e., incorporate language to cover non-synchronous generators and other resources. We also are in strong support of an exemption for power system stabilizer status during generator startup and shutdown (covered in</p>



Organization	Yes or No	Question 2 Comment
		R3) should be incorporated into the standard.
<p><b>Response: The SDT thanks you for your comment. The SDT acknowledges that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>PPL Corporation NERC Registered Affiliates</p>		<p>TO-issued voltage schedules for our entities, and probably everywhere, are tighter than the max and min limits that the TO and TOP themselves seek to maintain. It makes sense that firstly all generation plants should do what they can within the equipment limits, after which the TO/TOP take system-wide action; but a single generation plant is oftentimes not able to pull its node of the grid into compliance with the TO-issued voltage schedule during periods of high or low demand. It is unrealistic to assume that unanimity of GO actions occurs automatically as a result of VAR-002 requirements. The only means of getting all plants to pull together is through TO/TOP verbal directives. VAR-002 as presently written and in the proposed update (version 2b) sets a nearly impossible task in placing the entire burden of maintaining the schedule on each individual GO. To make matters worse, some TOs may set a bandwidth for GOs only a fraction of the amount the max/min variation that they themselves seek to maintain. It may be necessary to rewrite VAR-002 completely to address some fundamental issues with the current compliance approach.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Alliant Energy</p>		<p>We do not agree with the proposed revisions to R1. R1, in our opinion, was well-written and adding the footnotes did nothing to clarify it. The SDT is making the effort to define start-up and shutdown, but we believe each individual GOP needs to define that.</p>

Organization	Yes or No	Question 2 Comment
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
SPP Standards Review Group		<p>We generally agree with the proposed changes to R1 and R2 in the standard. That said, we do believe that the VAR standards need to be updated to bring the language into line with the latest technologies in use today, i.e. to incorporate language to cover non-synchronous generators and other resources. We recognize that this is beyond the scope of Project 2011-INT-02 but feel the standard needs a good review and update. We also believe that an exemption for power system stabilizer status during generator start-up and shutdown, covered in R3, should be incorporated into the standard.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
Public Service Enterprise Group		<p>We suggest the following changes in R1: Capitalized terms are additional language.1. Modify the opening paragraph:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator [DELETE “of one of the following”] OF THE CONDITIONS IN R1.1 OR R1.2: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] RATIONALE: Added new language to refer to renumbered bullets - see below.2. Change the “bullets” to subparts as follows, delineating the information in the first bulletR1.1 That the generator is being operated in start-up [footnote 1] or shutdown [footnote 2] mode pursuant to:R1.1.1 A Real-time communication, or R1.1.2 A procedure that was previously provided to</p>

Organization	Yes or No	Question 2 Comment
		<p>the Transmission Operator; HOWEVER, AFTER THE PROCEDURE HAS BEEN PROVIDED, NO NOTIFICATION IS REQUIRED BY THE GENERATOR OPERATOR FOR EACH SUBSEQUENT START-UP OR SHUTDOWN.R1.2 That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.3. Summary of 1 and 2:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator [DELETE “of one of the following”] OF THE CONDITIONS IN R1.1 OR R1.2: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]R1.1 That the generator is being operated in start-up [footnote 1] or shutdown [footnote 2] mode pursuant to:R1.1.1 A Real-time communication, or R1.1.2 A procedure that was previously provided to the Transmission Operator; HOWEVER, AFTER THE PROCEDURE HAS BEEN PROVIDED, NO NOTIFICATION IS REQUIRED BY THE GENERATOR OPERATOR FOR EACH SUBSEQUENT START-UP OR SHUTDOWN. R1.2 That the generator is not being operated in the automatic voltage control mode for a reason other than start up or shutdown.4. Change the footnotes as follows:[1] Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load (AS DEFINED BY THE GENERATOR OPERATOR IN R1.1.1 OR IN R.1.1.2) and the generator is prepared for continuous operation. THE GENERATOR OPERATOR SHALL REPORT CHANGES IN THE AUTOMATIC VOLTAGE CONTROL MODE STATUS AT THE END OF START-UP PER R3.[2] Start-up is deemed to have ended when the generator is ramped down to its minimum continuously sustainable load (AS DEFINED BY THE GENERATOR OPERTOR IN R1.1.1 OR IN R.1.1.2) and the generator is prepared to go off-line. THE GENERATOR OPERATOR SHALL REPORT CHANGES IN THE AUTOMATIC VOLTAGE CONTROL MODE STATUS AT THE END OF SHUTDOWN PER R3.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the</b></p>		

Organization	Yes or No	Question 2 Comment
<b>Project 2008-01 drafting team to consider in its revisions to the standard.</b>		
Independent Electricity System Operator		The IESO supports the revised standard.
<b>Response: The SDT thanks you for your comment.</b>		
FirstEnergy		FirstEnergy supports the revisions and thanks the drafting team for their hard work.
<b>Response: The SDT thanks you for your comment.</b>		
Bonneville Power Administration		BPA thanks you for the opportunity to provide comments on Project 2011-INT-02 Interpretation of VAR-002 for Constellation. At this time BPA has no comments or concerns.
<b>Response: The SDT thanks you for your comment.</b>		

END OF REPORT

## **Exhibit E**

Analysis of how VRFs and VSLs Were Determined Using Commission Guidelines

**Justification for Assignment of Violation Severity Levels for VAR-002-2b:**

In developing the VSLs for the VAR-002-2b standard, the SDT anticipated the evidence that would be reviewed during an audit, and developed its VSLs based on the noncompliance an auditor may find during a typical audit. The SDT based its assignment of VSLs on the following NERC criteria:

Lower	Moderate	High	Severe
<p>Missing a minor element (or a small percentage) of the required performance The performance or product measured has significant value as it almost meets the full intent of the requirement.</p>	<p>Missing at least one significant element (or a moderate percentage) of the required performance. The performance or product measured still has significant value in meeting the intent of the requirement.</p>	<p>Missing more than one significant element (or is missing a high percentage) of the required performance or is missing a single vital component. The performance or product has limited value in meeting the intent of the requirement.</p>	<p>Missing most or all of the significant elements (or a significant percentage) of the required performance. The performance measured does not meet the intent of the requirement or the product delivered cannot be used in meeting the intent of the requirement.</p>

FERC’s VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in VAR-002-2b meet the FERC Guidelines for assessing VSLs:

**Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

**Guideline 2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

**Guideline 3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

VSLs should not expand on what is required in the requirement.

**Guideline 4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

. . . unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

**VSLs for VAR-002-2b, Requirement R2:**

R#	Compliance with NERC’s VSL Guidelines	<p>Guideline 1</p> <p>Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p>	<p>Guideline 2</p> <p>Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p>Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>Guideline 3</p> <p>Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>Guideline 4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>
<b>R2</b>	Meets NERC’s VSL guidelines. There is an incremental aspect to the violation and the VSLs follow the guidelines for incremental violations.	The proposed requirement is a revision of VAR-002-b1, R2. The initial approved VSLs were percentage based as applied to a target voltage or reactive power output. However, the requirement was revised to add a tolerance band around a target value. Based on the VSL Guidance, the SDT developed four VSLs based on the amount of time the voltage was operated outside of the tolerance band.	The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.	The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.	The VSLs are based on a single violation and not cumulative violations.



**Exhibit F**

Record of Development of Proposed Reliability Standard

## Project 2011-INT-02 Rapid Revision of VAR-002 to address Constellation Request for Interpretation

### Related Files

**Status:**

Adopted by the Board of Trustees August 16, 2012, pending regulatory approval.

**Purpose/Industry Need:**

VAR-002-1.1b is being revised in response to a request for interpretation.

Draft	Action	Dates	Results	Consideration of Comments
<p><b>Draft 3</b> <b>VAR-002-2b</b> Clean (30)   Redline to Last Posting(31)   Redline to Last Approved(32)</p> <p>Implementation Plan Clean(33)</p> <p>Mapping Document(34)</p> <p><b>Supporting Documents:</b></p> <p>Unofficial Comment Form (Word) for VSL Changes(35)</p> <p>Justification for Assignment of VSLs (36)</p>	<p>Recirculation Ballot and Non-binding Poll of VRFs and VSLs</p> <p>Info(37)</p> <p>Vote&gt;&gt;</p> <p>Submit Comments on VSL Changes&gt;&gt;</p>	<p>07/18/12 - 07/27/12 (closed)</p>	<p>Summary (38)</p> <p>Ballot Results(39)</p> <p>Non-binding Poll Results(40)</p>	
<p><b>Draft 2</b> <b>VAR-002-2b</b> Clean(15)   Redline to Last Posting(16)   Redline to Last Approved(17)</p>	<p>Successive Ballot</p> <p>Updated Info(24)</p> <p>Vote&gt;&gt;</p>	<p>Updated dates on 5/29/12</p> <p>06/18/12 - 06/27/12</p>	<p>Summary (26)</p> <p>Ballot Results(27)</p>	

<p><b>Supporting Documents:</b> Unofficial Comment Form (Word)(18)</p> <p>Implementation Plan Clean(19)   Redline to Last Posting(20)</p> <p>Mapping Document(21)</p> <p>Draft SAR Clean(22)   Redline to Last Posting(23)</p>	<p>Comment Period</p> <p>Info(25)</p> <p>Submit Comments&gt;&gt;</p>	<p>(closed)</p> <p>Updated dates on 5/29/12</p> <p>05/22/12 - 06/27/12 (closed)</p>	<p>Comments Received (28)</p>	<p>Consideration of Comments(29)</p>
<p><b>Draft 1</b> <b>VAR-002-2b</b> Clean(1)   Redline to last approved (2)(updated 2/9/12 to correct an omitted word)</p> <p>Implementation Plan(3)</p> <p>Draft SAR(4)</p> <p><b>Supporting Documents:</b> Request for Interpretation of VAR-002-1b(5)</p> <p>Unofficial Comment Form (Word)(6)</p> <p>Mapping Document (7)(updated 2/9/12 to match the requirement)</p>	<p>Initial Ballot</p> <p>Info (March 14)(8) Updated Info (Feb 9)(9) Info(10)</p> <p>Vote&gt;&gt;</p>	<p>03/14/12 - 03/23/12 (closed)</p>	<p>Summary (11)</p> <p>Full Record(12)</p>	
	<p>Formal Comment Period</p> <p>Submit Comments&gt;&gt;</p>	<p>02/08/12 - 03/23/12 (closed)</p>	<p>Comments Received (13)</p>	<p>Consideration of Comments(14)</p>
	<p>Ballot Pool</p> <p>Join&gt;&gt;</p>	<p>02/08/12 - 03/08/12 (closed)</p>		

To download a file click on the file using your right mouse button, then save it to your computer in a directory of your choice.

### **Standard Development Roadmap**

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

#### **Development Steps Completed:**

1. SAR and proposed standard drafted and approved for posting (January 2012).

#### **Proposed Action Plan and Description of Current Draft:**

This is the first draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes previously approved Time Horizons, Violation Risk Factors, and Violation Severity Levels; and is being submitted for a 45-day concurrent formal comment period and initial ballot.

#### **Future Development Plan:**

<b>Anticipated Actions</b>	<b>Anticipated Date</b>
1. Develop responses to comments and develop second version draft standard.	March – April 2012
2. Post response to comments and conduct successive ballot.	May-June 2012
3. Develop responses to ballot comments.	June-July 2012
4. Post responses to comments and conduct recirculation ballot.	July 2012
5. BOT adoption.	August 2012
6. File with regulatory authorities.	October 2012

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or.
  - That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

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<sup>1</sup> Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.

<sup>3</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this will lead to a change in the associated Facility Ratings.

- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- R3.1.** 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.
- R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
- R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
- R4.1.1.** Tap settings.
- R4.1.2.** Available fixed tap ranges.
- R4.1.3.** Impedance data.
- R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
- R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

**C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.
- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator's directives as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.

- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

**1.2. Data Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 5 and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measure 6)

The Compliance Monitor shall retain any audit data for three years.

**1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

- Compliance Audit**
- Self-Certification**
- Spot Checking**
- Compliance Investigation**
- Self-Reporting**
- Complaint**

**1.4. Additional Compliance Information**

None

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by 5% or less.	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 5% up to (and including) 10% OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 10% up to (and including) 15%	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 15%. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1



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			R3.1 or R3.2	and R3.2
R4.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
2	TBD	Revised R1 to address an Interpretation Request. Also added VRFs, Time Horizons and VSLs.	Revised

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## **Appendix 2**

### **Interpretation of VAR-002-1a**

#### **Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

**Standard Development Roadmap**

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

**Development Steps Completed:**

1. SAR and proposed standard drafted and approved for posting (January 2012).

**Proposed Action Plan and Description of Current Draft:**

This is the first draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes previously approved Time Horizons, Violation Risk Factors, and Violation Severity Levels; and is being submitted for a 45-day concurrent formal comment period and initial ballot.

**Future Development Plan:**

<b><u>Anticipated Actions</u></b>	<b><u>Anticipated Date</u></b>
<u>1. Develop responses to comments and develop second version draft standard.</u>	<u>March – April 2012</u>
<u>2. Post response to comments and conduct successive ballot.</u>	<u>May-June 2012</u>
<u>3. Develop responses to ballot comments.</u>	<u>June-July 2012</u>
<u>4. Post responses to comments and conduct recirculation ballot.</u>	<u>July 2012</u>
<u>5. BOT adoption.</u>	<u>August 2012</u>
<u>6. File with regulatory authorities.</u>	<u>October 2012</u>

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-~~1.1b~~2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.

~~5. **Effective Date:** Immediately after approval of applicable regulatory authorities.~~

5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator ~~of one of the following:~~ [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]
- That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or.
  - That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]
- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

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<sup>1</sup> Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.

<sup>3</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this will lead to a change in the associated Facility Ratings.

- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- R3.1.** 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.
- R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
- R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
- R4.1.1.** Tap settings.
- R4.1.2.** Available fixed tap ranges.
- R4.1.3.** Impedance data.
- R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
- R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### **C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. *If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.*
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.
- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator's directives as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.



- M5. The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6. The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7. The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

~~For entities that do not work for the Regional Reliability Organization.~~

~~Entity, the Regional Entity shall serve as the Compliance Monitoring Period and Reset Time Frame Enforcement Authority.~~

~~One calendar year.~~

~~For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.~~

**1.2. Data Retention**

~~The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.~~

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 5 and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measure 6)

The Compliance Monitor shall retain any audit data for three years.

**1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

**Compliance Audit**

**Self-Certification**

**Spot Checking**

**Compliance Investigation**

**Self-Reporting**

**Complaint**

**1.3.1.4. Additional Compliance Information**

**Standard VAR-002-~~1.1b~~2b — Generator Operation for Maintaining Network Voltage Schedules**

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~~The Generator Owner and Generator Operator shall each demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.~~

None

**2. Violation Severity Levels of Non-Compliance for Generator Operator**

~~2.1. Level 1: There shall be a Level 1 non-compliance if any of the following conditions exist:~~

~~2.1.1 One incident of failing to notify the Transmission Operator as identified in R3.1, R3.2 or R5.1.~~

~~2.1.2 One incident of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.2. Level 2: There shall be a Level 2 non-compliance if any of the following conditions exist:~~

~~2.2.1 More than one but less than five incidents of failing to notify the Transmission as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.2.2 More than one but less than five incidents of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.3. Level 3: There shall be a Level 3 non-compliance if any of the following conditions exist:~~

~~2.3.1 More than five but less than ten incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.3.2 More than five but less than ten incidents of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.4. Level 4: There shall be a Level 4 non-compliance if any of the following conditions exist:~~

~~2.4.1 Failed to comply with the Transmission Operator’s directives as identified in R2.~~

~~2.4.2 Ten or more incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.4.3 Ten or more incidents of failing to maintain a voltage or reactive power schedule (R2).~~

**3. Levels of Non-Compliance for Generator Owner:**

~~3.1.1 Level One: Not applicable.~~

~~3.1.2 Level Two: Documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage was missing two of the data types identified in R4.1.1 through R4.1.4.~~

~~3.1.3 Level Three: No documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage~~

~~3.1.4 Level Four: Did not ensure generating unit step-up transformer settings were changed in compliance with the specifications provided by the Transmission Operator as identified in R5.~~

<u>R.#</u>	<u>Lower VSL</u>	<u>Moderate VSL</u>	<u>High VSL</u>	<u>Severe VSL</u>
<u>R1.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.</u>

**Standard VAR-002-1.1b2b — Generator Operation for Maintaining Network Voltage Schedules**

<p><u>R2.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by 5% or less.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 5% up to (and including) 10%</u>  <u>OR</u>  <u>When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</u>  <u>OR</u>  <u>The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 10% up to (and including) 15%</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 15%.</u>  <u>OR</u>  <u>When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</u></p>
<p><u>R3.</u></p>	<p><u>N/A</u></p>	<p><u>N/A</u></p>	<p><u>The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either R3.1 or R3.2</u></p>	<p><u>The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1 and R3.2</u></p>
<p><u>R4.</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u>  <u>OR</u>  <u>The information was provided in more than</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u>  <u>OR</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u>  <u>OR</u>  <u>The information was</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4</u>  <u>OR</u>  <u>The information was</u></p>

**Standard VAR-002-1.1b2b — Generator Operation for Maintaining Network Voltage Schedules**

	<u>30, but less than or equal to 35 calendar days of the request.</u>	<u>The information was provided in more than 35, but less than or equal to 40 calendar days of the request.</u>	<u>provided in more than 40, but less than or equal to 45 calendar days of the request.</u>	<u>provided in more than 45 calendar days of the request.</u>
<u>R5.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.</u>
<u>R5.1.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity failed to notify the Transmission Operator and to provide technical justification.</u>

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
<u>2</u>	<u>TBD</u>	<u>Revised R1 to address an Interpretation Request. Also added VRFs, Time Horizons and VSLs.</u>	<u>Revised</u>

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.



## Appendix 2

### Interpretation of VAR-002-1a

**Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

## Implementation Plan

### Project 2011-INT-02 Interpretation of VAR-002 for Constellation

#### **Implementation Plan for VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules**

##### *Approvals Required*

VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules

##### *Prerequisite Approvals*

None

##### *Revisions to Glossary Terms*

None

##### *Applicable Entities*

Generator Operator

Generator Owner

##### *Conforming Changes to Other Standards*

None

##### *Effective Dates*

In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

##### *Retirements*

VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules should be retired at midnight of the day immediately prior to the Effective Date of VAR-002-2b in the particular jurisdiction in which the new standard is becoming effective.

## Standards Authorization Request Form

NERC welcomes suggestions to improve the reliability of the bulk power system through improved reliability standards. Please use this form to submit your request to propose a new or a revision to a NERC's Reliability Standard.

Request to propose a new or a revision to a Reliability Standard			
Title of Proposed Standard:	Generator Operation for Maintaining Network Voltage Schedules		
Date Submitted:	January 13, 2012		
SAR Requester Information			
Name:	Stephen Crutchfield		
Organization:	NERC		
Telephone:	609-651-9455	E-mail:	Stephen.crutchfield@nerc.net
SAR Type (Check as many as applicable)			
<input type="checkbox"/> New Standard	<input type="checkbox"/> Withdrawal of existing Standard		
<input checked="" type="checkbox"/> Revision to existing Standard	<input type="checkbox"/> Urgent Action		

SAR Information
Industry Need (What is the industry problem this request is trying to solve?):
This SAR proposes to modify VAR-002-1b, R1 to address an ambiguity in the standard.
Purpose or Goal (How does this request propose to address the problem described above?):
N/A
Identify the Objectives of the proposed standard's requirements (What specific reliability deliverables are required to achieve the goal?):
N/A

## SAR Information

Brief Description (Provide a paragraph that describes the scope of this standard action.)

This SAR proposes to modify VAR-002-1b, R1 to address an ambiguity in the standard.

Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)

Requirement R1 of VAR-002-1.1b states the following:

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.

NERC received a request to interpret this requirement. The requester stated:

“During startup and shutdown of a generator, it is industry practice to have a generator’s AVR in the manual mode. Due to the instabilities associated with the changes in the field during these times, it is more reliable to have an operator control the generator than the AVR. Further, an AVR’s response is slower and more unreliable when the field current is low, which is the case during start up and shut down. Both the BA and TOP realize that during start up and shut down the real and reactive power from that generator cannot be counted upon for system stability.

Some regions have taken the stance that during start up and shut down of a generator, it is reasonable to assume that the AVR is in manual and that it will be switched to automatic once stable. This would not require contacting the TOP to state that the AVR is in manual for this time period. Other regions have taken the approach that all status changes of the AVR from automatic, regardless of industry practice and stability, needs to be communicated to the TOP.

Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when

SAR Information

the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time.

Constellation has found two issues caused by the lack of clarity/incorrect interpretation of this standard:

1. There is not a consistent view across the regions with regard to this requirement. Such inconsistencies are contrary to the intent of NERC’s CMEP and can expose entities to inconsistent evaluations. A procedure may be compliant in one region and may not be in another.
2. Requiring a GOP to communicate that the AVR is in manual during start up/shutdown is an unnecessary distraction at a time when the unit is unstable. A generator operator already communicates to the TOP that the unit is being started up or shutting down. Adding another communication imposes a redundant task when the generator operator is focused on controlling the unit and ensuring the reliability of the BES.”

The Standards Committee approved the use of a “rapid modification” approach to clarify the requirement in question directly in lieu of a formal interpretation. The Interpretation Team is proposing the attached modification to the standard in lieu of an Interpretation. The redline standard includes the FERC approved VRFs and VSLs for this standard.

Reliability Functions

The Standard will Apply to the Following Functions (Check each one that applies.)

<input type="checkbox"/> Regional Reliability Organization	Conducts the regional activities related to planning and operations, and coordinates activities of Responsible Entities to secure the reliability of the Bulk Electric System within the region and adjacent regions.
<input type="checkbox"/> Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator’s wide area view.

Standards Authorization Request Form

Reliability Functions	
<input type="checkbox"/> Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
<input type="checkbox"/> Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/> Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/> Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/> Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/> Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
<input type="checkbox"/> Transmission Owner	Owns and maintains transmission facilities.
<input type="checkbox"/> Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
<input type="checkbox"/> Distribution Provider	Delivers electrical energy to the End-use customer.
<input checked="" type="checkbox"/> Generator Owner	Owns and maintains generation facilities.
<input checked="" type="checkbox"/> Generator Operator	Operates generation unit(s) to provide real and reactive power.
<input type="checkbox"/> Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/> Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/> Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.

Reliability and Market Interface Principles

## Standards Authorization Request Form

Reliability and Market Interface Principles	
Applicable Reliability Principles (Check all that apply).	
<input checked="" type="checkbox"/>	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.
Does the proposed Standard comply with all of the following Market Interface Principles?	
	Enter (yes/no)
1. A reliability standard shall not give any market participant an unfair competitive advantage.	Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure.	Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.	Yes
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.	Yes

Related Standards	
Standard No.	Explanation

## Standards Authorization Request Form

Related Standards	

Related SARs	
SAR ID	Explanation

Regional Variances	
Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
RFC	
SERC	
SPP	



**Standards Authorization Request Form**

**Regional Variances**

WECC	
------	--

When completed, email this form to:  
[maureen.long@nerc.net](mailto:maureen.long@nerc.net)  
 For questions about this form or for assistance in  
 completing the form, call Maureen Long at 813-468-5998.

**Note: an Interpretation cannot be used to change a standard.**

Request for an Interpretation of a Reliability Standard	
Date submitted: 1/28/2011	
<b>Contact information for person requesting the interpretation:</b>	
Name:	Amir Hammad
Organization:	Constellation Power Generation
Telephone:	443-677-9762
E-mail:	amir.hammad@constellation.com
<b>Identify the standard that needs clarification:</b>	
Standard Number (include version number):	VAR-002-1.1b
(example: PRC-001-1)	
Standard Title:	Generator Operation for Maintaining Network Voltage Schedules
<b>Identify specifically what requirement needs clarification:</b>	
Requirement Number and Text of Requirement: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.	
Clarification needed: During startup and shutdown of a generator, it is industry practice to have a generator's AVR in the manual mode. Due to the instabilities associated with the changes in the field during these times, it is more reliable to have an operator control the generator than the AVR. Further, an AVR's response is slower and more unreliable when the field current is low, which is the case during start up and shut down. Both the BA and TOP realize that during start up and shut down the real and reactive power from that generator cannot be counted upon for system stability.	
Some regions have taken the stance that during start up and shut down of a generator, it is reasonable to assume that the AVR is in manual and that it will be switched to automatic once stable. This would not require contacting the TOP to state that the AVR is in manual for this time period. Other regions have taken the approach that all status changes of the AVR from automatic, regardless of industry practice and stability, needs to be communicated to the TOP.	
Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time.	

## Identify the material impact associated with this interpretation:

Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.

Constellation has found two issues caused by the lack of clarity/incorrect interpretation of this standard:

1. There is not a consistent view across the regions with regard to this requirement. Such inconsistencies are contrary to the intent of NERC's CMEP and can expose entities to inconsistent evaluations. A procedure may be compliant in one region and may not be in another.
2. Requiring a GOP to communicate that the AVR is in manual during start up/shutdown is an unnecessary distraction at a time when the unit is unstable. A generator operator already communicates to the TOP that the unit is being started up or shutting down. Adding another communication imposes a redundant task when the generator operator is focused on controlling the unit and ensuring the reliability of the BES.

## Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

### Unofficial Standard Comment Form

Please **DO NOT** use this form for submitting comments. Please use the [electronic form](#) to submit comments on the Standard. The electronic comment form must be completed by **March 23, 2012**.

If you have questions please contact Stephen Crutchfield at [Stephen.crutchfield@nerc.net](mailto:Stephen.crutchfield@nerc.net) or by telephone at 609-651-9455.

### Background Information

This posting is soliciting formal comment.

Requirement R1 of VAR-002-1.1b states the following:

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.

NERC received a request to interpret this requirement. The requester stated:

“During startup and shutdown of a generator, it is industry practice to have a generator’s AVR in the manual mode. Due to the instabilities associated with the changes in the field during these times, it is more reliable to have an operator control the generator than the AVR. Further, an AVR’s response is slower and more unreliable when the field current is low, which is the case during start up and shut down. Both the BA and TOP realize that during start up and shut down the real and reactive power from that generator cannot be counted upon for system stability.

Some regions have taken the stance that during start up and shut down of a generator, it is reasonable to assume that the AVR is in manual and that it will be switched to automatic once stable. This would not require contacting the TOP to state that the AVR is in manual for this

## Project 2011-INT-02 - Project Name

time period. Other regions have taken the approach that all status changes of the AVR from automatic, regardless of industry practice and stability, needs to be communicated to the TOP.

Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time.

Constellation has found two issues caused by the lack of clarity/incorrect interpretation of this standard:

1. There is not a consistent view across the regions with regard to this requirement. Such inconsistencies are contrary to the intent of NERC's CMEP and can expose entities to inconsistent evaluations. A procedure may be compliant in one region and may not be in another.
2. Requiring a GOP to communicate that the AVR is in manual during start up/shutdown is an unnecessary distraction at a time when the unit is unstable. A generator operator already communicates to the TOP that the unit is being started up or shutting down. Adding another communication imposes a redundant task when the generator operator is focused on controlling the unit and ensuring the reliability of the BES."

The Standards Committee approved the use of a "rapid revision" approach to clarify the requirement in question directly in lieu of a formal interpretation. The Interpretation Team is proposing the attached modification to the standard to address the requested clarification. The redline standard includes the FERC approved VRFs and VSLs for this standard, which are unchanged from the previously approved versions. Several generic changes made to bring the standard into conformance with the latest approved format include the following:

- Replace Effective Date language to reflect current guidance from NERC legal.
- Changed, "Compliance Monitoring Responsibility" to "Compliance Enforcement Authority"
- Added, "Compliance Monitoring and Enforcement Processes"
- Replaced out-of-date Levels of Non-compliance with approved Violation Severity Levels
- Transferred approved VRFs from NERC's VRF Matrix – which includes VRFs that have already been approved by FERC.

## Drafting Team Consideration

The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode. Some units are not operated in automatic voltage control mode until they reach minimum load while others operate in automatic voltage control mode prior to closing the breaker to the bulk power system. The drafting team believes it is up to the Generator Operator to formally notify the Transmission Operator of its procedures for placing the unit into automatic voltage control mode.

The team revised the requirement to include two bullets that define the exceptions to when a unit must be operated in automatic voltage control mode. The first bullet is contained in the current approved version of the standard and provides the exception of when the Generator Operator notifies the Transmission Operator that the AVR is off. The second bullet was added to address the interpretation request. It states that there is an exception for when the unit does not normally operate in automatic voltage control mode during start up and shut down. Two footnotes were included to address what is intended by the terms “start up” and “shut down”. The footnotes are:

- Start up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation.
- Shut down is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.

The drafting team does not intend for these two terms to be included in the NERC Glossary of Terms but are intended to provide guidance for when the exception applies.

You do not have to answer all questions. Enter All Comments in Simple Text Format. Bullets, numbers, and special formatting will not be retained.

Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

## Questions

1. Do you agree with the use of this “Rapid” approach to clarify the standard, rather than clarifying the standard through an Interpretation? If No, please explain your concerns.

Yes

No

Comments:

Project 2011-INT-02 - Project Name

2. Does the language in the SAR adequately represent the issue raised in the interpretation request? If No, please provide your suggestions to modify the SAR.

Yes

No

Comments:

3. Does the proposed revision resolve the issue raised in the interpretation request? If No, please provide your suggestions to modify the standard.

Yes

No

Comments:

4. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here.

Comments:

## Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Mapping Document *(Updated February 9, 2012 to correspond to the updated Requirement R1)*

### Mapping

Translation of VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules into VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules.

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.	Revised to address Interpretation Request	<b>R1.</b> The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator <b>Operator</b> has notified the Transmission Operator of one of the following: <i>[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</i>



Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		<ul style="list-style-type: none"> <li>• That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or.</li> <li>• That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.</li> </ul>
	All other requirements remain unchanged with the exception of the addition of Time Horizons and previously approved Violation Risk Factors and	<p>R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to</p>

<sup>1</sup> Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.

<sup>3</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this will lead to a change in the associated Facility Ratings.

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
	Violation Severity Levels.	<p>control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p>R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p>R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>R3.1. 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.</p> <p>R3.2. A status or capability change on any other Reactive Power resources under the Generator Operator’s control and the expected duration of the change in status or capability.</p> <p>R4. The Generator Owner shall provide the following to its associated Transmission Operator and Transmission</p>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		<p>Planner within 30 calendar days of a request. [Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]</p> <p>R4.1. For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:</p> <ul style="list-style-type: none"> <li>R4.1.1. Tap settings.</li> <li>R4.1.2. Available fixed tap ranges.</li> <li>R4.1.3. Impedance data.</li> <li>R4.1.4. The +/- voltage range with step-change in % for load-tap changing transformers.</li> </ul> <p>R5. 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: Medium] [Time Horizon: Real-time Operations]</p> <p>R5.1. If the Generator Operator can't comply with the Transmission Operator's specifications,</p>

Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation to Address Request for Interpretation

**Ballot Window Now Open Through 8 p.m. Eastern on Friday, March 23, 2012**

#### [Now Available](#)

Please note that although the project number and name reference that this is an interpretation, **this project is a revision to VAR-002-1.1b – Generator Operation for Maintaining Network Voltage Schedules**. In January 2011, Constellation Power Generation (CEG) requested an interpretation for VAR-002-1.1b – Generator Operation for Maintaining Network Voltage Schedules, Requirement R1. The Standards Committee has authorized processing a request for interpretation of VAR-002-1.1 b, Requirement R1 as a “rapid revision” of the standard, rather than as an interpretation with the requester’s permission.

A ‘rapid revision’ of a standard follows the normal standard development process in the approved NERC Standard Processes Manual, but because the scope of the changes is limited to addressing a narrow request for clarification, the process allows the Standards Committee to waive the initial 30-day formal comment period. The Standards Committee is piloting the ‘rapid revision’ process as part of an effort to make efficient use of industry resources. As envisioned, making a permanent revision to the standard makes more efficient use of industry resources than providing clarity first through an interpretation and then again later through a revision to the standard.

A drafting team appointed by the Standards Committee has posted CEG’s request for interpretation, a SAR identifying the revisions necessary to address the requested clarification, a draft VAR-002-2b (clean and redline showing changes to the last approved version of the standard), and an associated implementation plan, for a formal 45-day comment period and initial ballot **through 8 p.m. Eastern on Friday, March 23, 2012**.

#### **Special Instructions for Submitting Comments with a Ballot**

Please note that comments submitted during the formal comment period and the ballots for the standard both use the same electronic form, and it is NOT necessary for ballot pool members to submit more than one set of comments. **The drafting team requests that all stakeholders (ballot pool members as well as other stakeholders) submit all comments through the electronic comment form.**

#### **Next Steps**

The drafting team will consider all comments received during the formal comment period and initial ballot.

**Background**

Constellation Power Generation submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down. Additional information is available on the [project webpage](#).

**Standards Development Process**

The [Standard Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate. For more information or assistance, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net).

*For more information or assistance, please contact Monica Benson,  
Standards Process Administrator, at [monica.benson@nerc.net](mailto:monica.benson@nerc.net) or at 404-446-2560.*

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## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002

#### Corrected Documents Posted

**Ballot Pool Now Open through 8 a.m. Eastern on March 8, 2012**

**Formal Comment Period Open through 8 p.m. Eastern on Friday, March 23, 2012**

**Initial Ballot Window Open March 14 – 23, 2012**

#### [Now Available](#)

The word “Operator” was inadvertently deleted in the revised Requirement R1 of VAR-002-2b. A corrected version, with the reinserted word highlighted in red, has been posted along with a corrected mapping document.

Thank you.

#### **Standards Development Process**

The [Standard Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate. For more information or assistance, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net).

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Standards Process Administrator, at [monica.benson@nerc.net](mailto:monica.benson@nerc.net) or at 404-446-2560.*

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# Standards Announcement

## Project 2011-INT-02 Rapid Revision of VAR-002

**Ballot Pool Now Open through 8 a.m. Eastern on March 8, 2012**

**Formal Comment Period Open through 8 p.m. Eastern on Friday, March 23, 2012**

**Initial Ballot Window Open March 14 – 23, 2012**

### Now Available

The Standards Committee has authorized processing a request for interpretation of VAR-002-1b Requirement R2 as a “rapid revision” of the standard, rather than as an interpretation, with the requester’s permission. A “rapid revision” uses the normal standard development process to make a clarifying change to a standard. The drafting team formed for this project has posted a draft SAR, along with the clean and redline versions of the revised standard and an implementation plan, for a parallel formal comment period with a ballot during the last ten days of the comment period, through March 23, 2012. A ballot pool is being formed and the ballot pool window is open through 8 a.m. Eastern on Thursday, March 8, 2012.

### **Instructions for Joining the Ballot Pool**

A ballot pool is being formed to ballot VAR-002-2b. The ballot pool window is open through 8 a.m. Eastern on Thursday, March 8, 2012. **(Please note that ballot pool windows close at 8 a.m. Eastern on the day they close).**

To join the ballot pool to be eligible to vote in the upcoming ballot of the standard and associated implementation plan, go to: [Join Ballot Pool](#)

During the pre-ballot windows, members of the ballot pool may communicate with one another by using their “ballot pool list server.” (Once the balloting begins, ballot pool members are prohibited from using the ballot pool list servers.) The list server for this project is: [bp-2011-INT-02\\_VAR-002\\_in@nerc.com](mailto:bp-2011-INT-02_VAR-002_in@nerc.com)

### **Instructions for Commenting**

A formal comment period is open through **8 p.m. Eastern on Friday, March 23, 2012**. Please use this [electronic form](#) to submit comments. If you experience any difficulties in using the electronic form, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net). An off-line, unofficial copy of the comment form is posted on the [project page](#).



### Special Instructions for Submitting Comments with a Ballot

Please note that comments submitted during the formal comment period and the ballots for the standards both use the same electronic form, and will be compiled into a single report with duplicate comments submitted by the same entity removed and duplicate comments submitted by multiple entities consolidated. **Therefore, it is NOT necessary for ballot pool members to submit more than one set of comments. The drafting team requests that all stakeholders (ballot pool members as well as other stakeholders) submit all comments through the electronic comment form.**

### Next Steps

The drafting team will consider all comments submitted to determine whether to make additional revisions to the standard.

### Background

Constellation Energy submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down. Additional information is available on the [project webpage](#).

### Standards Development Process

The [Standard Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate. For more information or assistance, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net).

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## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation

#### Initial Ballot Results

#### [Now Available](#)

An initial ballot for Project 2010-07 – Rapid Revision for VAR-002 for Constellation concluded on Friday, March 23, 2012. Voting statistics are listed below, and the [Ballot Results](#) page provides a link to the detailed results.

#### Initial Ballot Results for Project 2011-INT-02

Quorum: 86.92%

Approval: 63.09%

#### Next Steps

The drafting team will consider all comments submitted, and based on the comments will determine whether to make additional changes. If the drafting team determines that no substantive changes are required to address the comments, a recirculation ballot will be conducted. If the drafting team decides to make substantive revisions, the drafting team will submit the revised standard and consideration of comments received for a quality review prior to posting for a parallel formal 30-day comment period and successive ballot.

#### Background

The Standards Committee has authorized processing a request for interpretation of VAR-002-1b Requirement R2 as a “rapid revision” of the standard, rather than as an interpretation. A “rapid revision” uses the normal standard development process to make a clarifying change to a standard.

#### Standards Development Process

The [Standard Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate. For more information or assistance, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net).

*For more information or assistance, please contact Monica Benson,  
Standards Process Administrator, at [monica.benson@nerc.net](mailto:monica.benson@nerc.net) or at 404-446-2560.*

User Name

Password

Log in

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- Ballot Pools
- Current Ballots
- Ballot Results
- Registered Ballot Body
- Proxy Voters

Home Page

Ballot Results	
<b>Ballot Name:</b>	Project 2011-INT-02 Interpretation of VAR-002 for Constellation_in
<b>Ballot Period:</b>	3/14/2012 - 3/23/2012
<b>Ballot Type:</b>	Initial
<b>Total # Votes:</b>	279
<b>Total Ballot Pool:</b>	321
<b>Quorum:</b>	<b>86.92 % The Quorum has been reached</b>
<b>Weighted Segment Vote:</b>	63.09 %
<b>Ballot Results:</b>	<b>The drafting team is considering comments.</b>

Summary of Ballot Results									
Segment	Ballot Pool	Segment Weight	Affirmative		Negative		Abstain # Votes	No Vote	
			# Votes	Fraction	# Votes	Fraction			
1 - Segment 1.		77	1	43	0.672	21	0.328	6	7
2 - Segment 2.		9	0.7	5	0.5	2	0.2	1	1
3 - Segment 3.		73	1	34	0.596	23	0.404	4	12
4 - Segment 4.		25	1	13	0.591	9	0.409	1	2
5 - Segment 5.		78	1	28	0.475	31	0.525	6	13
6 - Segment 6.		45	1	20	0.556	16	0.444	4	5
7 - Segment 7.		0	0	0	0	0	0	0	0
8 - Segment 8.		6	0.5	4	0.4	1	0.1	0	1
9 - Segment 9.		1	0.1	1	0.1	0	0	0	0
10 - Segment 10.		7	0.5	4	0.4	1	0.1	1	1
<b>Totals</b>		<b>321</b>	<b>6.8</b>	<b>152</b>	<b>4.29</b>	<b>104</b>	<b>2.51</b>	<b>23</b>	<b>42</b>

Individual Ballot Pool Results				
Segment	Organization	Member	Ballot	Comments
1	Ameren Services	Kirit Shah	Negative	<a href="#">View</a>
1	American Transmission Company, LLC	Andrew Z Pusztai	Negative	<a href="#">View</a>
1	Arizona Public Service Co.	Robert Smith	Affirmative	
1	Associated Electric Cooperative, Inc.	John Bussman	Affirmative	
1	Austin Energy	James Armke	Affirmative	
1	Avista Corp.	Scott J Kinney	Affirmative	
1	Balancing Authority of Northern California	Kevin Smith	Affirmative	
1	Baltimore Gas & Electric Company	Gregory S Miller	Abstain	<a href="#">View</a>

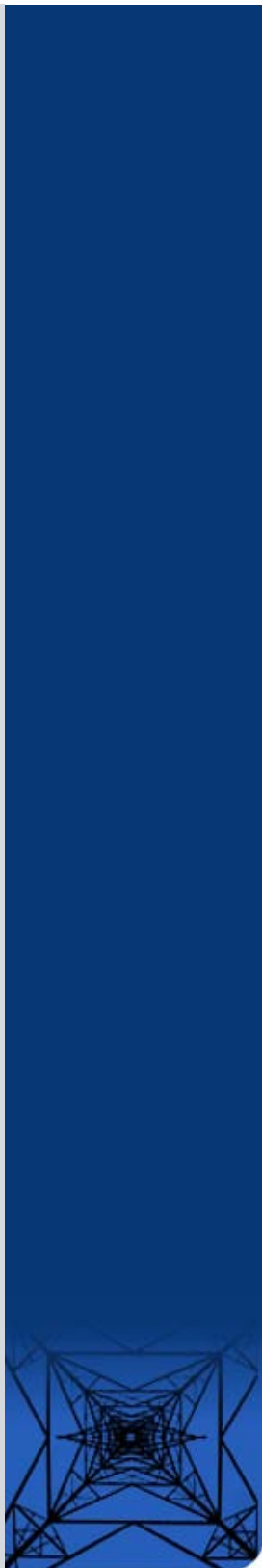
1	BC Hydro and Power Authority	Patricia Robertson	<a href="#">Abstain</a>	
1	Beaches Energy Services	Joseph S Stonecipher	<a href="#">Affirmative</a>	
1	Black Hills Corp	Eric Egge	<a href="#">Abstain</a>	
1	Bonneville Power Administration	Donald S. Watkins	<a href="#">Affirmative</a>	<a href="#">View</a>
1	Brazos Electric Power Cooperative, Inc.	Tony Kroskey	<a href="#">Negative</a>	<a href="#">View</a>
1	CenterPoint Energy Houston Electric, LLC	John Brockhan	<a href="#">Affirmative</a>	
1	City of Tacoma, Department of Public Utilities, Light Division, dba Tacoma Power	Chang G Choi	<a href="#">Affirmative</a>	
1	Clark Public Utilities	Jack Stamper	<a href="#">Affirmative</a>	
1	Colorado Springs Utilities	Paul Morland	<a href="#">Affirmative</a>	
1	Consolidated Edison Co. of New York	Christopher L de Graffenried	<a href="#">Affirmative</a>	
1	CPS Energy	Richard Castrejana	<a href="#">Affirmative</a>	
1	Dairyland Power Coop.	Robert W. Roddy	<a href="#">Affirmative</a>	
1	Dominion Virginia Power	Michael S Crowley	<a href="#">Affirmative</a>	
1	Empire District Electric Co.	Ralph F Meyer		
1	Entergy Services, Inc.	Edward J Davis	<a href="#">Negative</a>	<a href="#">View</a>
1	FirstEnergy Corp.	William J Smith	<a href="#">Negative</a>	<a href="#">View</a>
1	Florida Keys Electric Cooperative Assoc.	Dennis Minton	<a href="#">Affirmative</a>	
1	Florida Power & Light Co.	Mike O'Neil	<a href="#">Negative</a>	
1	FortisBC	Curtis Klashinsky	<a href="#">Affirmative</a>	
1	Great River Energy	Gordon Pietsch	<a href="#">Negative</a>	<a href="#">View</a>
1	Hoosier Energy Rural Electric Cooperative, Inc.	Bob Solomon	<a href="#">Negative</a>	
1	Hydro One Networks, Inc.	Ajay Garg	<a href="#">Affirmative</a>	
1	Idaho Power Company	Ronald D. Schellberg	<a href="#">Affirmative</a>	
1	Imperial Irrigation District	Tino Zaragoza	<a href="#">Affirmative</a>	
1	International Transmission Company Holdings Corp	Michael Moltane	<a href="#">Affirmative</a>	
1	Kansas City Power & Light Co.	Michael Gammon	<a href="#">Affirmative</a>	
1	Lincoln Electric System	Doug Bantam	<a href="#">Abstain</a>	
1	Long Island Power Authority	Robert Ganley		
1	Los Angeles Department of Water & Power	John Burnett		
1	Manitoba Hydro	Joe D Petaski	<a href="#">Affirmative</a>	<a href="#">View</a>
1	MidAmerican Energy Co.	Terry Harbour	<a href="#">Negative</a>	<a href="#">View</a>
1	Minnkota Power Coop. Inc.	Theresa Allard	<a href="#">Affirmative</a>	
1	Nebraska Public Power District	Cole C Brodine	<a href="#">Negative</a>	<a href="#">View</a>
1	New York Power Authority	Bruce Metruck	<a href="#">Affirmative</a>	
1	Northeast Utilities	David Boguslawski		
1	Northern Indiana Public Service Co.	Kevin M Largura	<a href="#">Affirmative</a>	
1	NorthWestern Energy	John Canavan	<a href="#">Abstain</a>	
1	Ohio Valley Electric Corp.	Robert Matthey	<a href="#">Negative</a>	
1	Oklahoma Gas and Electric Co.	Marvin E VanBebber	<a href="#">Negative</a>	<a href="#">View</a>
1	Omaha Public Power District	Doug Peterchuck	<a href="#">Negative</a>	<a href="#">View</a>
1	Oncor Electric Delivery	Jen Fiegel		
1	PacifiCorp	Ryan Millard	<a href="#">Negative</a>	<a href="#">View</a>
1	PECO Energy	Ronald Schloendorn	<a href="#">Negative</a>	
1	Platte River Power Authority	John C. Collins	<a href="#">Affirmative</a>	
1	Portland General Electric Co.	John T Walker	<a href="#">Affirmative</a>	
1	Potomac Electric Power Co.	David Thorne	<a href="#">Affirmative</a>	
1	PPL Electric Utilities Corp.	Brenda L Truhe		
1	Progress Energy Carolinas	Brett A Koelsch	<a href="#">Negative</a>	<a href="#">View</a>
1	Public Service Company of New Mexico	Laurie Williams	<a href="#">Affirmative</a>	
1	Public Service Electric and Gas Co.	Kenneth D. Brown	<a href="#">Negative</a>	<a href="#">View</a>
1	Puget Sound Energy, Inc.	Denise M Lietz	<a href="#">Abstain</a>	
1	Rochester Gas and Electric Corp.	John C. Allen	<a href="#">Affirmative</a>	
1	Sacramento Municipal Utility District	Tim Kelley	<a href="#">Affirmative</a>	
1	Salt River Project	Robert Kondziolka	<a href="#">Affirmative</a>	
1	Santee Cooper	Terry L Blackwell	<a href="#">Negative</a>	
1	Seattle City Light	Pawel Krupa	<a href="#">Affirmative</a>	
1	Sierra Pacific Power Co.	Rich Salgo	<a href="#">Affirmative</a>	
1	Snohomish County PUD No. 1	Long T Duong	<a href="#">Affirmative</a>	
1	South California Edison Company	Steven Mavis	<a href="#">Affirmative</a>	
1	Southern Company Services, Inc.	Robert Schaffeld		
1	Sunflower Electric Power Corporation	Noman Lee Williams	<a href="#">Affirmative</a>	
1	Tampa Electric Co.	Beth Young	<a href="#">Negative</a>	
1	Tennessee Valley Authority	Larry Akens	<a href="#">Negative</a>	<a href="#">View</a>
1	Tri-State G & T Association, Inc.	Tracy Sliman	<a href="#">Affirmative</a>	
1	Tucson Electric Power Co.	John Tolo	<a href="#">Affirmative</a>	

1	United Illuminating Co.	Jonathan Appelbaum	Affirmative	
1	Westar Energy	Allen Klassen	Negative	<a href="#">View</a>
1	Western Area Power Administration	Brandy A Dunn	Affirmative	
1	Xcel Energy, Inc.	Gregory L Pieper	Affirmative	
2	Alberta Electric System Operator	Mark B Thompson	Affirmative	<a href="#">View</a>
2	BC Hydro	Venkataramakrishnan Vinnakota	Abstain	
2	Electric Reliability Council of Texas, Inc.	Charles B Manning	Affirmative	<a href="#">View</a>
2	Independent Electricity System Operator	Barbara Constantinescu	Affirmative	
2	ISO New England, Inc.	Kathleen Goodman	Affirmative	
2	Midwest ISO, Inc.	Marie Knox	Negative	<a href="#">View</a>
2	New Brunswick System Operator	Alden Briggs	Affirmative	
2	New York Independent System Operator	Gregory Campoli	Negative	<a href="#">View</a>
2	Southwest Power Pool, Inc.	Charles H. Yeung		
3	AEP	Michael E DeLoach	Negative	<a href="#">View</a>
3	Alabama Power Company	Richard J. Mandes		
3	Ameren Services	Mark Peters	Negative	
3	APS	Steven Norris	Affirmative	
3	Atlantic City Electric Company	NICOLE BUCKMAN	Affirmative	
3	BC Hydro and Power Authority	Pat G. Harrington	Abstain	
3	Bonneville Power Administration	Rebecca Berdahl	Affirmative	
3	City of Austin dba Austin Energy	Andrew Gallo	Affirmative	
3	City of Clewiston	Lynne Mila	Affirmative	
3	City of Garland	Ronnie C Hoeinghaus	Abstain	
3	City of Green Cove Springs	Gregg R Griffin	Negative	
3	City of Redding	Bill Hughes	Affirmative	
3	Cleco Corporation	Michelle A Corley		
3	ComEd	Bruce Krawczyk	Negative	
3	Consolidated Edison Co. of New York	Peter T Yost	Affirmative	
3	Constellation Energy	CJ Ingersoll	Abstain	
3	Consumers Energy	Richard Blumenstock	Affirmative	
3	Cowlitz County PUD	Russell A Noble	Affirmative	
3	CPS Energy	Jose Escamilla	Affirmative	
3	Delmarva Power & Light Co.	Michael R. Mayer	Affirmative	
3	Detroit Edison Company	Kent Kujala	Affirmative	<a href="#">View</a>
3	Dominion Resources Services	Michael F. Gildea	Negative	<a href="#">View</a>
3	Duke Energy Carolina	Henry Ernst-Jr	Negative	<a href="#">View</a>
3	Entergy	Joel T Plessinger	Negative	
3	FirstEnergy Energy Delivery	Stephan Kern	Negative	<a href="#">View</a>
3	Florida Municipal Power Agency	Joe McKinney	Negative	<a href="#">View</a>
3	Florida Power Corporation	Lee Schuster	Negative	<a href="#">View</a>
3	Georgia Power Company	Danny Lindsey		
3	Great River Energy	Brian Glover	Negative	<a href="#">View</a>
3	Gulf Power Company	Paul C Caldwell		
3	Hydro One Networks, Inc.	David Kiguel	Affirmative	
3	Imperial Irrigation District	Jesus S. Alcaraz	Affirmative	
3	JEA	Garry Baker	Affirmative	
3	Kansas City Power & Light Co.	Charles Locke	Affirmative	
3	Kissimmee Utility Authority	Gregory D Woessner		
3	Lakeland Electric	Norman D Harryhill	Negative	
3	Lincoln Electric System	Jason Fortik	Abstain	
3	Los Angeles Department of Water & Power	Daniel D Kurowski		
3	Louisville Gas and Electric Co.	Charles A. Freibert	Affirmative	<a href="#">View</a>
3	Manitoba Hydro	Greg C. Parent	Affirmative	<a href="#">View</a>
3	MidAmerican Energy Co.	Thomas C. Mielnik	Negative	<a href="#">View</a>
3	Mississippi Power	Jeff Franklin		
3	Municipal Electric Authority of Georgia	Steven M. Jackson	Affirmative	
3	Nebraska Public Power District	Tony Eddleman	Negative	<a href="#">View</a>
3	New York Power Authority	David R Rivera	Affirmative	
3	Niagara Mohawk (National Grid Company)	Michael Schiavone	Affirmative	
3	Northern Indiana Public Service Co.	William SeDoris	Affirmative	
3	Orange and Rockland Utilities, Inc.	David Burke	Affirmative	
3	Orlando Utilities Commission	Ballard K Mutters	Affirmative	
3	Owensboro Municipal Utilities	Thomas T Lyons	Affirmative	
3	Pacific Gas and Electric Company	John H Hagen		
3	PacifiCorp	Dan Zollner	Negative	<a href="#">View</a>
3	Platte River Power Authority	Terry L Baker	Affirmative	

3	PNM Resources	Michael Mertz	Affirmative	
3	Potomac Electric Power Co.	Robert Reuter		
3	Progress Energy Carolinas	Sam Waters	Negative	<a href="#">View</a>
3	Public Service Electric and Gas Co.	Jeffrey Mueller	Negative	<a href="#">View</a>
3	Public Utility District No. 1 of Clallam County	David Proebstel	Affirmative	
3	Puget Sound Energy, Inc.	Erin Apperson		
3	Sacramento Municipal Utility District	James Leigh-Kendall	Affirmative	
3	Salt River Project	John T. Underhill	Affirmative	
3	San Diego Gas & Electric	Scott Peterson		
3	Santee Cooper	James M Poston	Negative	
3	Seattle City Light	Dana Wheelock	Affirmative	
3	Seminole Electric Cooperative, Inc.	James R Frauen	Affirmative	
3	Snohomish County PUD No. 1	Mark Oens	Affirmative	
3	South Carolina Electric & Gas Co.	Hubert C Young		
3	Tampa Electric Co.	Ronald L Donahey	Negative	
3	Tennessee Valley Authority	Ian S Grant	Negative	<a href="#">View</a>
3	Tri-State G & T Association, Inc.	Janelle Marriott	Affirmative	
3	Westar Energy	Bo Jones	Negative	<a href="#">View</a>
3	Wisconsin Electric Power Marketing	James R Keller	Negative	<a href="#">View</a>
3	Xcel Energy, Inc.	Michael Ibold	Negative	<a href="#">View</a>
4	Alliant Energy Corp. Services, Inc.	Kenneth Goldsmith	Negative	<a href="#">View</a>
4	American Municipal Power	Kevin Koloini	Affirmative	
4	City of Austin dba Austin Energy	Reza Ebrahimian	Affirmative	
4	City of Clewiston	Kevin McCarthy	Affirmative	
4	City of Redding	Nicholas Zettel	Affirmative	
4	City Utilities of Springfield, Missouri	John Allen	Negative	<a href="#">View</a>
4	Consumers Energy	David Frank Ronk	Affirmative	
4	Cowlitz County PUD	Rick Syring	Affirmative	
4	Flathead Electric Cooperative	Russ Schneider	Negative	
4	Florida Municipal Power Agency	Frank Gaffney	Negative	<a href="#">View</a>
4	Fort Pierce Utilities Authority	Thomas Richards		
4	Georgia System Operations Corporation	Guy Andrews	Abstain	
4	Indiana Municipal Power Agency	Jack Alvey	Negative	<a href="#">View</a>
4	LaGen	Richard Comeaux		
4	Madison Gas and Electric Co.	Joseph DePoorter	Negative	<a href="#">View</a>
4	Modesto Irrigation District	Spencer Tacke	Affirmative	
4	Ohio Edison Company	Douglas Hohlbaugh	Negative	<a href="#">View</a>
4	Old Dominion Electric Coop.	Mark Ringhausen	Negative	<a href="#">View</a>
4	Public Utility District No. 1 of Douglas County	Henry E. LuBean	Affirmative	
4	Public Utility District No. 1 of Snohomish County	John D Martinsen	Affirmative	
4	Sacramento Municipal Utility District	Mike Ramirez	Affirmative	
4	Seattle City Light	Hao Li	Affirmative	
4	Seminole Electric Cooperative, Inc.	Steven R Wallace	Affirmative	
4	Tacoma Public Utilities	Keith Morisette	Affirmative	
4	Wisconsin Energy Corp.	Anthony Jankowski	Negative	<a href="#">View</a>
5	AEP Service Corp.	Brock Ondayko	Negative	<a href="#">View</a>
5	Amerenue	Sam Dwyer		
5	Arizona Public Service Co.	Edward Cambridge	Affirmative	
5	Associated Electric Cooperative, Inc.	Matthew Pacobit		
5	BC Hydro and Power Authority	Clement Ma	Abstain	
5	Boise-Kuna Irrigation District/dba Lucky peak power plant project	Mike D Kukla		
5	Bonneville Power Administration	Francis J. Halpin	Affirmative	<a href="#">View</a>
5	Brazos Electric Power Cooperative, Inc.	Shari Heino	Negative	<a href="#">View</a>
5	City and County of San Francisco	Daniel Mason	Negative	<a href="#">View</a>
5	City of Austin dba Austin Energy	Jeanie Doty	Affirmative	
5	City of Redding	Paul Cummings	Affirmative	
5	City Water, Light & Power of Springfield	Steve Rose		
5	Cleco Power	Stephanie Huffman		
5	Colorado Springs Utilities	Jennifer Eckels	Affirmative	
5	Consolidated Edison Co. of New York	Willet (Jack) Ng	Affirmative	
5	Constellation Power Source Generation, Inc.	Amir Y Hammad		
5	Consumers Energy Company	David C Greyerbiehl	Affirmative	
5	Cowlitz County PUD	Bob Essex	Affirmative	
5	Detroit Edison Company	Christy Wicke	Affirmative	
5	Dominion Resources, Inc.	Mike Garton	Negative	<a href="#">View</a>

5	Duke Energy	Dale Q Goodwine	Negative	<a href="#">View</a>
5	Dynegy Inc.	Dan Roethemeyer	Negative	<a href="#">View</a>
5	Edison Mission Marketing & Trading Inc.	Brenda J Frazer	Affirmative	
5	Electric Power Supply Association	John R Cashin	Negative	<a href="#">View</a>
5	Energy Services, Inc.	Tracey Stubbs	Negative	<a href="#">View</a>
5	Essential Power, LLC	Patrick Brown	Affirmative	
5	Exelon Nuclear	Michael Korchynsky	Negative	
5	ExxonMobil Research and Engineering	Martin Kaufman		
5	FirstEnergy Solutions	Kenneth Dresner	Negative	<a href="#">View</a>
5	Florida Municipal Power Agency	David Schumann	Negative	<a href="#">View</a>
5	Great River Energy	Preston L Walsh		
5	ICF International	Brent B Hebert	Affirmative	
5	Imperial Irrigation District	Marcela Y Caballero	Affirmative	
5	JEA	John J Babik	Affirmative	
5	Kansas City Power & Light Co.	Brett Holland	Affirmative	
5	Kissimmee Utility Authority	Mike Blough	Negative	
5	Lakeland Electric	James M Howard		
5	Liberty Electric Power LLC	Daniel Duff	Negative	
5	Lincoln Electric System	Dennis Florom	Abstain	
5	Los Angeles Department of Water & Power	Kenneth Silver		
5	Lower Colorado River Authority	Tom Foreman	Affirmative	
5	Luminant Generation Company LLC	Mike Laney	Negative	<a href="#">View</a>
5	Manitoba Hydro	S N Fernando	Affirmative	<a href="#">View</a>
5	Massachusetts Municipal Wholesale Electric Company	David Gordon	Abstain	
5	MEAG Power	Steven Grego	Affirmative	
5	MidAmerican Energy Co.	Christopher Schneider	Negative	<a href="#">View</a>
5	Muscatine Power & Water	Mike Avesing	Negative	
5	Nebraska Public Power District	Don Schmit	Negative	<a href="#">View</a>
5	New York Power Authority	Wayne Sipperly	Affirmative	
5	NextEra Energy	Allen D Schriver	Negative	
5	North Carolina Electric Membership Corp.	Jeffrey S Brame	Negative	<a href="#">View</a>
5	Northern Indiana Public Service Co.	William O. Thompson	Affirmative	
5	Occidental Chemical	Michelle R DAntuono	Negative	<a href="#">View</a>
5	Omaha Public Power District	Mahmood Z. Safi	Negative	<a href="#">View</a>
5	PacifiCorp	Sandra L. Shaffer	Negative	<a href="#">View</a>
5	Platte River Power Authority	Roland Thiel	Affirmative	
5	Portland General Electric Co.	Gary L Tingley		
5	PPL Generation LLC	Annette M Bannon	Affirmative	<a href="#">View</a>
5	Progress Energy Carolinas	Wayne Lewis	Negative	
5	PSEG Fossil LLC	Tim Kucey	Negative	<a href="#">View</a>
5	Public Utility District No. 1 of Lewis County	Steven Grega	Abstain	
5	Puget Sound Energy, Inc.	Tom Flynn	Abstain	
5	Sacramento Municipal Utility District	Bethany Hunter	Affirmative	
5	Salt River Project	William Alkema	Affirmative	
5	Santee Cooper	Lewis P Pierce	Negative	
5	Seminole Electric Cooperative, Inc.	Brenda K. Atkins		
5	Snohomish County PUD No. 1	Sam Nietfeld	Affirmative	
5	South Carolina Electric & Gas Co.	Edward Magic		
5	Southern California Edison Co.	Denise Yaffe	Affirmative	
5	Southern Company Generation	William D Shultz	Negative	<a href="#">View</a>
5	Tacoma Power	Claire Lloyd	Affirmative	
5	Tampa Electric Co.	RJames Rocha	Affirmative	
5	Tenaska, Inc.	Scott M. Helyer	Negative	<a href="#">View</a>
5	Tennessee Valley Authority	David Thompson	Negative	<a href="#">View</a>
5	U.S. Army Corps of Engineers	Melissa Kurtz	Negative	<a href="#">View</a>
5	U.S. Bureau of Reclamation	Martin Bauer	Abstain	
5	Westar Energy	Bryan Taggart	Negative	
5	Wisconsin Electric Power Co.	Linda Horn	Negative	<a href="#">View</a>
6	AEP Marketing	Edward P. Cox	Negative	<a href="#">View</a>
6	APS	RANDY A YOUNG	Affirmative	
6	Bonneville Power Administration	Brenda S. Anderson	Affirmative	
6	City of Austin dba Austin Energy	Lisa L Martin	Affirmative	
6	City of Redding	Marvin Briggs	Affirmative	
6	Cleco Power LLC	Robert Hirschak		
6	Consolidated Edison Co. of New York	Nickesha P Carrol	Affirmative	
6	Constellation Energy Commodities Group	Brenda Powell	Abstain	

6	Dominion Resources, Inc.	Louis S. Slade	Negative	View
6	Entergy Services, Inc.	Terri F Benoit	Negative	View
6	Exelon Power Team	Pulin Shah	Negative	View
6	FirstEnergy Solutions	Kevin Querry	Negative	View
6	Florida Municipal Power Agency	Richard L. Montgomery	Negative	View
6	Florida Municipal Power Pool	Thomas Washburn	Negative	View
6	Florida Power & Light Co.	Silvia P. Mitchell	Negative	
6	Great River Energy	Donna Stephenson		
6	Imperial Irrigation District	Cathy Bretz	Affirmative	
6	Kansas City Power & Light Co.	Jessica L Klinghoffer	Affirmative	
6	Lincoln Electric System	Eric Ruskamp	Abstain	
6	Los Angeles Department of Water & Power	Brad Packer		
6	Luminant Energy	Brad Jones	Negative	View
6	Manitoba Hydro	Daniel Prowse	Affirmative	View
6	MidAmerican Energy Co.	Dennis Kimm	Negative	
6	New York Power Authority	Saul Rojas	Affirmative	
6	Northern Indiana Public Service Co.	Joseph O'Brien	Affirmative	
6	NRG Energy, Inc.	Alan Johnson	Abstain	
6	PacifiCorp	Scott L Smith	Negative	View
6	Platte River Power Authority	Carol Ballantine	Affirmative	
6	Powerex Corp.	Daniel W. O'Hearn		
6	PPL EnergyPlus LLC	Mark A Heimbach	Affirmative	View
6	Progress Energy	John T Sturgeon	Negative	View
6	PSEG Energy Resources & Trade LLC	Peter Dolan	Negative	View
6	Public Utility District No. 1 of Chelan County	Hugh A. Owen	Abstain	
6	Sacramento Municipal Utility District	Diane Enderby	Affirmative	
6	Salt River Project	Steven J Hulet	Affirmative	
6	Santee Cooper	Michael Brown	Negative	
6	Seattle City Light	Dennis Sismaet	Affirmative	
6	Seminole Electric Cooperative, Inc.	Trudy S. Novak	Affirmative	
6	Snohomish County PUD No. 1	William T Moojen	Affirmative	
6	South California Edison Company	Lujuanna Medina	Affirmative	
6	Southern Company Generation and Energy Marketing	John J. Ciza		
6	Tacoma Public Utilities	Michael C Hill	Affirmative	
6	Tampa Electric Co.	Benjamin F Smith II	Affirmative	
6	Tennessee Valley Authority	Marjorie S. Parsons	Negative	View
6	Westar Energy	Grant L Wilkerson	Negative	View
8		Edward C Stein		
8		Roger C Zaklukiewicz	Affirmative	
8		James A Maenner	Affirmative	
8	JDRJC Associates	Jim Cyrulewski	Negative	
8	Massachusetts Attorney General	Frederick R Plett	Affirmative	
8	Volkman Consulting, Inc.	Terry Volkman	Affirmative	
9	Commonwealth of Massachusetts Department of Public Utilities	Donald Nelson	Affirmative	
10	New York State Reliability Council	Alan Adamson	Affirmative	
10	Northeast Power Coordinating Council	Guy V. Zito	Affirmative	
10	ReliabilityFirst Corporation	Anthony E Jablonski	Abstain	View
10	SERC Reliability Corporation	Carter B. Edge		
10	Southwest Power Pool RE	Emily Pennel	Affirmative	View
10	Texas Reliability Entity, Inc.	Donald G Jones	Negative	View
10	Western Electricity Coordinating Council	Steven L. Rueckert	Affirmative	





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**Individual or group. (51 Responses)**  
**Name (31 Responses)**  
**Organization (31 Responses)**  
**Group Name (20 Responses)**  
**Lead Contact (20 Responses)**  
**Question 1 (46 Responses)**  
**Question 1 Comments (51 Responses)**  
**Question 2 (46 Responses)**  
**Question 2 Comments (51 Responses)**  
**Question 3 (48 Responses)**  
**Question 3 Comments (51 Responses)**  
**Question 4 (43 Responses)**  
**Question 4 Comments (51 Responses)**

Individual
Thomas E Washburn
FMPP
Yes
The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator has notified the Transmission Operator. Why is "Operator" deleted? It now states the Generator has notified the TOP. A Generator is not an entity. How can a non-entity notify anyone?
Individual
Joesph Zerbo
Salt River Project
Yes
Yes
Yes
No
Individual
Frederick R Plett
Massachusetts Attorney General
Yes
The wording of the standard should be changed to say "under normal operating conditions", or "except during startup and shut down"
Yes
No
The request is for an interpretation. The standard ought to be made more explicit to say "except during startup and shutdown conditions", or "during normal operating conditions"
No
Group

Tennessee Valley Authority
David Thompson
Yes
Yes
No
During startup, the defining point for start-up and shut down should be at the point of dispatch, not the minimum load point. Point of dispatch is more appropriate than the minimum load point because some units are still in an unstable operating zone at minimum load point, and it may be hours or longer before being dispatched. The footnotes under section B, R1, should be changed to the following: Start-up is deemed to have ended when the unit is released for dispatch by the Generator Operator. Shutdown is deemed to begin when the unit is released from dispatch by the Transmission Operator.
No
Individual
Keira Kazmerski
Xcel Energy
No
Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, "minimum load".
Yes
Yes
Yes
Xcel Energy would request that the VSL's be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.
Individual
Dan Roethemeyer
Dynegy
No
I don't know that I understand the differences between the two options.
Yes
No
It would be simpler to make R1 read as ".....unless the GOP has either notified the TOP or is in the startup or shutdown mode." Delete the new proposed language.
No
Individual
Rich Salgo
NV Energy
Yes
This was a good solution to the discovery of an inadequacy in the language of the existing Standard.

and it was implemented in an efficient fashion.
Yes
Yes
No
Individual
Julie Lux
Westar Energy
Yes
Yes
No
Please clarify within the requirement that notification is not required with each start-up and shutdown if a procedure has been previously provided to the Transmission Operator. With the language "the Generator Operator has notified the Transmission Operator" before the bullets, it implies that notification is required with each start-up and shutdown.
No
Group
Pacificorp
Sandra Shaffer
Yes
Yes
Comment on Footnote 1: Footnote 1 currently reads "Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operations." PacifiCorp strongly suggests that footnote 1 be re-written to read as follows: "Start-up is deemed to have ended when the unit is ramped up to its minimum stable load...." Revising the footnote in this way would remove the ambiguity around the meaning of the phrase "and the unit is preparing for continuous operations" which does not provide any additional clarity to the concept of "minimum load.". Adding the conceptclarification of "minimum stable load," however, defines a specific point in time that is likely to be differentvary among systems to system."preparing" be changed to "prepared". This change would clearly indicate that commissioning activities are performed as part of the start-up process and occurs as part of R1 exceptions to the current version of the standard. Comment on Severe VSL for R1: PacifiCorp does not believe that it is It is not appropriate that all violations of R1 should be treated as "severe" violations for at least two separate reasons: 1. A mere failure of the responsible entity to give notice to the Transmission Operator (by itself) should not defaultbe treated as to a severe violation on its own. Absent an actual reliability risk to the BES, a mere clerical error, a failure to timely report, or a failure to recorddocument the timely report, should never be raised to the level of a severe violation. Designating a clerical error for a single unit in an otherwise robust VAR-002 compliance regime to be a "severe" violation seems contrary to the current effort to focus limited industry and regulatory resources on elements of compliance that will make the most significant impact on the reliability of the BES. Violations that are of a minimal risk to reliability (such as De-minimus, clerical, and single unit errors) should be treated in the where the VSL table begins in the "Lower" category, with appropriate escalations towards "severe" as multiple units or habitual or willful non-compliance persistsis identified. This should particularly be the case as NERC moves to a compliance enforcement initiative, the Find, Fix, Track and Report mechanism, that permits no finding of penalty for lesser-risk violations related to documentation or administrative

errors. 2. Treating all violations as "severe" does not allow provide flexibility to NERC or the Regional Entities (REs) to for addressing actual severe violations that impact the reliability of the Bulk Electric System (BES), and nor does it fails to provide appropriate incentives/disincentives for either the registered entities with robust compliance programs or a compliance history with repeat violations conscientious complier or the habitual offender. The registered entity that habitually operates in manual mode or never reports an AVR or PSS outage should not be treated they by the RE same in the same manner as a conscientious operator who experiences an uncharacteristic reporting lapse (which tend to may occur in either the heat of the moment when while attention is rightfully diverted to fixing real actual system problems, or when the exercise is so routine and minor as to fail to catch an operator's attention). It takes multiple units operating in manual mode to negatively affect the reliability of the BES, and the VSL table should be modified to reflect higher potential sanctions against for repeat habitual offenders and/or those registered entities with without a no robust VAR-002 compliance program. An escalating VSL table will beserve as a better incentive for for all registered entities to develop a meaningful VAR-002 compliance regime. The same reasoning should be applied to the VSL's for R3.

Individual

Martin Kaufman

ExxonMobil Research and Engineering

No

NERC has already established an SDT to review and modify the VAR standards. By stepping outside the normal process for drafting standards, regardless of the intent or end product, NERC is setting a precedent for superseding a pre-qualified SDT and the ANSI approved process for drafting standards. For the time being, a Generator Operator's verbal notification to the Transmission Operator that a unit is being brought online or offline and is in manual control should be sufficient notification that its AVR is not in service.

Yes

No

Generator Operators do not provide a Transmission Operator with a startup or shutdown procedure. Startups and shutdowns are typically coordinated through an outage scheduling process which is akin to a simple notification and, in some cases, approval process. In the past, NERC has specifically stated that they would like to utilize standard requirements that provide a clear benefit to the bulk electric system. Outage scheduling and verbal notifications in conjunction with real time telemetry adequately communicate the state of a generator's operation to the Transmission Operator. Evidence of such coordination be sufficient to attend to the reliability concern addressed by Requirement R1 and demonstrate compliance with the inherrent requirement to coordinate generator startups and shutdowns as it relates to the operation of the generator's AVR.

No

Individual

Terri Pyle

Oklahoma Gas & Electric

Yes

Yes

No

The language in R1 should provide more clarity regarding the exceptions for operating a generating unit in automatic voltage control mode. The draft is still not as clear as it could be; therefore, the following language is suggested: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: • The unit is in start-up<sup>1</sup> or shutdown<sup>2</sup> mode and the Generator Operator has previously notified the Transmission Operator by providing a procedure that indicates the unit is operated in a mode other than automatic during start-up<sup>1</sup> or shutdown<sup>2</sup>; •

The Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up<sup>1</sup> or shutdown<sup>2</sup>; or, • The Generator Operator has previously notified the Transmission Operator that the unit is not equipped with an automatic voltage regulator.

No

No additional comments on the SAR or proposed Standard.

Group

Imperial Irrigation District (IID)

Jesus Sammy Alcaraz

Yes

Yes

Yes

No

Individual

Michelle R. D'Antuono

Ingleside Cogeneration LP

Yes

We agree that the consistent identification of the points in the start-up and shutdown process would help clarify the intent and application of VAR-002 R1. Each Region seems to have its own concept of the appropriate time to engage the AVR in the automatic voltage control mode; which has led to inconsistent treatment by auditors. Some will assess a violation if the TOP is not notified of an AVR status change during every start-up and shutdown action – other Regions accept that the GOP will use generally acceptable business practices to engage the AVR at the correct time. In our view, this explains one of the reasons why the notification of a change in AVR status continues to be one of NERC's most violated requirements. This in of itself is important enough to justify a rapid revision of VAR-002, as it will carry much greater authority with auditors than an interpretation will.

Yes

No

We believe that there are two clarifications that the project team needs to add in order to ensure industry-wide consistency. First, there should be no ambiguity around the "minimum load" point where start-up ends (footnote 1) and shutdown begins (footnote 2). It seems to make sense to tie it to the value that must be validated during the generator capacity testing required under MOD-025-2. Even though that Standard is still under development (Project 2007-09), both the MOD-025-2 validated value and the VAR-002 minimum load point define where stable generator operations begin and end. Second, as obvious as it may seem, the project team should clarify the point where the generation unit is no longer "connected to the interconnected transmission system." We believe this is the point where the generator breaker is open, but other descriptions may be more technically accurate. Once a break-point has been decided, VAR-002 R1 should clearly indicate that a notification to the TOP of any kind is not necessary if the AVR is fully engaged and controlling voltage up through that time.

It should be a goal of every Interpretation Drafting Team to eliminate related Compliance Application Notices (CANs) wherever possible. In our view, CANs are not fully vetted by the industry to the extent required of a viable regulatory program. If too many CANs are in effect at any one time, it diminishes the legitimacy of NERC's compliance effort. In this case, CAN-0022 "VAR-002 R1 and R3 Generator AVR Operation in Alternative Mode" covers much of the same ground as this rapid revision. We see this as an excellent opportunity to set a helpful precedent for the interpretations process.

Individual

Michael Falvo

Independent Electricity System Operator
Yes
Yes
Yes
Yes
The proposed implementation plan conflicts with Ontario regulatory practice respecting the effective date of the standard. It is suggested that this conflict be removed by appending to the implementation plan wording, after "applicable regulatory approval" in the Effective Dates Section A5 of the draft standard and P. 1 of the Implementation Plan, to the following effect: ", or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities."
Group
Northeast Power Coordinating Council
Guy Zito
Yes
Yes
Yes
Yes
NERC has indicated that footnotes should not be used in a standard. Footnotes 1, 2, and 3 (not included as part of this proposed revision) should be removed. Footnotes 1 and 2 define start-up and shutdown. Neither term is defined in the NERC Glossary and the terms as used in this standard should be prefaced with "generator" to eliminate any confusion with the start-up or shutdown of a network or load. If generator start-up and generator shutdown are unique to this standard, then they can be defined in the wording of the requirement. If they are not unique to this standard, they must be included in the NERC Glossary. To support this "rapid revision", the process for including the terms in the NERC Glossary should be made to accommodate a "rapid revision". Footnote 3 is a technical explanation, and should not be included in this standard.
Group
Southwest Power Pool Regional Entity
Emily Pennel
Yes
Yes
Yes
Yes
This has been our practice in assessing compliance in that we ask for verification in the entities procedures that the GOP has communicated to the TOP those units that start up or shut down in manual mode. We view this procedure provided to the TOP in advance as the means of notification and further communication at each manual start up and shut down is not necessary.
Individual
RoLynda Shumpert
South Carolina Electric and Gas
Yes

Yes
Yes
No
Group
Arizona Public Service Company
Janet Smith
Yes
Yes
Yes
No
Group
Bonneville Power Administration
Chris Higgins
Yes
Yes
Yes
No
Individual
Joe Petaski
Manitoba Hydro
Yes
Yes
Yes
Yes
Yes
-Will attestations or other documentation be required to demonstrate that generating units are not operated in start-up or shut-down mode? If so, this adds an unnecessary compliance burden. -The data retention requirements are too uncertain for two reasons. First, the requirement to "provide other evidence" if the evidence retention period specified is shorter than the time since the last audit introduces uncertainty because a responsible entity has no means of knowing if or when an audit may occur of the relevant standard. Secondly, it is unclear what 'other evidence', besides the specified logs, recordings and emails, an entity may be asked to provide to demonstrate it was compliant for the full time period since their last audit.
Group
Texas RE
Don Jones



Yes
We don't believe there is any basis in the Standard for effectively answering this question through an interpretation.
Yes
Yes
We support the intent and direction of this revision, but we provide several suggestions and corrections that should be addressed. 1. When a unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown, the GOP should be required to provide the reason to the TOP as part of its notification. 2. We suggest deleting footnotes 1 and 2, which attempt to define "start-up" and "shut-down." There are differences in start-up and shut-down procedures and terminology in different regions and markets that make any attempt to globally define them problematic. These definitions are not needed here, and the details can be left to local practice, GOP procedures, and agreements between GOPs and TOPs. 3. In footnote 3, we suggest changing "this WILL lead to a change in the associated Facility Ratings" to "this MAY lead to a change in the associated Facility Ratings," because the reactive power capability may not be the most limiting factor considered in a Facility Rating methodology. 4. In Requirement R5, there appears to be a disconnect between the "Generator Owner's" obligations in the first paragraph, and the reference to "Generator Operator" in subrequirement R5.1. It appears that these references should refer to the same entity – which one is it supposed to be? The Measures will need to be revised to match the requirement. 5. The Data Retention provisions don't refer to the correct measures, and they should be corrected and updated as needed. (For example, M5 applies to GO but is not referenced in Data Retention.) Also, the reference to "Compliance Monitor" should be updated to "Compliance Enforcement Authority." 6. We understand that revisions to the VSLs may be considered outside of the scope of this project, but some of the VSLs are technically insufficient and need to be corrected. In particular, the 5-10-15% limits in the VSL for R2 are much too large for this technical context, and a high or severe VSL should apply for a much smaller voltage variation.
Group
Progress Energy
Jim Eckelkamp
Yes
We prefer the "rapid" approach if it provides clarification only and does not add any additional requirements. For example, the additional requirements have been added in Section R1 and M3.
Yes
Partially
Yes
Yes – partially. It is to be appreciated that Constellation's interpretation question was addressed at the time when the standard was being revised. However, at the same time, new stipulations were added in Requirements R1 and measures M3.
Yes
Section B: Requirement R1: Revise bullet points in requirement R1 as under: • That the unit is being operated in start-up <sup>1</sup> or shutdown <sup>2</sup> mode; or. • That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. Revise definitions of startup and shutdown as: Note 1 Start-up is deemed to have ended when the unit is being ramped up for continuous operation. Note 2 Shutdown is deemed to begin when the unit is being ramped down and is preparing to go offline. Section B: Requirement R3: Revise requirement R3 as under: R3. For remotely started units with no onsite control room operator, transmission of information via SCADA is an acceptable form of conveying the AVR operating mode to the TOP. However, for all other generating units, each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] Section C: Measures M3: Revise as under. Delete the sentence "If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the

Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached." Section D: Violation Risk Factors: Putting the criteria for different levels of violation risk factor in a matrix form is fine but do not revise existing penalties.

Individual

Greg Rowland

Duke Energy

Yes

Yes

No

• The revision to the standard did not go far enough to resolve the request for interpretation. Constellation sought clarification of R1 as to whether or not a communication must be conducted between a GOP and TOP during start-up or shutdown of a generator. We agree with the SDT's proposed change to R1 which provides for two different types of notification from the GOP to the TOP for situations when the unit is not being operated in automatic voltage control mode. However R3 still requires a 30 minute notification on status or capability changes. The following language from approved CAN-0022 allows GOPs to provide a blanket advance notification to the TOP in lieu of separate notifications for each change in status. "Advance Notification: In the event that a registered entity did not notify its TOP in every instance that it operated in a mode other than automatic, CEAs are to verify whether a registered entity opted to provide a blanket notification to its TOP regarding when it would be operating in a mode other than automatic voltage control mode. For example, a blanket notification could refer to the appropriate times during: 1) generator testing, 2) generator start-up, and 3) generator shut-down. If the registered entity acted on this option, the CEA is to verify that the registered entity's TOP received the blanket notification in lieu of separate notifications for each change in status." The Standard Drafting Team should revise R3 similarly to R1, to fully incorporate the provisions of CAN-0022 into the standard. The following phrase from R1 should be added at the beginning of R3: "Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator," • For clarity, we also suggest adding the phrase "of AVR status is made" after the word "notification" in Measure M1, and delete the phrase "is made" after "Transmission Operator".

No

Individual

David Youngblood

Luminant

No

In this instance, Luminant believes that this should have been a simple interpretation by the SDT and not turned into a standard revision. An arbitrary call by individuals unaware of the impact to implement a "Rapid" approach could end up doing more harm to the BES than what was originally anticipated. Luminant also feels that if NERC wants to use the Rapid response for a standard revision, then that should be put forth to the industry for a ballot to ensure there are no major issues are being overlooked.

Yes

Yes

No

With respect to R1 VSL – The original standard had varying amounts of incidents (failure to notify the TO that the AVR is not in voltage control mode) and was replaced with one failed incident under the

Severe category. Varying amount of incidents should be placed in the VSL as follows: Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator. With respect to R3 VSL – The original standard had varying amounts of incidents (failure to notify status change in AVR/PSS/reactive power source within 30 minutes) and was replaced with one incident under High (R3.1 or R3.2) and Severe category (R3.1 and R3.2). Varying amount of incidents should be placed in the VSL as follows: Level 1: One incident of failing to notify the Transmission Operator; Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.

Group

SPP Standards Review Group

Robert Rhodes

Yes

Yes

No

While we like the direction that the two bullet points in R1 have taken, we feel the language could be modified to make the exceptions clearer. We would propose the following language. R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: • the Generator Operator has previously notified the Transmission Operator that the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or, • the Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up or shutdown, or the unit is not equipped with an automatic voltage regulator. Our intent is to provide an exception to operating the automatic voltage regulator in automatic mode when a unit is in the start-up/shutdown mode, or when the automatic voltage regulator may not be available for service, which does not require the Generator Operator to provide real time notification to the Transmission Operator. Given this and the proposed changes above, NERC should consider providing a similar exclusion for the Transmission Operator in VAR-001-2, R6.

No

None

Group

LG&E and KU Services

Brent Ingebrigtsen

Yes

Yes

Yes

LG&E and KU Services recommend the proposed additions to R1 also be applied to R2 using the following language: R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] • That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or. • That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or

Reactive Power schedule directed by the Transmission Operator. R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
Individual
David Thorne
Pepco Holdings
Yes
Yes
Yes
No
Individual
Edward
Davis
Yes
Yes
No
Entergy – believes the Transmission Operator should not be required to have, be required to update or maintain, nor be required to know the startup / shutdown procedures of all of the generators connected to its system. TOPs should not be required to dig through a procedure to find out if the AVR “should be” in manual or automatic mode during startup or shutdown. We also think it is not the best operation of the system for the TOP to “assume” the status of the AVR. All of the proposed changes, especially the provision of startup / shutdown procedures, places additional burdens on the TOP. These burdens also place unwritten requirements on the TOP which auditors will definitely “explore” during the next review, in any form, of the TOP. We view the requirement that the TOP receive the startup / shutdown procedures as placing new requirements on the TOP, in violation of the Interpretation process. Per Constellation in its Request for Interpretation “A generator operator already communicates to the TOP that the unit is being started up or shutting down.”. It would appear that a GOP could include in its procedures a requirement that the TOP be informed of the status of the AVR when the GOP is communicating to the TOP that the unit is starting up or shutting down. TOPs only want to know the status of a generating unit’s AVR, is it in automatic or manual mode. That information can be provided when the startup / shutdown information is being communicated. Therefore we recommend the following changes to VAR-002-2b: Delete both of the new bullet points added to R1, including associated footnotes. Delete: □ That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or. • That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. And: 1 Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline. Also delete the new wording in M1: If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
Group
Florida Municipal Power Agency

Frank Gaffney
No
Constellation is essentially asking "what does 'notify' mean as used in the standard", and asking if previously arranged operating procedures between the GOP and TOP is notification, including operating procedures for start-up and shutdown of a unit during which an AVR would be put into manual mode. An interpretation of what 'notify' means as used in the standard is more appropriate as opposed to changing the standard. The response to the request is too specific and introduces new terms into the standards that are ambiguous and will cause confusion depending on the type of generator being considered (e.g., start-up and shutdown), possibly spurring additional requests for interpretation of what start-up and shutdown mean for, say, a wind or solar farm, etc. In addition, while R1 has become clearer as to the intent, it leaves R3 unclear with the same question concerning the word 'notify'. An interpretation essentially saying that pre-arranged, mutually agreed upon operating procedures or similar documentation of pre-arranged, conditional notification, between the GOP and TOP acts as notification in regards to both R1 and R3 is a preferable approach to a rapid revision (e.g., every time the unit is on outage, the AVR is out of service; every time the unit is below XX MW of output, the AVR is in manual mode, etc.).
Yes
No
Please see comments to Question 1
Individual
Scott Berry
Indiana Municipal Power Agency
No
IMPA still likes the "Rapid" approach with some additional changes, such as having a SDT made up of six to eight members and with the focus of just performing the work to clarify the requirement within the standard that the request for interpretation is addressing.
no comment
No
IMPA believes that the SDT has introduced more ambiguity to the requirement by trying to define start up and shut down to cover all the generating units in the fleet under all operating conditions. In addition, a generating unit may be at its minimum load when going into shutdown which does not require any ramping down to minimum load (this condition does not meet the definition of shutdown per footnote 2).
Yes
IMPA believes the requirements for VAR-002 are very good and that the request by Constellation should have really been handled through the interpretation process. This was not a good request for the "Rapid" approach. An interpretation could have been used to clarify that an entity can use advance notice or a standing procedure with the TOP in order to give proper notice of the voltage regulator in manual during startup or shutdown. If requested by the TOP or if even needed, the GOP should be given the flexibility to define the startup or shutdown period for its generating units.
Group
FirstEnergy
Sam Ciccone
Yes
We believe that the rapid revision approach is appropriate for this change. Furthermore, we believe that NERC should take advantage of this opportunity to expand the revisions slightly to address all the issues presented in CAN-0022 so that the CAN can be subsequently retired. Please see our comments and suggestions in Questions 2, 3, and 4.
No
Pursuant to our suggested changes to the standard as shown in our comments to question 3, the SAR should be clear with respect to clarifying the intent of Requirement R1 and R3. We also suggest that

testing should be added in addition to start-up and shut-down in R1 of the standard thus eliminating the need for CAN-0022.

No

We believe the wording is on the right track to clarifying the requirement. However, we believe that there needs to be more clarification with regard to the tie between Requirement R1 and R3. It should be clear that R1 is allowing an exception during start-up, shut-down, or testing, while R3 should be related to a generator unit status or capability change when the unit is already connected to the bulk electric system. Therefore, we suggest the following wording for R1 and R3 along with their respective measures: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up<sup>1</sup>, shutdown<sup>2</sup> or testing mode pursuant to a real-time communication to the Transmission Operator or a procedure previously provided to the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up, shut down, or tested with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] R3.1. A status or capability change (other than start-up, shut-down, or testing) 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. R3.2. A status or capability change (other than start-up, shut-down, or testing) on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability. M4. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes (other than start-up, shut-down, or testing) identified in Requirement 3.

Yes

We believe that the proposed implementation plan does not afford entities adequate time to develop any required procedures pursuant to Requirement R1. We suggest the implementation plan effective date be "The first day of the 2nd calendar quarter after applicable regulatory approval".

Individual

Brian J Murphy

NextEra Energy. Inc.

No

On the February 16, 2012 Standards Committee's call, it was generally agreed that Rapid Revision procedure was still in the pilot phase and that it should only be used for minor revisions to a Reliability Standard. The revisions proposed changes create a new category of pre-notification via the use of procedures and attempts to clarify when notification is required. Neither of these revisions appears to be minor. Also, the proposed clarifications appear to be beyond the plain language of the Reliability Standard, and, therefore, are not appropriate for consideration as an interpretation. Thus, it is suggested that a new SAR be drafted, and that the issues raised by Constellation be assigned to a Standards Drafting Team, so that the issues raised can be considered by a diverse group of technical experts, and that a revision to VAR-002 can be processed consistent with the Standards Process Manual.

No

It is unclear that the SAR represents the issues raised in the interpretation, because it appears that one of the concerns was regional consistency, and it is not clear that the proposed language adequately provides for a uniform approach, particularly when notice is provided outside the context of start-up or shutdown.

Individual
Thad Ness
American Electric Power
Yes
In general, we have no objections to using the Rapid approach as long as industry's comments and concerns are vetted and acknowledged in no less way than they would be in any other process. That being said, this appears to be the third interpretation request in circulation regarding these requirements, so perhaps more clarity is needed within the language of the standard itself.
No
It does not appear that the revisions to R1 fully address the concerns of the requestor. The response actually complicates rather than clarifies VAR-002. In addition, the first bullet point added to R1 is covered by other standards. Using only the second bullet along with its footnote, and removing the first bullet, would be a more appropriate change. The proposed changes in the first bullet point to requirement 1 provide no additional benefit either in terms of clarity or by increasing the reliability of the BES. In addition, these revisions assume that an entity actually needs to be notified of such procedures. Requirements which presuppose the needs or wants of an entity are to be avoided and would be a source of confusion.
Yes
While we do not completely disagree with the proposed changes, the revisions beg the question if R1 is even necessary given the content of R2? Perhaps the best way to provide the clarity being sought is to remove R1 entirely and simply retain R2. How about simply stating that an entity shall operate in the agreed-upon mode unless GOP notifies the TOP otherwise?
Group
Dominion
Mike Garton
Yes
Yes
No
Per the Interpretation Request, Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time. The existing language in Requirement R1 states: "The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator." Dominion believes the existing standard language is clear and covers any situation when the generators automatic voltage regulator is not in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage). Dominion submits that the definition of start-up and shutdown (Footnotes 1 and 2 respectively) is unnecessary and inappropriate. Therefore, Dominion suggests retaining the existing language in Requirement 1 and Measure 1.
Yes
If the language proposed in the Project is adopted, then Dominion suggests in the bullets added under R1, M1, and in footnotes 1 and 2; that the word 'unit' be replaced with 'generator', for consistency, as generator is already used in the Standard.
Individual
Patrick Brown
Essential Power, LLC
Yes

Yes
Yes
No
Individual
Michael Moltane
ITC
Yes
Yes
Yes
Individual
Terry Harbour
MidAmerican Energy
Yes
Yes
No
MidAmerican has reviewed the Background and Drafting Team Considerations and has concerns of the proposed Project 2011-INT-02. As stated in the Drafting team considerations; "The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode". By stating (and it will be viewed by the industry as defining) what "start up and shut down" is, the SDT is expanding the technical issues that they have stated they would not do. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. (Note that within the PJM market, ramp is something that is associated with a schedule where by a GOP may not "ramp up" until five minutes before top of the hour but could be on line producing real and reactive power. The use of "ramp" within foot note 1 and 2 is ambiguous and will cause confusion.) There are too many different generator designs for the SDT to capture all possibilities by simply adding the proposed foot notes and bullets. In addition, whenever a foot note is used to clarify a Requirement, the Requirement becomes more ambiguous. Recommend that foot note 1 and 2 be deleted since they only provide examples to a certain type of generator. The SDT needs to write the Requirement whereby it can be universally used by all applicable entities. The SDT further states, "The drafting team believes it is up to the Generator Operator to formally notify the Transmission Operator of its procedures for placing the unit into automatic voltage control mode". MidAmerican agrees with the SDT. NERC requirements should allow GOPs (industry experts) to appropriately document exemptions and design conditions where units take automatic actions to switch modes and provide those in advance to the Transmission Operator. NERC has allowed stakeholders the authority to design their own programs based on their asset characteristics as in FAC-008, CIP-002, EOP-001, etc. The SDT should allow each applicable entity within this Standard the same authority. MidAmerican recommends R1 be left as is and not be changed to incorporate the "interpretation". R1 is already well written to assure that Generator Operators operate each generator connected to the interconnected transmission system in automatic voltage control mode (unless exempt by R2). MidAmerican recommends that R3 is clearly suited for incorporation of the requested interpretation. R3.1 is written to capture "...status or capacity changes on any generator...", such as when a generator is not in the desired voltage response mode. MidAmerican recommends R3 to be rewritten to capture the intent of the interpretation to read: R3.



Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes unless advanced notification, including but not limited to operating guidelines documenting expected status and capability changes, has been provided for any of the following: The noted "advance notification" will allow GOPs to establish an individual process for each generators that do not comply with R1 or fall within scope of R2. This will also allow GOPs and TOPs on how this advance warning is to be provided. It may be via written procedure, a mutually agreed SCADA point, etc.

Yes

Delete the words "and the expected duration" to R3.1 and 3.2. Since this is a revision to the standard, the drafting team should consider deletions as wells as additions. MidAmerican contends that the words "and the expected duration" provide no practical Bulk Electric System reliability benefit and should be removed. Delete all added material to M1 or have M1 match revised wording in R1. Revise any VRFs or VSLs appropriately.

Individual

Kirit Shah

Ameren

Yes

Yes

Yes

We agree that the proposed revision addresses the issue raised for VAR-002, R1 interpretation.

Yes

As stated above, we agree that the proposed revision addresses the issue raised for VAR-002, R1 interpretation. However, we suggest SDT to review how the proposed revision would impact VAR-001, R6. In particular, our concern is with regard to the first bullet in the proposed revision. The issue is while the GOP is required to provide the start-up and shutdown procedure, we believe that it would not be enough for the TOP to meet VAR-001-2, R6. This requirement is: R6. The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers. R6.1. When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule. Our concern is, to meet the above requirement, now TOP has to keep track of all generating units which is in a start-up and/or shut down mode, keep monitoring units' dispatch level, and when the unit reaches this pre-defined dispatch level (provided in the GOP procedure in advance) then assume that the status of AVR will change and provide a directive to the GOP. If our concern is not valid, please address it and clarify it in the next round of the revision. Assuming that our concern is valid, we suggest the following changes to the proposed draft: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] • That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or • That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown, or • That the unit is being operated in start-up or shut down mode with automatic voltage control mode contrary to the procedure previously provided to the Transmission Operator. 1 Start-up is deemed to have ended when the unit is ramped up to its minimum load (specified in the GOP procedure) and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load (specified in the GOP procedure) and the unit is preparing to go offline.

Individual

Brad Jones

EFH Luminant Energy

No

In this instance, Luminant believes that this should have been a simple interpretation by the SDT and

not turned into a standard revision. An arbitrary call by individuals unaware of the impact to implement a "Rapid" approach could end up doing more harm to the BES than what was originally anticipated. Luminant also feels that if NERC wants to use the Rapid response for a standard revision, then that should be put forth to the industry for a ballot to ensure there are no major issues are being overlooked.

Yes

Yes

Yes

R1 VSL – The original standard had varying amounts of incidents (failure to notify the TO that the AVR is not in voltage control mode) and was replaced with one failed incident under the Severe category. Varying amount of incidents should be placed in the VSL as follows: Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator. R3 VSL – The original standard had varying amounts of incidents (failure to notify status change in AVR/PSS/reactive power source within 30 minutes) and was replaced with one incident under High (R3.1 or R3.2) and Severe category (R3.1 and R3.2). Varying amount of incidents should be placed in the VSL as follows: Level 1: One incident of failing to notify the Transmission Operator; Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.

Individual

Daniel Duff

Liberty Electric Power LLC

Yes

No

The use of the footnoted terms to define start-up and shutdown has the potential to create more compliance issues than are solved by the revision. Suggest removing the footnotes, remove the bullet points in R1 and change to read as follows: The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the generator is starting up or shutting down; or the Generator Operator has notified the Transmission Operator that the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. This formulation eliminates the confusion which will be caused when different auditors interpret "minimum load" and "preparing". Further, it eliminates records retention issues surrounding the data needed from each start-up or shutdown event for proof of compliance.

No

Individual

Andrew Z. Pusztai

American Transmission Company

No

An interpretation would allow a thorough vetting of the issue at hand, rather than opening up the entire Standard to revision.

Yes

No

The issue raised by the RFI is an inconsistent application of the Standard across the regions. The Rapid Revision expands the Standard by offering specific language to deal with a specific exception, rather than set the stage for consistency. The other issue is a perceived necessity for a Generator

Operator to take the additional action of notification to the TOP to mitigate a symptom of the first issue. When a broader view of the Standards is taken, it can be argued that the existing language in VAR-002-2b R1, and R2 captures the possibility of an exception with the provision for exemption. This situation does not relieve the Transmission Operator from obligations to VAR-001-2 R6, "The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers." If an interpretation is to be made regarding Generators with design concerns, a reference to Attachment 1-TOP-005 1.2.4 of TOP-005-2a should be made. This data would give the necessary means to the TOP with which to be compliant with VAR-001-2 R6, facilitate Contingency Analysis in Real-Time, and provide a vehicle enabling Generator Operators to convey status of AVR without a phone call. The potential for any Generator lacking ability to provide AVR status data, or having any other extenuating circumstances regarding communication of status, may be handled through the exemption provisions as noted in VAR-002-1.1b R2 between the TOP and the GOP, or "unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability." as stated in TOP-005-2a R2.

Yes

Constellation asked for an interpretation for consistent application of the Standard by the regions. The "Rapid Revision" and the scope of the changes went beyond what was originally raised in the RFI and actually changed the Standard. As stated in the Drafting Team Considerations; "The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode". (an example of how it changed the Standard) By stating (and it will be viewed by the industry as defining) what "start up and shut down" is in footnotes 1 and 2 below, the SDT is expanding the technical issues that they have stated they would not do. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. Footnote 1 - Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. Footnote 2 - Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.

Group

Kansas City Power & Light

Michael Gammon

Yes

Yes

No

While we like the direction that the two bullet points in R1 have taken, we feel the language could be modified to make the exceptions clearer. We would propose the following language. R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: • the Generator Operator has previously notified the Transmission Operator that the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or, • the Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up or shutdown, or the unit is not equipped with an automatic voltage regulator. Our intent is to provide an exception to operating the automatic voltage regulator in automatic mode when a unit is in the start-up/shutdown mode, or when the automatic voltage regulator may not be available for service, which does not require the Generator Operator to provide real time notification to the Transmission Operator. Given this and the proposed changes above, NERC should consider providing a similar exclusion for the Transmission Operator in VAR-001-2, R6.

M1 is in need of modification to clearly state that a generator that has the AVR in any other mode other than automatic as a routine process of shutting down or starting up a generator, a submission of the procedure stating such is sufficient and no other notification by the generator is required. Recommend the following for clarity to replace the current M1 description: If a generator is being started up or shut down with the automatic voltage control off, the Generator Operator must provide

evidence that the generator either notified the Transmission Operator each time the generator was started up or shut down of the AVR status, or the Generator Operator will have evidence it provided the generators procedure for placing the unit into automatic voltage control mode during start-up and placing the automatic voltage control mode to off during shutdown to the Transmission Operator. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. In any other operating condition, the generator shall provide evidence it notified its associated Transmission Operator any time the generator failed to operate a generator in the automatic voltage control mode as specified in Requirement 1.

Individual

Anthony Jablonski

ReliabilityFirst

Yes

Yes

No

ReliabilityFirst abstains on this ballot and offers the following comments for consideration: 1. ReliabilityFirst fundamentally agrees that the included bullets somewhat resolve the issue raised in the interpretation request, though believes the first bullet is missing one key component. ReliabilityFirst believes the GOPs procedure for start-up/shutdown not only needs to be provided to the TOP but needs to be accepted by the corresponding TOP as well. ReliabilityFirst recommends the following language for consideration: "That the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to and accepted by the Transmission Operator; or."

Individual

James R. Keller

We Energies

No

We strongly disagree with this approach and believe it does not properly address the concerns which prompted the request for an Interpretation. A clear and useful Interpretation would serve the industry better than a vague "rapid revision" of this standard.

Yes

No

It is well known that compliance with this standard has been an issue in the industry. If the standard is opened up for revision, the entire standard should be reviewed, not just Requirement 1. The SDT definitions added for "start-up" and "shutdown" is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. There needs to be full industry input on any revisions to this standard.

No

The revisions to the standard do not adequately address the industry concerns in the Interpretation request. The SDT did recognize that there are sound reasons for some generators to be operated in the manual AVR mode during startup or shutdown, and the standard should allow for this. The standard and its bullets added to R1 provide the flexibility needed in the operation of turbine-generator AVR's to ensure stability of the unit and overall system reliability. However, the definitions added for "start-up" and "shutdown" is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. The standard does need definitions for these terms, which may vary from unit to unit. We Energies recommend Requirement 1, bullet footnotes 1 and 2, define minimum load as 20 Megawatts when starting or stopping a unit. Also, there is a need to clearly address the requirements for wind farms, which need flexibility in the operating mode due to the generator AVR technology, generator size and intermittent nature. We

believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.

Group

We Energies

Howard Rulf

No

We strongly disagree with this approach and believe it does not properly address the concerns which prompted the request for an Interpretation. A clear and useful Interpretation would serve the industry better than a vague "rapid revision" of this standard.

Yes

No

It is well known that compliance with this standard has been an issue in the industry. If the standard is opened up for revision, the entire standard should be reviewed, not just Requirement 1. The SDT definitions added for "start-up" and "shutdown" is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. There needs to be full industry input on any revisions to this standard.

Yes

The revisions to the standard do not adequately address the industry concerns in the Interpretation request. The SDT did recognize that there are sound reasons for some generators to be operated in the manual AVR mode during startup or shutdown, and the standard should allow for this. The standard and its bullets added to R1 provide the flexibility needed in the operation of turbine-generator AVR's to ensure stability of the unit and overall system reliability. However, the definitions added for "start-up" and "shutdown" is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. The standard does need definitions for these terms, which may vary from unit to unit. We Energies recommend Requirement 1, bullet footnotes 1 and 2, define minimum load as 20 Megawatts when starting or stopping a unit. Also, there is a need to clearly address the requirements for wind farms, which need flexibility in the operating mode due to the generator AVR technology, generator size and intermittent nature.

Individual

John Bee on Behalf of the Exelon Companies

Exelon

No

Exelon/Constellation recognizes and supports the effort to more "rapidly" resolve less controversial issues with a standard revision. However, Exelon/Constellation does not believe that the "rapid" approach to clarify the standard is the proper way to address this interpretation request for two reasons – the role of an interpretation versus a standard revision and the analysis to judge this issue as qualified for a rapid revision. The role of an interpretation versus a standard revision: An interpretation fulfils a different function than a standard revision. In this case, the interpretation request targeted VAR-002-1.1b Requirement 1 to address a narrow concern with the standard language that created auditing inconsistency across regions. Constellation felt that an interpretation to clarify the intent behind the language would more clearly reflect current reliable operational practices within the industry and aid in compliance clarity. Following development of the interpretation request, Constellation reviewed all the requirements in the standard language and considered developing a SAR to address the many issues that exist within the current standard language, others more urgent than that of R1. Revision to VAR-002-1.1b Requirement 2 is urgently needed as well as to the companion language in VAR-001-2 Requirement 4. Clearly a standard revision project is needed for VAR-001 and VAR-002, but the "rapid" approach is limited to only the issue raised in the interpretation request. Exelon/Constellation still believes that the concerns with VAR-001-2 R2 and VAR-002-1.1b R2 warrant a revision project. VAR-002-1.1b Requirement 2 states

that each GOP shall maintain the generator voltage or Reactive Power output as directed, and Measure 2 further clarifies this requirement stating that a GOP shall have evidence to show it controlled its generator voltage or Reactive Power output to meet the voltage or Reactive Power schedule provided by the TOP. However, in certain situations, a GOP may not be able to meet the schedule because of system variations outside of the GOP's control. In this situation, a GOP may be non-compliant with this requirement because of issues out of its control. This requirement should be revised to allow the GOP to contact the TOP when outside the schedule to follow the TOP's instruction. VAR-001-2 Requirement 4 is closely tied to VAR-002-1.1b Requirement 2. It states that each TOP shall specify a voltage or Reactive Power schedule at the interconnection point between the generator facility and the TO's facilities. However, some GOPs do not have metering capability at the point of interconnection and are not mandated to do so. Therefore, a TOP must give instruction to GOPs who potentially have no way of proving compliance with the instruction. This requirement should change to allow the TOP to give instruction to the GOP based on an agreed upon point, regardless of the interconnection point. Analysis to judge this issue as qualified for a rapid revision: The front end assessment of the issues was insufficient to identify the technical complexities underlying VAR-002-1.1b R1. Constellation requested that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. While greater clarity is needed regarding the obligations around such events as it concerns notification to interconnected parties, the technical aspects associated with the operational practice warrant sufficient latitude within the standard language. Starting up and shutting down a unit is dependent upon many variables such as the type of unit, the fuel used, and the unit specific operating procedures, to name a few, and means different things to different players in the connected system. Defining the terms "start up" and "shut down" was not part of the request and creates more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague. The VAR-002-1.1b R1 language may not need to be revised if an interpretation properly clarifies the compliance obligation at start up and shut down. If a generator has to start up and shut down in manual mode, it should be compliant to do so under the current R1 requirement. For example, a blanket notification that certain generators start up and shut down in manual mode should be sufficient to comply with the communication of the situation. Pursuing the rapid revision of VAR-002-1.1b R1 without understanding the technical complexities behind R1 or addressing the issues in VAR-002-1.1b R2 and VAR-001-2 R4 creates a risk that a series of revisions will be needed rather than conducting a coherent standard revision project. Every iteration of a standard imposes cost and compliance risk to entities. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. Further, it is unclear who makes the judgments. Enabling stakeholders to better understand the process may make for a more effective deployment of this expedited revision process. However, for this VAR-002 interpretation request, Exelon/Constellation requests that work cease on this "rapid" approach and an interpretation of VAR-002-1.1b be submitted for industry review, with industry input in the development process.

Yes

The SAR language closely matches the interpretation request. However, as stated in response to Question 1, Exelon/Constellation feels that an interpretation on this issue raised is more appropriate than a rapid revision. There are larger concerns with VAR-002-1.1b as well as VAR-001-2 that need to be addressed. The scope of the SAR was limited to an interpretation request of a single requirement. The "rapid" process in developing the SAR did not include industry expertise which would have directed focus to these issues. Exelon/Constellation requests that work cease on this "rapid" approach and an interpretation of VAR-002-1.1b be submitted for industry review, with industry input in the development process.

No

Exelon/Constellation does not believe that the proposed revision resolves the issue raised in the interpretation request. Constellation requested that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. Defining the terms "start up" and "shut down" was not part of the request and created more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague. Footnote 1 attempts to define start up of a unit. However, there are several issues with this definition. First, the term "ramped up" is a qualifier that is not needed. Secondly, the term "minimum load" is too vague. The minimum load in a generator user manual may be different than the minimum load defined in a start up procedure. Lastly, the language

stating "the unit is preparing for continuous operation" does not match any generator operator language and is unclear. The operator is the one who would prepare for continuous operation, not "the unit." The operator prepares for continuous operation long before reaching synch speed, so per Footnote 1, start up would end when the call is made to start up the unit. Footnote 2 attempts to define shut down of a unit. However, the definition used is only one of numerous ways a unit may be brought offline. Every unit has a unique sequence in which it is shut down. Therefore, Footnote 2 is too prescriptive. R.1 has been revised to state "pursuant to a procedure previously provided to the Transmission Operator." The SDT has not considered that there are other forms of communication that could be utilized to meet the requirement R1. For example, a formal letter of understand between the GO and the TOP rather than having a procedure to satisfy the requirement. R.1 and the associated M.1 imply that this requirement is only applicable to the automatic voltage regulator. The SDT has not addressed "startup" and "shutdown" provisions for other reactive power resources (e.g. power system stabilizers). M.1 currently states "and no notification to the Transmission Operator is made" gives the impression that this applies to all notifications to the Transmission Operator related to unit "startup" or "shutdown". This is ambiguous and needs to be clear that that the notification is related only to the status of the reactive resource (e.g., automatic voltage regulator). Exelon/Constellation maintains that this "rapid" revision should cease and an interpretation to VAR-002-1.1b be developed.

Yes

To reiterate, a standard revision is not preferable to an interpretation on VAR-002-1.1b R1. However, a standard revision project is much needed for VAR-001-2 R4 and VAR-002-1.1b R2. The Constellation interpretation request should be reconsidered, this rapid revision project should be remanded and a new project should be created to revise VAR-001-2 R4 and VAR-002-1.1b R2

Group

ISO/RTO Standards Review Committee

Gregory Campoli

Yes

Yes

No

Yes

The IRC/SRC proposes the following changes to the draft: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] • That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or. • That it notifies the Transmission Operator the reason that the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. We agree with the proposal however, there is no need for the Generator Operator to provide its procedure to the Transmission Operator.

Group

MISO Standards Collaborators

Marie Knox

Yes

Yes

No

While it doesn't impact us directly, the VAR interpretation does not address the question raised by Constellation and the change to the standard adds no value and causes confusion. We recommend the following language: R1. The Generator Operator shall operate each generator connected to the

interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the unit is operated in start-up or shutdown mode or it notifies the Transmission Operator of the reason that the unit is not being operated in automatic voltage control mode.
Yes
Constellation noted that calling the TOP and notifying them that a generator has its voltage regulator off automatic during startup or shutdown is unnecessary and a distraction from the GOP's primary task at hand. It is common practice to take the voltage regulator off automatic during startup and shutdown. The TOP is not relying on VAR support from the generator during startup or shutdown. A strict reading of the new R1 implies that the GOP must still make the phone call, but rather than saying the voltage regulator is out of automatic, they must call to say that the voltage regulator is out of automatic because the unit is starting up or shutting down in accordance with an established procedure.
Group
PPL Electric Utilities and PPL Supply NERC Registered Organizations
Annette M. Bannon
While the PPL Companies think the change to Reliability Standard VAR-002 may result in an improvement compared to the current VAR-002, we believe that the proposed revised Reliability Standard should have been vetted with stakeholders through the Standard Development Team (SDT) process. The proposed revised standard raises questions that could have been avoided with additional vetting by stakeholders. For example, a change was made in VAR-002, R.1 but a corresponding change was not made in R.2. Is this an intentional distinction? Additionally, as discussed in our response to question 3, the new footnotes that were added to define start-up and shutdown, introduce the term "minimum load," which can have different meanings under varying circumstances. Had the SDT process been used it is likely that such issues would have been vetted and clarified by stakeholders.
Yes
As previously stated, the term "minimum load" has various meanings depending upon the circumstances. There is, for example, the "min-load pickup" needed to prevent a newly-synchronized generator from slipping into a reverse-power situation, the "minimum stable load" for unit operation (this is what we think the SDT had in mind), the "minimum environmentally-compliant load," and the "minimum commercial load" a unit may cycle-to at night when power prices fall. We believe such issues could have been vetted during the SDT process.
Individual
DANA SHOWALTER
E.ON CLIMATE & RENEWABLES
No
E.ON Climate & Renewables supports the effort to quickly resolve less controversial issues with a "rapid" revision of a standard and is willing to accept the proposed changes. However, E.ON Climate & Renewables does not believe that this is the proper way to address this issue. An interpretation to clarify the intent behind the language would be sufficient, as the purpose of an interpretation is to address a concern with standard language that may create auditing or performance inconsistencies across the regions. In addition, this revision only partially addresses the issues of and concerns with the VAR standards. A standard revision project is needed for VAR-002, however the revision should address all of the known issues that exist within the current standard language and not just the narrow scope raised in the interpretation request. In regards to the proposed modifications, which attempt to provide greater clarity, additional complications may have been added. Using the terms "start up" and "shut down" creates more confusion than it resolves, as the proposed definitions in the footnotes are unclear and vague. The standard language may not need to be revised if an interpretation properly clarifies the compliance obligation at start up and shutdown. While E.ON Climate & Renewables is willing to accept the proposed changes, E.ON Climate & Renewables would prefer that work cease on the "rapid" approach and proceed with the requested interpretation of VAR-002 be submitted for industry review, with industry input in the development process.



Yes
Yes but the SAR only addresses the interpretation request. While the scope of an interpretation should only address the request, a standard revision should address and improve on issues within the entire standard. Limiting the revision to the single requirement makes a statement that the rest of the requirements are acceptable as written, which, from the opinions of many, is not the case for the VAR standards.
Yes
E.ON Climate & Renewables believes the proposed revision, which attempt to provide greater clarity, addresses the interpretation request, may result in additional confusion based on unit needs and terminology. Using the terms "start up" and "shut down" creates more confusion than it resolves, as the proposed definitions in the footnotes are unclear and vague.
Yes
Going forward, it would be helpful if the SAR quoted the interpretation request it is resolving. In addition, it would be helpful to highlight (even in the clean version) the sections changed within the SAR. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. Furthermore, it is unclear who makes the judgments. Enabling stakeholders to better understand the process may make for a more effective deployment of this expedited revision process. While E.ON Climate & Renewables believes a full review and revision of the VAR standards is necessary in the near future.
Group
ACES Power Marketing Standards Collaborators
Jason Mashall
Yes
No
While the request for interpretation may have focused on Requirement R1, Requirement R2 should also be included in the SAR to fully address the issues in the interpretation. Constellation correctly points out in their request for interpretation that generating units that are in start up or shut down mode are not counted upon for reactive power or voltage support. Since Requirement R2 compels the Generator Operator to operate a generator to a voltage or reactive power schedule unless exempted by the Transmission Operator, the Generator Operator will still have to seek an exemption from the Transmission Operator for not controlling voltage during startup and shut down mode. If the Generator Operator is actually expected to maintain a voltage or reactive power schedule while the generating unit is not stable, reliability will be negatively affected because the generating unit is more likely to trip during these unstable operating modes. Ultimately, addressing Requirement R1 without addressing Requirement R2 still leaves the Generator Operator with the burden of an extra communication during the unstable startup and shutdown modes.
No
The changes do not offer clarity on whether the Generator Operator must communicate to the Transmission Operator that it will not operate in automatic voltage control mode during start up or shut down. The previous version of Requirement R1 was open- ended and required the Generator Operator to notify the Transmission Operator when it cannot operate a generator in automatic voltage control mode. The changes only make it clear that one reason the Generator Operator may notify the Transmission Operator is that the generator is in start up or shut down mode. It attempts to subject this reason to a previously provided procedure. However, this only adds confusion because the main body of Requirement R1 still indicates that the Generator Operator has to notify the Transmission Operator. It is not clear if that is through the previously supplied procedure or if Generator Operator has to notify the Transmission Operator each time. The request does not address the ultimate issue in the request for interpretation. Constellation is seeking an exemption to the notification requirement during start up and shut down mode and we agree that it should be provided. Constellation states directly in the request for interpretation that the generating units are not counted upon for voltage or reactive power during startup mode. While any reactive power that the unit supplies in startup or shutdown mode will certainly provide voltage support, Constellation is correct that they are not counted upon during startup and shutdown. It is obvious that a unit shutting down should not be required to control voltage as it will not even provide voltage support once it is off-line. Thus, asking

it to support voltage does not further reliability. Because a unit is in startup mode, the Generator Operator should be given flexibility to get the unit to a stable operating point before putting the unit in automatic voltage control mode. Otherwise, the unit may trip and offer no voltage support. The ultimate issue in the request for interpretation can actually be addressed by adding an exception to the standard requirement. Adding an exception (or an "unless" clause) to NERC standards requirements is a long standing practice. Many requirements in NERC standards have a clause that states actions must be taken unless such action would violate safety, equipment, regulatory and statutory requirements. Some examples include IRO-001-1.1 R8, IRO-014-2 R8, and TOP-001-1a R3, R4, and R6. There are also other "unless" clauses for other reasons. One approach here that would solve the ultimate issue would be to simply add "unless the unit is in startup mode or shutdown mode" to both Requirements R1 and R2.

Yes

We recommend modifying the version history slightly by adding "previously approved" as a description before the VSLs and VRFs. Someone reading this version history in the future may believe that the VSLs and VRFs were created during this posting and did not previously exist.

## Consideration of Comments

### Rapid Revision to Address Request for Interpretation of VAR-002 for Constellation Project 2011-INT-02

The VAR-002-02b - Generator Operation for Maintaining Network Voltage Schedules Rapid Revision Drafting Team thanks all commenters who submitted comments on the proposed revisions to VAR-002 for Constellation (Project 2011-INT-02). The proposed revisions to VAR-002 were posted for a 45-day public comment period from February 8, 2012 through March 23, 2012. Stakeholders were asked to provide feedback on VAR-002-2b and associated documents through a special electronic comment form. There were 51 sets of comments, including comments from approximately 133 different people from approximately 90 companies representing all 10 Industry Segments, as shown in the table on the following pages.

All comments submitted may be reviewed in their original format on the standard's project page:

[http://www.nerc.com/filez/standards/Project\\_2011-INT-02\\_Int\\_of\\_VAR-002\\_for\\_Const.html](http://www.nerc.com/filez/standards/Project_2011-INT-02_Int_of_VAR-002_for_Const.html)

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President of Standards and Training, Herb Schrayshuen, at 404-446-2560 or at [herb.schrayshuen@nerc.net](mailto:herb.schrayshuen@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>1</sup>

### Summary Consideration

The drafting team received feedback from stakeholders concerning the rapid revision process, as well as the specific language that was proposed to address the interpretation request. The intent of the rapid revision is to add clarity to the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee (SC) and the SDT felt that a rapid revision was necessary to address the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. In response to industry comments on the rapid revision, the SDT has revised the wording of Requirement R1 and Measure M1 to add further clarity to the standard. The revised requirement and measure now read:

<sup>1</sup> The appeals process is in the Standard Processes Manual:  
[http://www.nerc.com/files/Appendix\\_3A\\_Standard\\_Processes\\_Manual\\_Rev%201\\_20110825.pdf](http://www.nerc.com/files/Appendix_3A_Standard_Processes_Manual_Rev%201_20110825.pdf).

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown.

<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is preparing to go offline.

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode, as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure; such as an electronic message or a transmittal letter with the procedure included or attached.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2, and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the above requirement states: The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period. The SDT has revised VAR-002-2b, R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]

R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 for R2 above is a revision of the footnote from VAR-001-2, R4 above: <sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.

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

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- 2. Does the language in the SAR adequately represent the issue raised in the interpretation request? If No, please provide your suggestions to modify the SAR. ....31
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**The Industry Segments are:**

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

Group/Individual		Commenter	Organization		Registered Ballot Body Segment									
					1	2	3	4	5	6	7	8	9	10
1.	Group	Jesus Sammy Alcaraz	Imperial Irrigation District (IID)		X		X	X	X					
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Jose Landeros	IID	WECC	1, 3, 4, 5, 6										
2.	Chris Reyes	IID	WECC	1, 3, 4, 5, 6										
3.	John Quinonez	IID	WECC	1, 3, 4, 5, 6										
2.	Group	Guy Zito	Northeast Power Coordinating Council											X
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Alan Adamson	New York State Reliability Council, LLC	NPCC	10										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
2.	Greg Campoli	New York Independent System Operator	NPCC	2																
3.	Sylvain Clermont	Hydro-Quebec TransEnergie	NPCC	1																
4.	Donald Weaver	New Brunswick System Operator		2																
5.	Gerry Dunbar	Northeast Power Coordinating Council	NPCC	10																
6.	Mike Garton	Dominion Resources Services, Inc.	NPCC	5																
7.	Kathleen Goodman	ISO - New England	NPCC	2																
8.	Chantel Haswell	FPL Group, Inc.	NPCC	5																
9.	David Kiguel	Hydro One Networks Inc.	NPCC	1																
10.	Michael R. Lombardi	Northeast Utilities	NPCC	1																
11.	Randy MacDonald	New Brunswick Power Transmission	NPCC	9																
12.	Bruce Metruck	New York Power Authority	NPCC	6																
13.	Lee Pedowicz	Northeast Power Coordinating Council	NPCC	10																
14.	Robert Pellegrini	The United Illuminating Company	NPCC	1																
15.	Si-Truc Phan	Hydro-Quebec TransEnergie	NPCC	1																
16.	David Ramkalawan	Ontario Power Generation, Inc.	NPCC	5																
17.	Ben Wu	Orange and Rockland Utilities	NPCC	1																
18.	Saurabh Saksena	National Grid	NPCC	1																
19.	Michael Schiavone	National Grid	NPCC	1																
20.	Wayne Sipperly	New York Power Authority	NPCC	5																
21.	Tina Teng	Independent Electricity System Operator	NPCC	2																
3.	Group	Emily Pannel	Southwest Power Pool Regional Entity																	X
	<b>Additional</b>	<b>Additional Organization</b>	<b>Regio</b>	<b>Segment</b>																



Group/Individual		Commenter	Organization		Registered Ballot Body Segment									
					1	2	3	4	5	6	7	8	9	10
<b>Member</b>			<b>n</b>	<b>Selection</b>										
1.	John Allen	City Utilities of Springfield	SPP	1, 4										
2.	Greg McAuley	Oklahoma Gas & Electric	SPP	1, 3, 5										
3.	Nick McCarty	Kansas City Power & Light	SPP	1, 3, 5, 6										
4.	Stephen McGie	City of Coffeyville	SPP	NA										
5.	Bill Nolte	Sunflower Electric Power Corporation	SPP	1										
6.	Valerie Pinamonti	American Electric Power	SPP	1, 3, 5										
7.	Terri Pyle	Oklahoma Gas & Electric	SPP	1, 3, 5										
8.	Randy Root	Grand River Dam Authority	SPP	1, 3, 5										
9.	Sean Simpson	Board of Public Utilities, City of McPherson	SPP	1, 3, 5										
10.	Michael Wech	Southwestern Power Administration	SPP	1, 5										
4.	Group	Chris Higgins	Bonneville Power Administration		X		X		X	X				
<b>Additional Member</b>		<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Tedd	Snodgrass	WECC	1										
5.	Group	Don Jones	Texas RE											X
<b>Additional Member</b>		<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	Curtis Crews	Texas RE	ERCOT	10										
2.	David Penney	Texas RE	ERCOT	10										
6.	Group	Robert Rhodes	SPP Standards Review Group			X								
<b>Additional Member</b>		<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
1.	John Allen	City Utilities of Springfield	SPP	1, 4										
2.	Greg McAuley	Oklahoma Gas & Electric	SPP	1, 3, 5										
3.	Nick McCarty	Kansas City Power & Light	SPP	1, 3, 5, 6										
4.	Stephen McGie	City of Coffeyville	SPP	NA										
5.	Bill Nolte	Sunflower Electric Power Corporation	SPP	1										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
6.	Valerie Pinamonti	American Electric Power	SPP	1, 3, 5																
7.	Terri Pyle	Oklahoma Gas & Electric	SPP	1, 3, 5																
8.	Randy Root	Grand River Dam Authority	SPP	1, 3, 5																
9.	Sean Simpson	Board of Public Utilities, City of McPherson	SPP	1, 3, 5																
10.	Michael Wech	Southwestern Power Administration	SPP	1, 5																
7.	Group	Brent Ingebrigtsen	LG&E and KU Services		X		X		X	X										
No additional members listed.																				
8.	Group	Frank Gaffney	Florida Municipal Power Agency		X		X	X	X	X										
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	Timothy Beyrle	City of New Smyrna Beach	FRCC	4																
2.	Jim Howard	Lakeland Electric	FRCC	3																
3.	Greg Woessner	Kissimmee Utility Authority	FRCC	3																
4.	Lynne Mila	City of Clewiston	FRCC	3																
5.	Joe Stonecipher	Beaches Energy Services	FRCC	1																
6.	Cairo Vanegas	Fort Pierce Utility Authority	FRCC	4																
7.	Randy Hahn	Ocala Utility Services	FRCC	3																
9.	Group	Sam Ciccone	FirstEnergy		X		X	X	X	X										
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	Brian Orians	FE	RFC																	
2.	Rusty Loy	FE	RFC																	
3.	Doug Hohlbaugh	FE	RFC																	

Group/Individual		Commenter		Organization		Registered Ballot Body Segment									
						1	2	3	4	5	6	7	8	9	10
4	Kevin Querry	FE	RFC												
5	Chris Lassak	FE	RFC												
10.	Group	Mike Garton		Dominion		X		X		X	X				
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>											
1	Michael Gildea	Dominion Resources Services, Inc.	MRO	5, 6											
2	Louis Slade	Dominion Resources Services, Inc.	RFC	5, 6											
3	Connie Lowe	Dominion Resources Services, Inc.	NPCC	5, 6											
4	Michael Crowley	Virginia Electric and Power Company	SERC	1, 3											
11.	Group	Michael Gammon		Kansas City Power & Light		X		X		X	X				
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>											
1	Nick McCarty	Kansas City Power & Light	SPP	1, 3, 5, 6											
2	Brett Holland	Kansas City Power & Light	SPP	1, 3, 5, 6											
12.	Group	Howard Rulf		We Energies			X	X	X						
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>											
1	Power Generation	We Energies	RFC	3, 4, 5											
13.	Group	Gregory Campoli		ISO/RTO Standards Review Committee		X									
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>											
1	Albert DiCaprio	PJM	RFC	2											
2	Mark Thompson	AESO	WECC	2											
3	Garv DeShazo	CAISO	WECC	2											

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																		
			1	2	3	4	5	6	7	8	9	10									
4	Steven Myers	ERCOT	ERCOT	2																	
5	Ben Li	IESO	NPCC	2																	
6	Matt Goldberg	ISO-NE	NPCC	2																	
7	Bill Phillips	MISO	RFC	2																	
8	Donald Weaver	NBSO	NPCC	2																	
9	Charles Yeung	SPP	SPP	2																	
14.	Group	Marie Knox	MISO Standards Collaborators			X															
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																	
1	Jim Cyrulewski	JDRJC Associates, LLC	RFC	8																	
15.	Group	Annette M. Bannon	PPL Electric Utilities and PPL Supply NERC Registered Organizations		X					X	X										
	<b>Additional Member</b>	<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>																
1	Mark Heimbach	PPL EnergyPlus, LLC		MRO	6																
2	Annette Bannon	PPL Generation, LLC on Behalf of its NERC Registered		RFC	5																
3	Brenda Truhe	PPL Electric Utilities Corporation		RFC	1																
16.	Group	Jason Mashall	ACES Power Marketing Standards Collaborators								X										
	<b>Additional Member</b>	<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>																
1	Mark Ringhausen	Old Dominion Electric Cooperative		RFC	3, 4																
2	Scott Brame	North Carolina Electric Membership		SERC	1. 3. 4. 5																

Group/Individual		Commenter	Organization		Registered Ballot Body Segment										
					1	2	3	4	5	6	7	8	9	10	
		Corporation													
3	Shari Heino	Brazos Electric Power Cooperative	ERCO T	1											
4	Bob Solomon	Hoosier Energy	RFC	1											
17.	Individual	David Thompson	Tennessee Valley Authority		X		X		X	X					
18.	Individual	Sandra Shaffer	PacifiCorp		X		X		X	X					
19.	Individual	Janet Smith	Arizona Public Service Company		X		X		X	X					
20.	Individual	Jim Eckelkamp	Progress Energy		X		X		X	X					
21.	Individual	Thomas E Washburn	FMPP							X					
22.	Individual	Joesph Zerbo	Salt River Project		X		X		X	X					
23.	Individual	Frederick R Plett	Massachusetts Attorney General									X			
24.	Individual	Keira Kazmerski	Xcel Energy		X		X		X	X					
25.	Individual	Dan Roethemeyer	Dynergy						X						
26.	Individual	Rich Salgo	NV Energy		X		X		X	X					
27.	Individual	Julie Lux	Westar Energy		X		X		X	X					
28.	Individual	Martin Kaufman	ExxonMobil Research and Engineering		X				X						
29.	Individual	Terri Pyle	Oklahoma Gas & Electric		X		X		X						
30.	Individual	Michelle R. D'Antuono	Ingleside Cogeneration LP						X						
31.	Individual	Michael Falvo	Independent Electricity System Operator			X									
32.	Individual	RoLynda Shumpert	South Carolina Electric and Gas		X		X		X		X				
33.	Individual	Joe Petaski	Manitoba Hydro		X		X		X	X					
34.	Individual	Greg Rowland	Duke Energy		X		X		X	X					
35.	Individual	David Youngblood	Luminant						X						
36.	Individual	David Thorne	Pepco Holdings		X		X								
37.	Individual	Edward	Davis		X		X		X	X					
38.	Individual	Scott Berry	Indiana Municipal Power Agency					X							

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
39.	Individual	Brian J Murphy	NextEra Energy. Inc.	X		X		X	X				
40.	Individual	Thad Ness	American Electric Power	X		X		X	X				
41.	Individual	Patrick Brown	Essential Power, LLC	X				X					
42.	Individual	Michael Moltane	ITC	X									
43.	Individual	Terry Harbour	MidAmerican Energy	X		X		X	X				
44.	Individual	Kirit Shah	Ameren	X		X		X	X				
45.	Individual	Brad Jones	EFH Luminant Energy						X				
46.	Individual	Daniel Duff	Liberty Electric Power LLC					X					
47.	Individual	Andrew Z. Puztai	American Transmission Company	X									
48.	Individual	Anthony Jablonski	ReliabilityFirst										X
49.	Individual	James R. Keller	We Energies			X							
50.	Individual	John Bee on Behalf of the Exelon Companies	Exelon	X		X		X	X				
51.	Individual	DANA SHOWALTER	E.ON CLIMATE & RENEWABLES					X					

1. Do you agree with the use of this “Rapid” approach to clarify the standard, rather than clarifying the standard through an Interpretation? If No, please explain your concerns.

**Summary Consideration:** The majority of stakeholders agree with the rapid revision approach. Some commenters expressed concerns with the approach because they identified other issues with VAR-002-1.1b that need to be addressed, as well. In particular, several stakeholders raised concerns with Requirement R2 and its VSLs.

The SDT received approval from the Standards Committee to address deficiencies in Requirement R2, and has made further changes to R2 to address concerns that were expressed. Requirement R2 is intrinsically linked to VAR-001-2 – Voltage and Reactive Control, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised VAR-002-2b Requirement R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added footnote 3 to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]

R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 is a revision of the footnote for Requirement R4 in VAR-001-2: “<sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.”

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

“When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.”

Organization	Yes or No	Question 1 Comment
Madison Gas and Electric Co.	Negative	VAR-002 does not need a Rapid Revision. R1 states you need to be in AVR when the unit is connected unless you notify the TOP. R2 gives you an exemption to R1 and R3 states that within 30 minutes you inform the TOP the change in status or capability. A simple interpretation what work but is not required.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard.</p>		
Wisconsin Electric Power Co.	Negative	We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT modified Requirement R1 to remove the need for the GOP to notify the TOP about the AVR operation during start-up and</p>		



Organization	Yes or No	Question 1 Comment
shutdown, as you suggested.		
Wisconsin Electric Power Marketing	Negative	We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.
Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT modified Requirement R1 to remove the need for the GOP to notify the TOP about the AVR operation during start-up and shutdown, as you suggested.		
Wisconsin Energy Corp.	Negative	We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated. NOTE: other comments submitted in the comment form.
Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT modified Requirement R1 to remove the need for the GOP to notify the TOP about the AVR operation during start-up and shutdown, as you suggested.		

Organization	Yes or No	Question 1 Comment
Xcel Energy, Inc.	Negative	<p>Q1: Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, “minimum load”</p> <p>Additional Comments: Xcel Energy would request that the VSL’s be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.</p>
<p>Response: Thank you for your comment. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available. The term “minimum load” was further clarified, and changes were made to R2 and the VSL’s to address your concerns.</p>		
Florida Municipal Power Agency	No	<p>Constellation is essentially asking “what does ‘notify’ mean as used in the standard”, and asking if previously arranged operating procedures between the GOP and TOP is notification, including operating procedures for start-up and shutdown of a unit during which an AVR would be put into manual mode. An interpretation of what ‘notify’ means as used in the standard is more appropriate as opposed to changing the standard. The response to the request is too specific and introduces new terms into the standards that are ambiguous and will cause confusion depending on the type of generator being considered (e.g., start-up and shutdown), possibly spurring additional requests for interpretation of what start-up and shutdown mean for, say, a wind of solar farm, etc. In addition, while R1 has become clearer as to the</p>

Organization	Yes or No	Question 1 Comment
		<p>intent, it leaves R3 unclear with the same question concerning the word 'notify'. An interpretation essentially saying that pre-arranged, mutually agreed upon operating procedures or similar documentation of pre-arranged, conditional notification, between the GOP and TOP acts as notification in regards to both R1 and R3 is a preferably approach to a rapid revision (e.g., every time the unit is on outage, the AVR is out of service; every time the unit is below XX MW of output, the AVR is in manual mode, etc.).</p>
<p>Response: Thank you for your comment. The first bullet under R1 has been modified to provide additional clarity regarding the term "notify", as you suggest.</p> <ul style="list-style-type: none"> <li>That the generator is being operated in start-up or shutdown mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator.</li> </ul> <p>This provides information regarding what is meant by the word "notify". R3 is outside the scope of the rapid revision process.</p>		
We Energies	No	<p>We strongly disagree with this approach and believe it does not properly address the concerns which prompted the request for an Interpretation. A clear and useful Interpretation would serve the industry better than a vague "rapid revision" of this standard.</p>
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT has made further revisions to the language to provide additional clarity.</p>		
Xcel Energy	No	<p>Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, "minimum load".</p>

Organization	Yes or No	Question 1 Comment
<p>Response: Thank you for your comment. Additional language has been added to clarify “minimum load.” The footnotes now read:</p> <p><sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum <b>continuously sustainable</b> load and the generator is prepared for continuous operation.</p> <p><sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum <b>continuously sustainable</b> load and the generator is prepared to go offline.</p>		
Dynergy	No	I don't know that I understand the differences between the two options.
<p>Response: Thank you for your comment. The NERC Board of Trustees has provided direction that any interpretation of a NERC standard must restrict itself to the words contained in the standard. If clarity cannot be provided without referencing additional work, and the clarity is still necessary, then the words of the standard must be modified to provide that clarity. A rapid revision is a tool to make a small adjustment to the wording to clarify the intent of the standard. Since it is a modification to the standard, it must follow the process for standard revision. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request.</p>		
ExxonMobil Research and Engineering	No	NERC has already established an SDT to review and modify the VAR standards. By stepping outside the normal process for drafting standards, regardless of the intent or end product, NERC is setting a precedent for superseding a pre-qualified SDT and the ANSI approved process for drafting standards. For the time being, a Generator Operator’s verbal notification to the Transmission Operator that a unit is being brought online or offline and is in manual control should be sufficient notification that its AVR is not in service.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes. The SDT believes that your suggestion is allowed by the language of the requirement. If a Generator Operator provides a Transmission</p>		

Organization	Yes or No	Question 1 Comment
Operator with its AVR procedures during start-up and shutdown, then no further notifications are required.		
Luminant	No	In this instance, Luminant believes that this should have been a simple interpretation by the SDT and not turned into a standard revision. An arbitrary call by individuals unaware of the impact to implement a “Rapid” approach could end up doing more harm to the BES than what was originally anticipated. Luminant also feels that if NERC wants to use the Rapid response for a standard revision, then that should be put forth to the industry for a ballot to ensure there are no major issues are being overlooked.
Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes.		
Indiana Municipal Power Agency	No	IMPA still likes the “Rapid” approach with some additional changes, such as having a SDT made up of six to eight members and with the focus of just performing the work to clarify the requirement within the standard that the request for interpretation is addressing.
Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes.		
NextEra Energy. Inc.	No	On the February 16, 2012 Standards Committee’s call, it was generally agreed that Rapid Revision procedure was still in the pilot phase and that it should only be used for minor revisions to a Reliability Standard. The revisions proposed changes create a new category of pre-notification via the use of procedures and attempts to clarify when notification is required. Neither of these revisions appears to be minor. Also, the proposed clarifications appear to be beyond the plain language of the Reliability Standard, and, therefore, are not appropriate for consideration as an interpretation. Thus, it is suggested that a new SAR be drafted, and that the

Organization	Yes or No	Question 1 Comment
		<p>issues raised by Constellation be assigned to a Standards Drafting Team, so that the issues raised can be considered by a diverse group of technical experts, and that a revision to VAR-002 can be processed consistent with the Standards Process Manual.</p>
<p>Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes contained in the Standards Process Manual.</p>		
<p>EFH Luminant Energy</p>	<p>No</p>	<p>In this instance, Luminant believes that this should have been a simple interpretation by the SDT and not turned into a standard revision. An arbitrary call by individuals unaware of the impact to implement a “Rapid” approach could end up doing more harm to the BES than what was originally anticipated. Luminant also feels that if NERC wants to use the Rapid response for a standard revision, then that should be put forth to the industry for a ballot to ensure there are no major issues are being overlooked.</p>
<p>Response: Thank you for your comment. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The Standards Committee is following its approved processes. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope).</p>		
<p>American Transmission Company</p>	<p>No</p>	<p>An interpretation would allow a thorough vetting of the issue at hand, rather than opening up the entire Standard to revision.</p>
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope).</p>		
<p>We Energies</p>	<p>No</p>	<p>We strongly disagree with this approach and believe it does not properly</p>

Organization	Yes or No	Question 1 Comment
		address the concerns which prompted the request for an Interpretation. A clear and useful Interpretation would serve the industry better than a vague “rapid revision” of this standard.
<p>Response: Thank you for your comment. The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The SDT has made further revisions to the language to provide additional clarity.</p>		
Exelon	No	<p>Exelon/Constellation recognizes and supports the effort to more “rapidly” resolve less controversial issues with a standard revision. However, Exelon/Constellation does not believe that the “rapid” approach to clarify the standard is the proper way to address this interpretation request for two reasons - the role of an interpretation versus a standard revision and the analysis to judge this issue as qualified for a rapid revision. The role of an interpretation versus a standard revision: An interpretation fulfils a different function than a standard revision. In this case, the interpretation request targeted VAR-002-1.1b Requirement 1 to address a narrow concern with the standard language that created auditing inconsistency across regions. Constellation felt that an interpretation to clarify the intent behind the language would more clearly reflect current reliable operational practices within the industry and aid in compliance clarity. Following development of the interpretation request, Constellation reviewed all the requirements in the standard language and considered developing a SAR to address the many issues that exist within the current standard language, others more urgent than that of R1. Revision to VAR-002-1.1b Requirement 2 is urgently needed as well as to the companion language in VAR-001-2 Requirement 4. Clearly a standard revision project is needed for VAR-001 and VAR-002, but the “rapid” approach is limited to only the issue raised in the interpretation request. Exelon/Constellation still believes that the concerns with VAR-001-2 R2 and VAR-002-1.1b R2 warrant a revision project. VAR-002-1.1b</p>

Organization	Yes or No	Question 1 Comment
		<p>Requirement 2 states that each GOP shall maintain the generator voltage or Reactive Power output as directed, and Measure 2 further clarifies this requirement stating that a GOP shall have evidence to show it controlled its generator voltage or Reactive Power output to meet the voltage or Reactive Power schedule provided by the TOP. However, in certain situations, a GOP may not be able to meet the schedule because of system variations outside of the GOP's control. In this situation, a GOP may be non-compliant with this requirement because of issues out of its control. This requirement should be revised to allow the GOP to contact the TOP when outside the schedule to follow the TOP's instruction. VAR-001-2 Requirement 4 is closely tied to VAR-002-1.1b Requirement 2. It states that each TOP shall specify a voltage or Reactive Power schedule at the interconnection point between the generator facility and the TO's facilities. However, some GOPs do not have metering capability at the point of interconnection and are not mandated to do so. Therefore, a TOP must give instruction to GOPs who potentially have no way of proving compliance with the instruction. This requirement should change to allow the TOP to give instruction to the GOP based on an agreed upon point, regardless of the interconnection point. Analysis to judge this issue as qualified for a rapid revision: The front end assessment of the issues was insufficient to identify the technical complexities underlying VAR-002-1.1b R1. Constellation requested that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. While greater clarity is needed regarding the obligations around such events as it concerns notification to interconnected parties, the technical aspects associated with the operational practice warrant sufficient latitude within the standard language. Starting up and shutting down a unit is dependent upon many variables such as the type of unit, the fuel used, and the unit specific operating procedures, to name a few, and means different things to different players in the connected</p>



Organization	Yes or No	Question 1 Comment
		<p>system. Defining the terms “start up” and “shut down” was not part of the request and creates more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague. The VAR-002-1.1b R1 language may not need to be revised if an interpretation properly clarifies the compliance obligation at start up and shut down. If a generator has to start up and shut down in manual mode, it should be compliant to do so under the current R1 requirement. For example, a blanket notification that certain generators start up and shut down in manual mode should be sufficient to comply with the communication of the situation. Pursuing the rapid revision of VAR-002-1.1b R1 without understanding the technical complexities behind R1 or addressing the issues in VAR-002-1.1b R2 and VAR-001-2 R4 creates a risk that a series of revisions will be needed rather than conducting a coherent standard revision project. Every iteration of a standard imposes cost and compliance risk to entities. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. Further, it is unclear who makes the judgments. Enabling stakeholders to better understand the process may make for a more effective deployment of this expedited revision process. However, for this VAR-002 interpretation request, Exelon/Constellation requests that work cease on this “rapid” approach and an interpretation of VAR-002-1.1b be submitted for industry review, with industry input in the development process.</p>
<p>Response: Thank you for your comment. The NERC Board of Trustees has provided direction that any interpretation of a NERC standard must restrict itself to the words contained in the standard. If clarity cannot be provided without referencing additional work, and the clarity is still necessary, then the words of the standard must be modified to provide that clarity. A Rapid Revision is a tool to make a small adjustment to the wording to clarify the intent of the standard. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address this interpretation request. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope). The SDT has recognized the link between VAR-001-2, R4 and VAR-002-2b, R2, and has included revisions in VAR-002b to add clarity. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address your concerns. Requirement R2 is intrinsically linked to VAR-</p>		

Organization	Yes or No	Question 1 Comment
		<p>001-2, Requirement R4:</p> <p>R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule <sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).</p> <p>The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:</p> <p>R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power <del>output</del> <b>schedule</b><sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p>R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p>Footnote 3 is a revision of the footnote above:</p> <p><sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.</p> <p>The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:</p> <p>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.</p> <p>The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the Interpretation request.</p>

Organization	Yes or No	Question 1 Comment
<p>This approach provides additional clarity to the entities subject to the standard. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
<p>E.ON CLIMATE &amp; RENEWABLES</p>	<p>No</p>	<p>E.ON Climate &amp; Renewables supports the effort to quickly resolve less controversial issues with a “rapid” revision of a standard and is willing to accept the proposed changes. However, E.ON Climate &amp; Renewables does not believe that this is the proper way to address this issue. An interpretation to clarify the intent behind the language would be sufficient, as the purpose of an interpretation is to address a concern with standard language that may create auditing or performance inconsistencies across the regions. In addition, this revision only partially addresses the issues of and concerns with the VAR standards. A standard revision project is needed for VAR-002, however the revision should address all of the known issues that exist within the current standard language and not just the narrow scope raised in the interpretation request. In regards to the proposed modifications, which attempt to provide greater clarity, additional complications may have been added. Using the terms “start up” and “shut down” creates more confusion than it resolves, as the proposed definitions in the footnotes are unclear and vague. The standard language may not need to be revised if an interpretation properly clarifies the compliance obligation at start up and shutdown. While E.ON Climate &amp; Renewables is willing to accept the proposed changes, E.ON Climate &amp; Renewables would prefer that work cease on the “rapid” approach and proceed with the requested interpretation of VAR-002 be submitted for industry review, with industry input in the development process.</p>
<p>Response: Thank you for your comment. The NERC Board of Trustees has provided direction that any interpretation of a NERC standard must restrict itself to the words contained in the standard. If clarity cannot be provided without referencing additional work, and the clarity is still necessary, then the words of the standard must be modified to provide that clarity. A rapid Revision is</p>		

Organization	Yes or No	Question 1 Comment
<p>a tool to make a small adjustment to the wording to clarify the intent of the standard. Members of the Project 2008-01 drafting team are working on this rapid revision, which is intended to address an interpretation request. The scope of this rapid revision is limited to R1 and R2 (which was recently added to the scope). The NERC Standards Committee felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The term “minimum load” was further clarified to address start-up and shutdown concerns. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Texas RE	Yes	We don’t believe there is any basis in the Standard for effectively answering this question through an interpretation.
<p>Response: Thank you for your comment.</p>		
FirstEnergy	Yes	We believe that the rapid revision approach is appropriate for this change. Furthermore, we believe that NERC should take advantage of this opportunity to expand the revisions slightly to address all the issues presented in CAN-0022 so that the CAN can be subsequently retired. Please see our comments and suggestions in Questions 2, 3, and 4.
<p>Response: Thank you for your comment. Please see our responses to your other comments. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. Any further modifications go beyond the scope of a rapid revision. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Progress Energy	Yes	We prefer the “rapid” approach if it provides clarification only and does not add any additional requirements. For example, the additional requirements have been added in Section R1 and M3.

Organization	Yes or No	Question 1 Comment
Response: Thank you for your comment.		
Massachusetts Attorney General	Yes	The wording of the standard should be changed to say "under normal operating conditions", or "except during startup and shut down"
Response: Thank you for your comment. The drafting team believes that the wording of R1 meets the intent of your comment. R1 also allows the GOP to operate the generator without the automatic voltage regulator in service and controlling voltage if he has notified the TOP. This may be required under what may still be termed "normal operating conditions."		
NV Energy	Yes	This was a good solution to the discovery of an inadequacy in the language of the existing Standard, and it was implemented in an efficient fashion.
Response: Thank you for your comment.		
Ingleside Cogeneration LP	Yes	We agree that the consistent identification of the points in the start-up and shutdown process would help clarify the intent and application of VAR-002 R1. Each Region seems to have its own concept of the appropriate time to engage the AVR in the automatic voltage control mode; which has led to inconsistent treatment by auditors. Some will assess a violation if the TOP is not notified of an AVR status change during every start-up and shutdown action - other Regions accept that the GOP will use generally acceptable business practices to engage the AVR at the correct time. In our view, this explains one of the reasons why the notification of a change in AVR status continues to be one of NERC's most violated requirements. This in of itself is important enough to justify a rapid revision of VAR-002, as it will carry much greater authority with auditors than an interpretation will.
Response: Thank you for your comment.		
American Electric Power	Yes	In general, we have no objections to using the Rapid approach as long as industry's comments and concerns are vetted and acknowledged in no less

Organization	Yes or No	Question 1 Comment
		way than they would be in any other process. That being said, this appears to be the third interpretation request in circulation regarding these requirements, so perhaps more clarity is needed within the language of the standard itself.
<p>Response: Thank you for your comment. The standard drafting team is following the NERC standards development process, and will address all comments submitted regarding this standard. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Imperial Irrigation District (IID)	Yes	
Northeast Power Coordinating Council	Yes	
Southwest Power Pool Regional Entity	Yes	
Bonneville Power Administration	Yes	
SPP Standards Review Group	Yes	
Dominion	Yes	
Kansas City Power & Light	Yes	
ISO/RTO Standards Review Committee	Yes	
MISO Standards Collaborators	Yes	

Organization	Yes or No	Question 1 Comment
ACES Power Marketing Standards Collaborators	Yes	
Tennessee Valley Authority	Yes	
Arizona Public Service Company	Yes	
Salt River Project	Yes	
Westar Energy	Yes	
Oklahoma Gas & Electric	Yes	
Independent Electricity System Operator	Yes	
South Carolina Electric and Gas	Yes	
Manitoba Hydro	Yes	
Duke Energy	Yes	
Pepco Holdings	Yes	
Davis	Yes	
Essential Power, LLC	Yes	
ITC	Yes	
MidAmerican Energy	Yes	

Organization	Yes or No	Question 1 Comment
Ameren	Yes	
ReliabilityFirst	Yes	
PPL Electric Utilities and PPL Supply NERC Registered Organizations		<p>While the PPL Companies think the change to Reliability Standard VAR-002 may result in an improvement compared to the current VAR-002, we believe that the proposed revised Reliability Standard should have been vetted with stakeholders through the Standard Development Team (SDT) process. The proposed revised standard raises questions that could have been avoided with additional vetting by stakeholders. For example, a change was made in VAR-002, R.1 but a corresponding change was not made in R.2. Is this an intentional distinction? Additionally, as discussed in our response to question 3, the new footnotes that were added to define start-up and shutdown, introduce the term “minimum load,” which can have different meanings under varying circumstances. Had the SDT process been used it is likely that such issues would have been vetted and clarified by stakeholders.</p>
<p>Response: Thank you for your comment. The standard drafting team is following the NERC standards development process and will address all comments submitted regarding this standard. The intent of the rapid revision is to add clarity to the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the Interpretation request. This approach provides additional clarity to the entities subject to the standard. Some industry comments addressed other aspects of VAR 002-1.</p>		



2. Does the language in the SAR adequately represent the issue raised in the interpretation request? If No, please provide your suggestions to modify the SAR.

**Summary Consideration:** The vast majority of stakeholders agree that the SAR adequately represents the issue raised in the interpretation request. One stakeholder suggested adding testing as a condition to R1 exclusions. The SDT believes that testing is already addressed under the condition described in the second bullet under R1 and it is not necessary to include it explicitly in the standard. Another stakeholder expressed concerns with R2 and its VSLs, and thought revisions to it were necessary.

Organization	Yes or No	Question 2 Comment
FirstEnergy	No	Pursuant to our suggested changes to the standard as shown in our comments to question 3, the SAR should be clear with respect to clarifying the intent of Requirement R1 and R3. We also suggest that testing should be added in addition to start-up and shut-down in R1 of the standard thus eliminating the need for CAN-0022.
<p>Response: Thank you for your comment. Please see our responses to your comments in Question 3. Testing certainly falls under the condition described in the second bullet under R1. As long as the GOP has notified the TOP, operation with the automatic voltage regulator not in service controlling voltage is allowed. Periods of testing should not be nearly as frequent as start-up and shutdown, and the separate notification requirements are not determined to be a burden to either the GOP or TOP. Revisions to Requirement R3 are outside the scope of this rapid revision project.</p>		
ACES Power Marketing Standards Collaborators	No	While the request for interpretation may have focused on Requirement R1, Requirement R2 should also be included in the SAR to fully address the issues in the interpretation. Constellation correctly points out in their request for interpretation that generating units that are in start up or shut down mode are not counted upon for reactive power or voltage support. Since Requirement R2 compels the Generator Operator to operate a generator to a voltage or reactive power schedule unless exempted by the Transmission Operator, the Generator Operator will still have to seek an exemption from the Transmission Operator for not controlling voltage during startup and shut down mode. If the Generator Operator is actually expected to

Organization	Yes or No	Question 2 Comment
		<p>maintain a voltage or reactive power schedule while the generating unit is not stable, reliability will be negatively affected because the generating unit is more likely to trip during these unstable operating modes. Ultimately, addressing Requirement R1 without addressing Requirement R2 still leaves the Generator Operator with the burden of an extra communication during the unstable startup and shutdown modes.</p>
<p>Response: Thank you for your comment. The SDT received approval from the SC to address deficiencies in Requirement R2, and has made further changes to R2 to address your concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4:</p> <p>R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule <sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).</p> <p>The footnote associated with the requirement states: "The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period." The SDT has revised R2 to change the word "output" to "schedule" to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:</p> <p>R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power <del>output</del> schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>), as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p>R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p>R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p>Footnote 3 is a revision of the footnote above:</p> <p><sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.</p>		

Organization	Yes or No	Question 2 Comment
NextEra Energy. Inc.	No	It is unclear that the SAR represents the issues raised in the interpretation, because it appears that one of the concerns was regional consistency, and it is not clear that the proposed language adequately provides for a uniform approach, particularly when notice is provided outside the context of start-up or shutdown.
<p>Response: Thank you for your comment. The SDT feels the proposed revisions to R1 will provide regional consistency by making the clarification in the actual standard language. The periods of start-up and shutdown were specifically addressed in the interpretation request.</p>		
Progress Energy	Yes	Partially
<p>Response: Thank you for your comment.</p>		
Exelon	Yes	The SAR language closely matches the interpretation request. However, as stated in response to Question 1, Exelon/Constellation feels that an interpretation on this issue raised is more appropriate than a rapid revision. There are larger concerns with VAR-002-1.1b as well as VAR-001-2 that need to be addressed. The scope of the SAR was limited to an interpretation request of a single requirement. The “rapid” process in developing the SAR did not include industry expertise which would have directed focus to these issues. Exelon/Constellation requests that work cease on this “rapid” approach and an interpretation of VAR-002-1.1b be submitted for industry review, with industry input in the development process.
<p>Response: Thank you for your comment. Please refer to the response provided in Question 1.</p>		
E.ON CLIMATE & RENEWABLES	Yes	Yes but the SAR only addresses the interpretation request. While the scope of an interpretation should only address the request, a standard revision should address and improve on issues within the entire standard. Limiting the revision to the single requirement makes a statement that the rest of the requirements are acceptable as written, which, from the opinions of many, is not the case for the VAR standards.

Organization	Yes or No	Question 2 Comment
<p>Response: Thank you for your comment. The project scope was recently revised to include R2 and its VSLs. Project 2008-01, Voltage and Reactive Planning and Control, has been established to address all aspects of VAR-001 and VAR-002, as well as other possible revisions or additions to the VAR standards. That project is currently in informal development, but will return to active development as soon as NERC staff resources become available.</p>		
Imperial Irrigation District (IID)	Yes	
Northeast Power Coordinating Council	Yes	
Southwest Power Pool Regional Entity	Yes	
Bonneville Power Administration	Yes	
SPP Standards Review Group	Yes	
LG&E and KU Services	Yes	
Florida Municipal Power Agency	Yes	
Dominion	Yes	
Kansas City Power & Light	Yes	
We Energies	Yes	
ISO/RTO Standards Review Committee	Yes	

Organization	Yes or No	Question 2 Comment
MISO Standards Collaborators	Yes	
PPL Electric Utilities and PPL Supply NERC Registered Organizations	Yes	
Tennessee Valley Authority	Yes	
Arizona Public Service Company	Yes	
Salt River Project	Yes	
Massachusetts Attorney General	Yes	
Xcel Energy	Yes	
Dynegy	Yes	
NV Energy	Yes	
Westar Energy	Yes	
ExxonMobil Research and Engineering	Yes	
Oklahoma Gas & Electric	Yes	
Ingleside Cogeneration LP	Yes	

Organization	Yes or No	Question 2 Comment
Independent Electricity System Operator	Yes	
South Carolina Electric and Gas	Yes	
Manitoba Hydro	Yes	
Duke Energy	Yes	
Luminant	Yes	
Pepco Holdings	Yes	
Davis	Yes	
Essential Power, LLC	Yes	
ITC	Yes	
MidAmerican Energy	Yes	
Ameren	Yes	
EFH Luminant Energy	Yes	
Liberty Electric Power LLC	Yes	
American Transmission Company	Yes	

Organization	Yes or No	Question 2 Comment
ReliabilityFirst	Yes	
We Energies	Yes	
Indiana Municipal Power Agency		no comment

3. Does the proposed revision resolve the issue raised in the interpretation request? If No, please provide your suggestions to modify the standard.

**Summary Consideration:** Most stakeholders agree with the revisions, but many stakeholders made suggestions for revisions that add clarity to the standard. The intent of the rapid revision is to add clarity to the existing -approved standard regarding the AVR status during generator start up and shut down. The Standards Committee (SC) and the SDT felt that a rapid revision provided greater clarity on the issue raised by the Interpretation request than would be possible with an Interpretation. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard.

Some industry comments addressed other aspects of VAR 002-1. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01 – Voltage and Reactive Planning and Control. In response to industry comments on the rapid revision, the SDT has revised the wording to add further clarity. The SDT has revised the wording of Requirement R1 and Measure M1 to add further clarity to AVR status during generator startup and shut down in the standard. The revised requirement and measure now read:

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown.

<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is preparing to go offline.

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being



started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2, and has made further changes to R2 to address concerns that were expressed by stakeholders. VAR-002-2b Requirement R2 is intrinsically linked to VAR-001-2 – Voltage and Reactive Control, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>), as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 for R2 above is a revision of the footnote from VAR-001-2, R4 above: <sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or Reactive Power schedule, the Generator Operator failed to meet the directed values for more than 15 minutes.

Organization	Yes or No	Question 3 Comment
Alliant Energy Corp. Services, Inc.	Negative	Alliant Energy believes this proposed revision will drive up the number of violations as it tries to define startup and shutdown modes for a generator, and there are so many different types of generators that it is not reasonable.
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. The SDT believes that by allowing the GOP to provide the TOP a procedure on AVR operation, compliance with VAR-002 R1 shall be simplified and the number of violations will decrease.</p>		
City and County of San Francisco	Negative	This revision is unnecessary and further complicates NERC Standard VAR-002. CAN-022 already addresses the acceptability of a Generator providing "blanket notification" regarding the operation of AVR during start-up and shut-down. If ramping time is to be specifically addressed in this Standard, then why not every other potential reason for having AVR out of service, such as testing.
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator startup and shut down. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach</p>		

Organization	Yes or No	Question 3 Comment
<p>provides additional clarity to the entities subject to the standard. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. The SDT believes that this clarification will minimize the need to refer to the CAN 022.</p>		
Midwest ISO, Inc.	Negative	<p>While it doesn't impact us directly, the VAR interpretation does not address the question raised by Constellation and the change to the standard adds no value and causes confusion.</p>
<p>Response: Thank you for your comment. The SDT cannot act on your comment without specific concerns with language that was developed to address the interpretation request. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing -approved standard regarding the AVR status during generator start-up and shut down. In that regard the SDT believes that it has directly addressed Constellations' issues. However, in response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service. The scope of the rapid revision project was also expanded to include R2 and its VSLs.</p>		
Tenaska, Inc.	Negative	<p>It would be preferred to simply write R1 as follows: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. The GOP is not required to be controlling voltage during periods of startup and shutdown, so the GOP shall provide the TOP with a statement specifying the MW level above which the generator will be operating with its AVR in service and controlling voltage. If the drafting team does not believe that change will satisfy the request for interpretation, then it is suggested that footnotes 1 and 2 be modified as follows: 1. Start-up is deemed to have ended when the unit is ramped up to a minimum continuously sustainable load level where all operational and environmental specifications are met, the AVR becomes operational in automatic mode per OEM specifications and the unit for entering continuous operation. 2. Shutdown is deemed to begin when the unit is ramped down to a load level where all operational and environmental specifications can no longer be met, the AVR is no longer operational in automatic mode per OEM specifications and the unit is</p>

Organization	Yes or No	Question 3 Comment
		preparing to go offline.
<p>Response: The SDT thanks you for your comments, and agrees that further clarification can be incorporated into the footnote. The SDT believes adding the words “continuously sustainable” addresses the environmental and OEM concerns. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service.</p>		
<p>Wisconsin Electric Power Co., Wisconsin Electric Power Marketing, Wisconsin Energy Corp.</p>	<p>Negative</p>	<p>We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, eliminated.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shut down. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. The SDT believes that R1 has been clarified by allowing the GOP to provide procedures to the TOP, thereby improving the knowledge between the two entities.</p>		
<p>SPP Standards Review Group</p>	<p>No</p>	<p>While we like the direction that the two bullet points in R1 have taken, we feel the language could be modified to make the exceptions clearer. We would propose the following language.R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: o the Generator Operator has previously notified the Transmission Operator that the unit is being operated in start-up1 or shutdown2 mode pursuant to a procedure previously provided to the Transmission Operator; or, o the Generator Operator has</p>

Organization	Yes or No	Question 3 Comment
		<p>previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up or shutdown, or the unit is not equipped with an automatic voltage regulator. Our intent is to provide an exception to operating the automatic voltage regulator in automatic mode when a unit is in the start-up/shutdown mode, or when the automatic voltage regulator may not be available for service, which does not require the Generator Operator to provide real time notification to the Transmission Operator. Given this and the proposed changes above, NERC should consider providing a similar exclusion for the Transmission Operator in VAR-001-2, R6.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>Florida Municipal Power Agency</p>	<p>No</p>	<p>Please see comments to Question 1</p>
<p>Response: Thank you for your comment. Please see our responses to your comments in Question 1.</p>		
<p>FirstEnergy</p>	<p>No</p>	<p>We believe the wording is on the right track to clarifying the requirement. However, we believe that there needs to be more clarification with regard to the tie between Requirement R1 and R3. It should be clear that R1 is allowing an exception during start-up, shut-down, or testing, while R3 should be related to a generator unit status or capability change when the unit is already connected to the bulk electric system. Therefore, we suggest the following wording for R1 and R3 along with their respective measures:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up1, shutdown2 or testing mode pursuant to a real-time</p>

Organization	Yes or No	Question 3 Comment
		<p>communication to the Transmission Operator or a procedure previously provided to the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up, shut down, or tested with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]R3.1. A status or capability change (other than start-up, shut-down, or testing) 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.R3.2. A status or capability change (other than start-up, shut-down, or testing) on any other Reactive Power resources under the Generator Operator’s control and the expected duration of the change in status or capability.M4. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes (other than start-up, shut-down, or testing) identified in Requirement 3.</p>
<p>Response: The SDT thanks you for your comments. The rapid revision process addresses AVR during start-up and shutdown. The second bullet in R1 provides for other reasons, such as testing, that the AVR may be taken out of service. The SDT believes that R1 captures the issue and there is no need to re-enforce the language in other requirements. Since the words regarding testing were not incorporated, the changes to the measurements that you suggested are not required. The drafting team did modify M1 to add clarity. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		

Organization	Yes or No	Question 3 Comment
Dominion	No	<p>Per the Interpretation Request, Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time. The existing language in Requirement R1 states: “The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.” Dominion believes the existing standard language is clear and covers any situation when the generators automatic voltage regulator is not in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage). Dominion submits that the definition of start-up and shutdown (Footnotes 1 and 2 respectively) is unnecessary and inappropriate. Therefore, Dominion suggests retaining the existing language in Requirement 1 and Measure 1.</p>
<p>Response: The SDT thanks you for your comments, and agrees that you have captured Constellations’ concern. However, the industry agrees with Constellations’ concern that, as written, there is ambiguity in the exiting language and better clarity is desired. The Standards Committee and the SDT felt that a rapid revision provided greater clarity by allowing the GOP to provide the TOP with a procedure. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service.</p>		
Kansas City Power & Light	No	<p>While we like the direction that the two bullet points in R1 have taken, we feel the language could be modified to make the exceptions clearer. We would propose the following language.R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: o the Generator Operator has previously notified the Transmission Operator that the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure</p>

Organization	Yes or No	Question 3 Comment
		<p>previously provided to the Transmission Operator; or, o the Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up or shutdown, or the unit is not equipped with an automatic voltage regulator. Our intent is to provide an exception to operating the automatic voltage regulator in automatic mode when a unit is in the start-up/shutdown mode, or when the automatic voltage regulator may not be available for service, which does not require the Generator Operator to provide real time notification to the Transmission Operator. Given this and the proposed changes above, NERC should consider providing a similar exclusion for the Transmission Operator in VAR-001-2, R6.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
We Energies	No	<p>It is well known that compliance with this standard has been an issue in the industry. If the standard is opened up for revision, the entire standard should be reviewed, not just Requirement 1. The SDT definitions added for “start-up” and “shutdown” is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. There needs to be full industry input on any revisions to this standard.</p>
<p>Response: Thank you for your comments. We agree that GOP can “best determine when a unit is stable,” and we assume that if the unit is not stable, the GOP will not synchronize the unit until the unit controls prove to be stable. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown</p>		



Organization	Yes or No	Question 3 Comment
<p>parameters for any particular generator. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue while, providing operational flexibility for other reason for having an AVR out of service.</p>		
<p>MISO Standards Collaborators</p>	<p>No</p>	<p>While it doesn't impact us directly, the VAR interpretation does not address the question raised by Constellation and the change to the standard adds no value and causes confusion. We recommend the following language: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the unit is operated in start-up or shutdown mode or it notifies the Transmission Operator of the reason that the unit is not being operated in automatic voltage control mode.</p>
<p>Response: Thank you for your comment. The drafting team believes that the language contained in the requirements meets the intent of your suggested revision.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>No</p>	<p>The changes do not offer clarity on whether the Generator Operator must communicate to the Transmission Operator that it will not operate in automatic voltage control mode during start up or shut down. The previous version of Requirement R1 was open- ended and required the Generator Operator to notify the Transmission Operator when it cannot operate a generator in automatic voltage control mode. The changes only make it clear that one reason the Generator Operator may notify the Transmission Operator is that the generator is in start up or shut down mode. It attempts to subject this reason to a previously provided procedure. However, this only adds confusion because the main body of Requirement R1 still indicates that the Generator Operator has to notify the Transmission Operator. It is not clear if that is through the previously supplied procedure or if Generator Operator has to notify the Transmission Operator each time. The request does not address the ultimate issue in the request for interpretation. Constellation is seeking an exemption to the notification requirement during start up and shut down mode and we agree that it should be provided. Constellation states directly in the request for interpretation that the</p>

Organization	Yes or No	Question 3 Comment
		<p>generating units are not counted upon for voltage or reactive power during startup mode. While any reactive power that the unit supplies in startup or shutdown mode will certainly provide voltage support, Constellation is correct that they are not counted upon during startup and shutdown. It is obvious that a unit shutting down should not be required to control voltage as it will not even provide voltage support once it is off-line. Thus, asking it to support voltage does not further reliability. Because a unit is in startup mode, the Generator Operator should be given flexibility to get the unit to a stable operating point before putting the unit in automatic voltage control mode. Otherwise, the unit may trip and offer no voltage support. The ultimate issue in the request for interpretation can actually be addressed by adding an exception to the standard requirement. Adding an exception (or an “unless” clause) to NERC standards requirements is a long standing practice. Many requirements in NERC standards have a clause that states actions must be taken unless such action would violate safety, equipment, regulatory and statutory requirements. Some examples include IRO-001-1.1 R8, IRO-014-2 R8, and TOP-001-1a R3, R4, and R6. There are also other “unless” clauses for other reasons. One approach here that would solve the ultimate issue would be to simply add “unless the unit is in startup mode or shutdown mode” to both Requirements R1 and R2.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service and to incorporate the “unless start –up, shutdown mode” language in R1. The second bullet in R1 provides for other reasons, such as testing, that the AVR may be taken out of service. The SDT believes that R1 has been clarified by allowing the GOP to provide procedures to the TOP, thereby improving the knowledge between the two entities. This also allows the GOP to change their operations (i.e. AVR operations prior to synchronizing, or immediately after synchronizing, etc.).</p>		
Tennessee Valley Authority	No	<p>During startup, the defining point for start-up and shut down should be at the point of dispatch, not the minimum load point. Point of dispatch is more appropriate than the minimum load point because some units are still in an unstable operating zone at minimum load point, and it may be hours or longer before being dispatched. The footnotes under section B, R1, should be changed to the following: Start-up is</p>

Organization	Yes or No	Question 3 Comment
		deemed to have ended when the unit is released for dispatch by the Generator Operator. Shutdown is deemed to begin when the unit is released from dispatch by the Transmission Operator.
Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. "Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation."		
Massachusetts Attorney General	No	The request is for an interpretation. The standard ought to be made more explicit to say "except during startup and shutdown conditions", or "during normal operating conditions"
Response: The SDT thanks you for your comments. The drafting team believes that the wording of R1 meets the intent of your comment. R1 also allows the GOP to operate the generator without the automatic voltage regulator in service and controlling voltage if he has notified the TOP. This may be required under what may still be termed "normal operating conditions."		
Dynergy	No	It would be simpler to make R1 read as ".....unless the GOP has either notified the TOP or is in the startup or shutdown mode." Delete the new proposed language.
Response: The SDT thanks you for your comments. The drafting team believes that the wording of R1 meets the intent of your comment. R1 also allows the GOP to operate the generator without the automatic voltage regulator in service and controlling voltage if he has notified the TOP. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue.		
Westar Energy	No	Please clarify within the requirement that notification is not required with each start-up and shutdown if a procedure has been previously provided to the Transmission Operator. With the language "the Generator Operator has notified the Transmission Operator" before the bullets, it implies that notification is required with each start-up and shutdown.
Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has		

Organization	Yes or No	Question 3 Comment
<p>revised the proposed language to add clarity to this issue. The wording “previously notified” contained within R1 addresses your concern regarding the need to notify during each change of status.</p>		
<p>ExxonMobil Research and Engineering</p>	<p>No</p>	<p>Generator Operators do not provide a Transmission Operator with a startup or shutdown procedure. Startups and shutdowns are typically coordinated through an outage scheduling process which is akin to a simple notification and, in some cases, approval process. In the past, NERC has specifically stated that they would like to utilize standard requirements that provide a clear benefit to the bulk electric system. Outage scheduling and verbal notifications in conjunction with real time telemetry adequately communicate the state of a generator's operation to the Transmission Operator. Evidence of such coordination be sufficient to attend to the reliability concern addressed by Requirement R1 and demonstrate compliance with the inherent requirement to coordinate generator startups and shutdowns as it relates to the operation of the generator's AVR.</p>
<p>Response: Thank you for your comments. The SDT did not include verbiage stating that start-up or shutdown procedures are required; only procedures on how the AVR will be operated. In addition, in start-up and shutdowns are not coordinated through the BA outage scheduling process, but is a BA dispatch schedule.</p>		
<p>Oklahoma Gas &amp; Electric</p>	<p>No</p>	<p>The language in R1 should provide more clarity regarding the exceptions for operating a generating unit in automatic voltage control mode. The draft is still not as clear as it could be; therefore, the following language is suggested:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless: o The unit is in start-up1 or shutdown2 mode and the Generator Operator has previously notified the Transmission Operator by providing a procedure that indicates the unit is operated in a mode other than automatic during start-up1 or shutdown2; o The Generator Operator has previously notified the Transmission Operator that the automatic voltage regulator cannot be operated in automatic control mode for a reason other than start-up1 or shutdown2; or, o The Generator Operator has previously notified the Transmission Operator that</p>

Organization	Yes or No	Question 3 Comment
		the unit is not equipped with an automatic voltage regulator.
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator. The SDT does not believe that the proposed third bullet is necessary, as a generator that does not have an AVR is addressed in the second bullet.</p>		
Ingleside Cogeneration LP	No	<p>We believe that there are two clarifications that the project team needs to add in order to ensure industry-wide consistency. First, there should be no ambiguity around the “minimum load” point where start-up ends (footnote 1) and shutdown begins (footnote 2). It seems to make sense to tie it to the value that must be validated during the generator capacity testing required under MOD-025-2. Even though that Standard is still under development (Project 2007-09), both the MOD-025-2 validated value and the VAR-002 minimum load point define where stable generator operations begin and end. Second, as obvious as it may seem, the project team should clarify the point where the generation unit is no longer “connected to the interconnected transmission system.” We believe this is the point where the generator breaker is open, but other descriptions may be more technically accurate. Once a break-point has been decided, VAR-002 R1 should clearly indicate that a notification to the TOP of any kind is not necessary if the AVR is fully engaged and controlling voltage up through that time.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator. Based on the comments received, the drafting team revised the footnotes to:</p> <p><sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.</p> <p><sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator</p>		

Organization	Yes or No	Question 3 Comment
is prepared to go offline.		
Duke Energy	No	<ul style="list-style-type: none"> <li>o The revision to the standard did not go far enough to resolve the request for interpretation. Constellation sought clarification of R1 as to whether or not a communication must be conducted between a GOP and TOP during start-up or shutdown of a generator. We agree with the SDT’s proposed change to R1 which provides for two different types of notification from the GOP to the TOP for situations when the unit is not being operated in automatic voltage control mode. However R3 still requires a 30 minute notification on status or capability changes. The following language from approved CAN-0022 allows GOPs to provide a blanket advance notification to the TOP in lieu of separate notifications for each change in status. “Advance Notification: In the event that a registered entity did not notify its TOP in every instance that it operated in a mode other than automatic, CEAs are to verify whether a registered entity opted to provide a blanket notification to its TOP regarding when it would be operating in a mode other than automatic voltage control mode. For example, a blanket notification could refer to the appropriate times during: 1) generator testing, 2) generator start-up, and 3) generator shut-down. If the registered entity acted on this option, the CEA is to verify that the registered entity’s TOP received the blanket notification in lieu of separate notifications for each change in status.”The Standard Drafting Team should revise R3 similarly to R1, to fully incorporate the provisions of CAN-0022 into the standard. The following phrase from R1 should be added at the beginning of R3: “Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator,”</li> <li>o For clarity, we also suggest adding the phrase “of AVR status is made” after the word “notification” in Measure M1, and delete the phrase “is made” after “Transmission Operator”.</li> </ul>
Response: Thank you for your comments. The SDT tried to capture the concepts in CAN-022, allowing for advance notification by		

Organization	Yes or No	Question 3 Comment
		<p>incorporating procedures into R1. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator. The SDT believes that R1 captures the issue and there is no need to re-enforce the language in other requirements. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reason for having an AVR out of service. Revisions to R3 are outside the scope of this project. We have revised the measure M1, as you suggested.</p>
<p>Davis</p>	<p>No</p>	<p>Entergy - believes the Transmission Operator should not be required to have, be required to update or maintain, nor be required to know the startup / shutdown procedures of all of the generators connected to its system. TOPs should not be required to dig through a procedure to find out if the AVR “should be” in manual or automatic mode during startup or shutdown. We also think it is not the best operation of the system for the TOP to “assume” the status of the AVR. All of the proposed changes, especially the provision of startup / shutdown procedures, places additional burdens on the TOP. These burdens also place unwritten requirements on the TOP which auditors will definitely “explore” during the next review, in any form, of the TOP. We view the requirement that the TOP receive the startup / shutdown procedures as placing new requirements on the TOP, in violation of the Interpretation process. Per Constellation in its Request for Interpretation “A generator operator already communicates to the TOP that the unit is being started up or shutting down.”. It would appear that a GOP could include in its procedures a requirement that the TOP be informed of the status of the AVR when the GOP is communicating to the TOP that the unit is starting up or shutting down. TOPs only want to know the status of a generating unit’s AVR, is it in automatic or manual mode. That information can be provided when the startup / shutdown information is being communicated. Therefore we recommend the following changes to VAR-002-2b: Delete both of the new bullet points added to R1, including associated footnotes. Delete: o That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than</p>

Organization	Yes or No	Question 3 Comment
		<p>start-up or shutdown. And:1 Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline. Also delete the new wording in M1:If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>
<p>Response: Thank you for your comments. The revised requirement allows for notification to be made prior to Real-time operations using a procedure. In all likelihood, the generator is not going to be operated in AVR mode during start-up or shutdown. This is the basis for the revision to the standard. The requirement also allows for Real-time notifications and provides flexibility in operations during a time when the Generator Operator is more appropriately focused on maintaining generator stability and reliability. As per TOP-001, the TOP has significant reliability authority and is aware of the generators synchronized within its service area, as well as their Real and Reactive Power capabilities and limits (i.e., load limits, AVR status, etc). The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shut down. The majority of industry comments have been supportive and provide suggestions for further clarity, rather than deletion of the proposed changes. The SDT does not believe this clarifying language imposes additional burden on the TOP. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>Indiana Municipal Power Agency</p>	<p>No</p>	<p>IMPA believes that the SDT has introduced more ambiguity to the requirement by trying to define start up and shut down to cover all the generating units in the fleet under all operating conditions. In addition, a generating unit may be at its minimum load when going into shutdown which does not require any ramping down to minimum load (this condition does not meet the definition of shutdown per footnote 2).</p>
<p>Response: The SDT thanks you for your comments. Footnote 2 “ramped down to its minimum continuously-stable load and the</p>		



Organization	Yes or No	Question 3 Comment
<p>generator is preparing to go offline” does not include a time element. It does not preclude a generator that had been operating at minimum load for some time period to then begin preparing to go offline. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator.</p>		
<p>American Electric Power</p>	<p>No</p>	<p>It does not appear that the revisions to R1 fully address the concerns of the requestor. The response actually complicates rather than clarifies VAR-002. In addition, the first bullet point added to R1 is covered by other standards. Using only the second bullet along with its footnote, and removing the first bullet, would be a more appropriate change. The proposed changes in the first bullet point to requirement 1 provide no additional benefit either in terms of clarity or by increasing the reliability of the BES. In addition, these revisions assume that an entity actually needs to be notified of such procedures. Requirements which presuppose the needs or wants of an entity are to be avoided and would be a source of confusion.</p>
<p>Response: Thank you for your comment. The SDT does not believe that the first bullet under R1 is addressed in other standards. This scenario is the basis for the interpretation request that we received. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The majority of industry comments has been supportive and provides suggestions for further clarity, rather than deletion of the proposed changes. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>MidAmerican Energy</p>	<p>No</p>	<p>MidAmerican has reviewed the Background and Drafting Team Considerations and has concerns of the proposed Project 2011-INT-02. As stated in the Drafting team considerations; “The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode”. By stating (and it will be viewed by the industry as defining) what “start up and shut down” is, the SDT is expanding the technical issues that they have stated they would not do. The drafting team should not attempt to define,</p>

Organization	Yes or No	Question 3 Comment
		<p>start up, shut down, ramp up, or ramp down or place those words within a Requirement. (Note that within the PJM market, ramp is something that is associated with a schedule where by a GOP may not “ramp up” until five minutes before top of the hour but could be on line producing real and reactive power. The use of “ramp” within foot note 1 and 2 is ambiguous and will cause confusion.)</p> <p>There are too many different generator designs for the SDT to capture all possibilities by simply adding the proposed foot notes and bullets. In addition, whenever a foot note is used to clarify a Requirement, the Requirement becomes more ambiguous. Recommend that foot note 1 and 2 be deleted since they only provide examples to a certain type of generator. The SDT needs to write the Requirement whereby it can be universally used by all applicable entities. The SDT further states, “The drafting team believes it is up to the Generator Operator to formally notify the Transmission Operator of its procedures for placing the unit into automatic voltage control mode”. MidAmerican agrees with the SDT. NERC requirements should allow GOPs (industry experts) to appropriately document exemptions and design conditions where units take automatic actions to switch modes and provide those in advance to the Transmission Operator. NERC has allowed stakeholders the authority to design their own programs based on their asset characteristics as in FAC-008, CIP-002, EOP-001, etc. The SDT should allow each applicable entity within this Standard the same authority. MidAmerican recommends R1 be left as is and not be changed to incorporate the “interpretation”. R1 is already well written to assure that Generator Operators operate each generator connected to the interconnected transmission system in automatic voltage control mode (unless exempt by R2).MidAmerican recommends that R3 is clearly suited for incorporation of the requested interpretation. R3.1 is written to capture “...status or capacity changes on any generator...”, such as when a generator is not in the desired voltage response mode. MidAmerican recommends R3 to be rewritten to capture the intent of the interpretation to read:R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes unless advanced notification, including but not limited to operating guidelines documenting expected</p>

Organization	Yes or No	Question 3 Comment
		<p>status and capability changes, has been provided for any of the following: The noted “advance notification” will allow GOPs to establish an individual process for each generators that do not comply with R1 or fall within scope of R2. This will also allow GOPs and TOPs on how this advance warning is to be provided. It may be via written procedure, a mutually agreed SCADA point, etc.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The majority of industry comments have been supportive and provide suggestions for further clarity, rather than deletion of the proposed changes. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
<p>Liberty Electric Power LLC</p>	<p>No</p>	<p>The use of the footnoted terms to define start-up and shutdown has the potential to create more compliance issues than are solved by the revision. Suggest removing the footnotes, remove the bullet points in R1 and change to read as follows: The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the generator is starting up or shutting down; or the Generator Operator has notified the Transmission Operator that the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. This formulation eliminates the confusion which will be caused when different auditors interpret "minimum load" and "preparing". Further, it eliminates records retention issues surrounding the data needed from each start-up or shutdown event for proof of compliance.</p>
<p>Response: The SDT thanks you for your comments. In response to your comments, as well as other industry comments, the SDT has revised the proposed language to add clarity to this issue. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shutdown parameters for any particular generator.</p>		

Organization	Yes or No	Question 3 Comment
American Transmission Company	No	<p>The issue raised by the RFI is an inconsistent application of the Standard across the regions. The Rapid Revision expands the Standard by offering specific language to deal with a specific exception, rather than set the stage for consistency. The other issue is a perceived necessity for a Generator Operator to take the additional action of notification to the TOP to mitigate a symptom of the first issue. When a broader view of the Standards is taken, it can be argued that the existing language in VAR-002-2b R1, and R2 captures the possibility of an exception with the provision for exemption. This situation does not relieve the Transmission Operator from obligations to VAR-001-2 R6, “The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.”If an interpretation is to be made regarding Generators with design concerns, a reference to Attachment 1-TOP-005 1.2.4 of TOP-005-2a should be made. This data would give the necessary means to the TOP with which to be compliant with VAR-001-2 R6, facilitate Contingency Analysis in Real-Time, and provide a vehicle enabling Generator Operators to convey status of AVR without a phone call. The potential for any Generator lacking ability to provide AVR status data, or having any other extenuating circumstances regarding communication of status, may be handled through the exemption provisions as noted in VAR-002-1.1b R2 between the TOP and the GOP, or “unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.” as stated in TOP-005-2a R2.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 requirement language which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. The majority of industry comments have been supportive and provide suggestions for further clarity, rather than deletion of the proposed changes. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue while providing operational flexibility for other reason for having an AVR out of service. Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to</p>		

Organization	Yes or No	Question 3 Comment
define the start-up, shutdown parameters for any particular generator.		
ReliabilityFirst	No	<p>ReliabilityFirst abstains on this ballot and offers the following comments for consideration:1. ReliabilityFirst fundamentally agrees that the included bullets somewhat resolve the issue raised in the interpretation request, though believes the first bullet is missing one key component. ReliabilityFirst believes the GOPs procedure for start-up/shutdown not only needs to be provided to the TOP but needs to be accepted by the corresponding TOP as well. ReliabilityFirst recommends the following language for consideration: “That the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to and accepted by the Transmission Operator; or.”</p>
<p>Response: The SDT thanks you for your response. However, the SDT does not believe that TOP acceptance should be incorporated into the requirements. Equipment status and limitations are identified by the GOP and are the responsibility of the GOP to transmit this information to the TOP.</p>		
Exelon	No	<p>Exelon/Constellation does not believe that the proposed revision resolves the issue raised in the interpretation request. Constellation requested that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. Defining the terms “start up” and “shut down” was not part of the request and created more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague.</p> <p>Footnote 1 attempts to define start up of a unit. However, there are several issues with this definition. First, the term “ramped up” is a qualifier that is not needed. Secondly, the term “minimum load” is too vague.</p> <p>The minimum load in a generator user manual may be different than the minimum load defined in a start up procedure. Lastly, the language stating “the unit is preparing for continuous operation” does not match any generator operator language and is unclear. The operator is the one who would prepare for continuous</p>

Organization	Yes or No	Question 3 Comment
		<p>operation, not “the unit.” The operator prepares for continuous operation long before reaching synch speed, so per Footnote 1, start up would end when the call is made to start up the unit. Footnote 2 attempts to define shut down of a unit. However, the definition used is only one of numerous ways a unit may be brought offline. Every unit has a unique sequence in which it is shut down. Therefore, Footnote 2 is too prescriptive. R.1 has been revised to state “pursuant to a procedure previously provided to the Transmission Operator.” The SDT has not considered that there are other forms of communication that could be utilized to meet the requirement R1. For example, a formal letter of understand between the GO and the TOP rather than having a procedure to satisfy the requirement. R.1 and the associated M.1 imply that this requirement is only applicable to the automatic voltage regulator. The SDT has not addressed “startup” and “shutdown” provisions for other reactive power resources (e.g. power system stabilizers). M.1 currently states “and no notification to the Transmission Operator is made” gives the impression that this applies to all notifications to the Transmission Operator related to unit “startup” or “shutdown”. This is ambiguous and needs to be clear that that the notification is related only to the status of the reactive resource (e.g., automatic voltage regulator).Exelon/Constellation maintains that this “rapid” revision should cease and an interpretation to VAR-002-1.1b be developed.</p>

Organization	Yes or No	Question 3 Comment
<p>Response: Thank you for your comments. The SDT agrees with your comment on “the generator is preparing.” We have edited this to state, “the generator is prepared.” The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. The Standards Committee and the SDT felt that a rapid revision provided greater clarity on the issue raised by the interpretation request. The rapid revision provides a change in the VAR-002 Requirement language, which directly addresses the interpretation request. This approach provides additional clarity to the entities subject to the standard. Flexibility has been given to the Generator Operators to provide documentation to the TOP that allows the GOP to define the start-up, shutdown parameters for any particular generator. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service. M1 has been changed to add clarity. In addition, the Power System Stabilizer is a component of the AVR. If the stabilizer is taken out of service, it will be the decision of the GOP to determine if the AVR can be operated without it; therefore, the SDT believes M1 as written is acceptable. Some industry comments addressed other aspects of VAR 002-1. Comments not within the scope of the rapid revision that you have addressed will be considered by the drafting team established to complete project 2008-01.</p>		
ISO/RTO Standards Review Committee	No	
Alberta Electric System Operator	Affirmative	While the AESO can agree with the proposed standard as written, we suggest the drafting team consider the revisions to R1 recommended by the Standards Review Committee of the ISO/RTO Council.
<p>Response: The SDT thanks you for your comment. In response to industry comments, the SDT has revised the proposed language to add clarity.</p>		
Detroit Edison Company	Affirmative	In the first condition of R1, "procedure" should be replaced by "notification." Same for M1. Condition will likely be caused by physical limitations of equipment and notification should provide TOP with all necessary information without requiring release of internal documents. Definitions of Start-up and Shut-down should be better defined. "...unit is preparing for..." leaves too much room for interpretation. Would suggest using "...unit is released for dispatch by electrical system control by plant operator" or similar. Same for Shut-down, "...unit is released by electrical

Organization	Yes or No	Question 3 Comment
		<p>system control to plant control to come offline" or similar. Footnote #3- not sure why this statement is in the VAR-002 standard. I suggest removing this statement. (Comments by Eizans, Depriest &amp; Kujala)</p>
<p>Response: The SDT thanks you for your comment. In response to industry comments, the SDT has revised the proposed language to add clarity.</p>		
Progress Energy	Yes	<p>Yes - partially. It is to be appreciated that Constellation’s interpretation question was addressed at the time when the standard was being revised. However, at the same time, new stipulations were added in Requirements R1 and measures M3.</p>
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service. Some industry comments addressed other aspects of VAR 002-1. Comments not within the scope of the rapid revision will be considered by the drafting team established to complete project 2008-01.</p>		
Ameren	Yes	<p>We agree that the proposed revision addresses the issue raised for VAR-002, R1 interpretation.</p>
<p>Response: The SDT thanks you for your comment.</p>		
E.ON CLIMATE & RENEWABLES	Yes	<p>E.ON Climate &amp; Renewables believes the proposed revision, which attempt to provide greater clarity, addresses the interpretation request, may result in additional confusion based on unit needs and terminology. Using the terms “start up” and “shut down” creates more confusion than it resolves, as the proposed definitions in the footnotes are unclear and vague.</p>



Organization	Yes or No	Question 3 Comment
<p>Response: Thank you for your comment. The intent of the rapid revision was to incorporate wording into the standards document to add clarity in the existing approved standard regarding the AVR status during generator start-up and shutdown. In response to industry comments, the SDT has revised the proposed language to add clarity to this issue, while providing operational flexibility for other reasons for having an AVR out of service.</p>		
<p>PPL Electric Utilities and PPL Supply NERC Registered Organizations</p>		<p>As previously stated, the term “minimum load” has various meanings depending upon the circumstances. There is, for example, the “min-load pickup” needed to prevent a newly-synchronized generator from slipping into a reverse-power situation, the “minimum stable load” for unit operation (this is what we think the SDT had in mind), the “minimum environmentally-compliant load,” and the “minimum commercial load” a unit may cycle-to at night when power prices fall. We believe such issues could have been vetted during the SDT process.</p>
<p>Response: The SDT thanks you for your comment. The footnotes have been revised for clarity to include the term “continuously sustainable,” to address your concern.</p>		
<p>Imperial Irrigation District (IID)</p>	<p>Yes</p>	
<p>Northeast Power Coordinating Council</p>	<p>Yes</p>	
<p>Southwest Power Pool Regional Entity</p>	<p>Yes</p>	
<p>Bonneville Power Administration</p>	<p>Yes</p>	
<p>Texas RE</p>	<p>Yes</p>	
<p>LG&amp;E and KU Services</p>	<p>Yes</p>	

Organization	Yes or No	Question 3 Comment
PacifiCorp	Yes	
Arizona Public Service Company	Yes	
Salt River Project	Yes	
Xcel Energy	Yes	
NV Energy	Yes	
Independent Electricity System Operator	Yes	
South Carolina Electric and Gas	Yes	
Manitoba Hydro	Yes	
Luminant	Yes	
Pepco Holdings	Yes	
Essential Power, LLC	Yes	
ITC	Yes	
EFH Luminant Energy	Yes	

4. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here.

**Summary Consideration:** Several stakeholders provided suggested enhancements to the language of R1 and R2 to provide additional clarity. The SDT has revised R1 and R2 to address these comments.

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator; or
- That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode, as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off, and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

VAR-002-2b Requirement R2 is intrinsically linked to VAR-001-2 – Voltage and Reactive Control, Requirement R4:

R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule 1 at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the requirement states: “The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.” The SDT has revised R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added footnote 3 to VAR-002-2b, R2:

R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power ~~output~~ **schedule**<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]

R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

Footnote 3 for R2 is a revision of the footnote from VAR-001-2, R4:

<sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.

Organization	Yes or No	Question 4 Comment
AEP, AEP Marketing	Negative	Comments are being submitted via electronic form by Thad Ness on behalf of American Electric Power.
Response: Thank you for your comment. Please see response to those comments.		
AEP Service Corp.	Negative	Comments are being submitted via electronic form by Thad Ness on behalf of American Electric Power

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. Please see response to those comments.		
Brazos Electric Power Cooperative, Inc.	Negative	Please see the formal comments submitted by ACES Power Marketing.
Response: Thank you for your comment. Please see response to those comments.		
City Utilities of Springfield, Missouri	Negative	City Utilities of Springfield, Missouri supports the comments submitted by the SPP Standards Development group.
Response: Thank you for your comment. Please see response to those comments.		
Dominion Resources Services	Negative	Dominion believes the existing standard language is clear and covers any situation when the generators automatic voltage regulator is not in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage). Dominion submits that the definition of start-up and shutdown (Footnotes 1 and 2 respectively) is unnecessary and inappropriate. Therefore, Dominion suggests retaining the existing language in Requirement 1 and Measure 1.
Response: Thank you for your comment. The SDT believes the proposed language, as modified based on industry comments, provides greater clarity and a more clear understanding of the requirements and the measures.		
Dynergy Inc.	Negative	See my previous comments submitted 3/1/12.
Response: Thank you for your comment. Please see response to those comments.		
Electric Power Supply Association	Negative	EPSA concurs with the comments provided by Constellation.

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. Please see response to those comments.		
Energy Services, Inc.	Negative	Comments submitted from Entergy.
Response: Thank you for your comment. Please see response to those comments.		
FirstEnergy Corp., FirstEnergy Energy Delivery, FirstEnergy Solutions	Negative	Please see FirstEnergy's comments submitted through the formal comment period.
Response: Thank you for your comment. Please see response to those comments.		
Great River Energy	Negative	Please see the formal comments submitted by the MRO NSRF.
Response: Thank you for your comment. The SDT did not receive the comments from the MRO NSRF.		
MidAmerican Energy Co.	Negative	See the MidAmerican and MRO NSRF comments. It is inappropriate to define "start up" and "shut down". The drafting team cannot appropriately capture all of the varied power plant and combustion turbine designs governing how and when units will automatically switch into and out of Automatic Voltage Regulation. The SDT should not change R1, but should add the following to R3 after the words 30 minutes, "...unless advanced notification including but not limited to operating guides describing the expected status and capability changes was made for any of the following: "
Response: Thank you for your comments. The SDT believes that start-up and shutdown can be defined in a footnote for this standard. The language in R1 does not attempt to define when an AVR is switched into or out of operation as that is the responsibility of the GOP. R1 provides the obligation for the GOP to notify the TOP of when he is operating the generator without the AVR in automatic operation controlling voltage. The SDT did not receive the comments from the MRO NSRF.		
Nebraska Public Power	Negative	NPPD is joining comments submitted by the MRO NSRF (NERC Standards Review

Organization	Yes or No	Question 4 Comment
District		Forum).
Response: Thank you for your comment. The SDT did not receive the comments from the MRO NSRF.		
New York Independent System Operator	Negative	comments have been submitted, we support the change except for the need of the generator to provide procedures to the TOP.
Response: Thank you for your comment. The language inR1 has been modified to include the option of a “Real-time communication” or procedure to the TOP.		
North Carolina Electric Membership Corp.	Negative	Please see the formal comments submitted by ACES Power Marketing
Response: Thank you for your comment. Please see response to those comments.		
Occidental Chemical	Negative	See comment form submitted by Ingleside Cogeneration LP
Response: Thank you for your comment. Please see response to those comments.		
Ohio Edison Company	Negative	Please see FirstEnergy's comments submitted through the formal comment period.
Response: Thank you for your comment. Please see response to those comments.		
Oklahoma Gas and Electric Co.	Negative	See comments by OG&E and SPP
Response: Thank you for your comment. Please see response to those comments.		
Old Dominion Electric Coop.	Negative	See comments supplied by ACES Power Marketing.
Response: Thank you for your comment. Please see response to those comments.		
Omaha Public Power District	Negative	OPPD is supporting MRO (Regional Entity) comments. Please see MRO NSRF

Organization	Yes or No	Question 4 Comment
		comments.
Response: Thank you for your comments. The SDT did not receive the comments from the MRO NSRF.		
PacifiCorp	Negative	<p>Comment on Footnote 1: Footnote 1 currently reads “Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operations.” PacifiCorp strongly suggests that footnote 1 be re-written to read as follows: “Start-up is deemed to have ended when the unit is ramped up to its minimum stable load...” Revising the footnote in this manner would remove the ambiguity around the meaning of the phrase “and the unit is preparing for continuous operation” which does not provide any additional clarity to the concept of “minimum load.” Adding the clarification of “minimum stable load,” however, defines a specific point in time that is likely to be vary among systems.</p> <p>Comment on Severe VSL for R1: PacifiCorp does not believe that it is appropriate that all violations of R1 should be treated as “severe” violations for at least two separate reasons: 1. A mere failure of the responsible entity to give notice to the Transmission Operator should not be treated as a severe violation on its own. Absent an actual reliability risk to the BES, a mere clerical error, a failure to timely report, or a failure to document the timely report, should never be raised to the level of a severe violation.</p> <p>Designating a clerical error for a single unit in an otherwise robust VAR-002 compliance regime to be a “severe” violation seems contrary to the current effort to focus limited industry and regulatory resources on elements of compliance that will make the most significant impact on the reliability of the BES. Violations that are of a minimal risk to reliability (such as clerical and single unit errors) should be treated in the VSL table in the “Lower” category, with appropriate escalations towards “severe” as multiple units or habitual or willful non-compliance is identified. This should particularly be the case as NERC moves to a compliance enforcement initiative, the Find, Fix, Track and Report mechanism, that permits no finding of penalty for lesser-risk violations related to documentation or administrative errors. 2. Treating all violations as “severe” does not provide flexibility to NERC or the Regional Entities (REs) to address actual severe violations that impact the reliability of the Bulk Electric</p>



Organization	Yes or No	Question 4 Comment
		<p>System (BES), and it fails to provide appropriate incentives/disincentives for either the registered entities with robust compliance programs or a compliance history with repeat violations. The registered entity that habitually operates in manual mode or never reports an AVR or PSS outage should not be treated by the RE in the same manner as a conscientious operator who experiences an uncharacteristic reporting lapse (which may occur while attention is rightfully diverted to fixing actual system problems). It takes multiple units operating in manual mode to negatively affect the reliability of the BES, and the VSL table should be modified to reflect higher potential sanctions for repeat offenders and/or those registered entities without a robust VAR-002 compliance program. An escalating VSL table will serve as a better incentive for all registered entities to develop a meaningful VAR-002 compliance regime. The same reasoning should be applied to the VSLs for R3.</p>
<p>Response: Thank you for your comments. Footnote 1 has been modified to include the language “minimum continuously sustainable load and the generator is prepared for continuous operation” to address your concern. The SDT agrees with your concerns on the VSLs, and the VSL table has been modified accordingly.</p>		
<p>PSEG Energy Resources &amp; Trade LLC, PSEG Fossil LLC, Public Service Electric and Gas Co.</p>	<p>Negative</p>	<p>PSEG entities support Constellation’s separately-submitted comments.</p>
<p>Response: Thank you for your comment. Please see response to those comments.</p>		
<p>Southern Company Generation</p>	<p>Negative</p>	<p>See comments submitted by Antonio Grayson on behalf of Southern company.</p>
<p>Response: Thank you for your comment. Please see response to those comments.</p>		
<p>Tennessee Valley Authority</p>	<p>Negative</p>	<p>Please see TVA's comments submitted through the electronic comment form.</p>

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. Please see response to those comments.		
U.S. Army Corps of Engineers	Negative	See MRO- NSRF comments
Response: Thank you for your comments. The SDT did not receive the comments from the MRO NSRF.		
Westar Energy	Negative	Agree with the concept, disagree with wording in the Requirement
Westar Energy	Negative	While we agree with the concept, we do not agree with the language in the requirement
Response: Thank you for your comment. The language in Requirement R1 has been modified to provide additional clarity.		
Westar Energy	Negative	Please see Westar Energy comments submitted electronically.
Response: Thank you for your comment. Please see response to those comments.		
Xcel Energy, Inc.	Negative	<p>Q1: Xcel Energy believes that, for the scope of the initial clarification request, the Rapid approach is appropriate. However, Xcel Energy also believes that the drafting team has gone beyond addressing the clarification request that was the basis for this revision by the inclusion of other changes. A change was made including a new, undefined term, “minimum load”</p> <p>Additional Comments: Xcel Energy would request that the VSL’s be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.</p>

Organization	Yes or No	Question 4 Comment
<p>Response: The SDT has modified the term “minimum load” to the term “minimum continuously sustainable load” to provide additional clarity. The SDT agrees with Xcel’s comment on the VSL’s for R2, and the VSL table has been modified to address this concern.</p>		
SPP Standards Review Group	No	None
Oklahoma Gas & Electric	No	No additional comments on the SAR or proposed Standard.
Luminant	No	<p>With respect to R1 VSL - The original standard had varying amounts of incidents (failure to notify the TO that the AVR is not in voltage control mode) and was replaced with one failed incident under the Severe category. Varying amount of incidents should be placed in the VSL as follows: Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p> <p>With respect to R3 VSL - The original standard had varying amounts of incidents (failure to notify status change in AVR/PSS/reactive power source within 30 minutes) and was replaced with one incident under High (R3.1 or R3.2) and Severe category (R3.1 and R3.2). Varying amount of incidents should be placed in the VSL as follows: Level 1: One incident of failing to notify the Transmission Operator; Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p>
<p>Response: Thank you for your comment. R1: Failure to notify the TOP is a violation of the requirement. Since this is a binary type requirement, the VSL guidelines require only a single Severe VSL. R3 is outside the scope of the drafting team.</p>		
We Energies	No	The revisions to the standard do not adequately address the industry concerns in the Interpretation request. The SDT did recognize that there are sound reasons for some

Organization	Yes or No	Question 4 Comment
		<p>generators to be operated in the manual AVR mode during startup or shutdown, and the standard should allow for this. The standard and its bullets added to R1 provide the flexibility needed in the operation of turbine-generator AVR's to ensure stability of the unit and overall system reliability. However, the definitions added for "start-up" and "shutdown" is neither clear nor helpful. The Generator Owner/Operators can best determine when a unit is stable in startup or shutdown mode. The SDT should obtain input from the industry with respect to when a unit is stable to put an AVR in automatic. The standard does need definitions for these terms, which may vary from unit to unit. We Energies recommend Requirement 1, bullet footnotes 1 and 2, define minimum load as 20 Megawatts when starting or stopping a unit. Also, there is a need to clearly address the requirements for wind farms, which need flexibility in the operating mode due to the generator AVR technology, generator size and intermittent nature. We believe that an Interpretation which addresses the concerns of the requestors is more appropriate. The proposed revision does not help clarify the significant issues in the existing standard. There needs to be flexibility for the GO to operate in Manual voltage regulation during the important phases of start-up and shutdown. The need for notification between the GO and the TO about AVR operation during these short times should be minimized or better, elimin</p>
<p>Response: Thank you for your comments. The SDT believes that the use of 20 MWs to place the AVR in service is inappropriate. This may be applicable to some units in the We Energies service area, but is inappropriate for a North American standard. The SDT believes the standard, as modified, allows the flexibility for the GOP to operate the generator with the AVR in manual during the start-up and shutdown periods, as long as he has communicated this information to the TOP. That communication can be either in Real-time or by a procedure that is given to the TOP in advance. This minimizes the need for notifications between the GOP and the TOP during the start-up and shutdown periods, as desired by the interpretation request.</p>		
Imperial Irrigation District (IID)	No	
Bonneville Power	No	

Organization	Yes or No	Question 4 Comment
Administration		
Tennessee Valley Authority	No	
Arizona Public Service Company	No	
Salt River Project	No	
Massachusetts Attorney General	No	
Dynergy	No	
NV Energy	No	
Westar Energy	No	
ExxonMobil Research and Engineering	No	
South Carolina Electric and Gas	No	
Duke Energy	No	
Pepco Holdings	No	
Essential Power, LLC	No	
Liberty Electric Power LLC	No	

Organization	Yes or No	Question 4 Comment
Bonneville Power Administration	Affirmative	please refer to BPA’s submitted comments
Response: Thank you for your comment. Please see the response to those comments.		
Electric Reliability Council of Texas, Inc.	Affirmative	ERCOT supports the comments submitted by the IRC SRC.
Response: Thank you for your comment. Please see the response to those comments.		
Manitoba Hydro	Affirmative	Please see comments submitted by Joe Petaski (Manitoba Hydro)
Response: Thank you for your comment. Please see the response to those comments.		
PPL EnergyPlus LLC	Affirmative	Please refer to comments filed by PPL Supply
Response: Thank you for your comment. Please see the response to those comments.		
PPL Generation LLC	Affirmative	Although PPL Generation is voting affirmative, we submitted comments for the Standard Drafting Team's consideration under the group name PPL Electric Utilities and PPL Supply NERC Registered Organizations.
Response: Thank you for your comments. Please see the response to those comments.		
Northeast Power Coordinating Council	Yes	NERC has indicated that footnotes should not be used in a standard. Footnotes 1, 2, and 3 (not included as part of this proposed revision) should be removed. Footnotes 1 and 2 define start-up and shutdown. Neither term is defined in the NERC Glossary and the terms as used in this standard should be prefaced with “generator” to eliminate any confusion with the start-up or shutdown of a network or load. If generator start-up and generator shutdown are unique to this standard, then they can be defined in the wording of the requirement. If they are not unique to this

Organization	Yes or No	Question 4 Comment
		<p>standard, they must be included in the NERC Glossary. To support this “rapid revision”, the process for including the terms in the NERC Glossary should be made to accommodate a “rapid revision”. Footnote 3 is a technical explanation, and should not be included in this standard.</p>
<p>Response: Thank you for your comments. NERC advised the SDT that the use of footnotes was acceptable for the “rapid revision” process. However, it is possible to use these terms in the requirement. The SDT considered this change, but decided to keep the terms as footnotes. (2) Footnote 3 is a technical explanation, and the SDT believes it doesn’t do any harm to leave the footnote in place. Further consideration of removing this footnote can be given during the activities of Project 2008-01.</p>		
<p>Southwest Power Pool Regional Entity</p>	<p>Yes</p>	<p>This has been our practice in assessing compliance in that we ask for verification in the entities procedures that the GOP has communicated to the TOP those units that start up or shut down in manual mode. We view this procedure provided to the TOP in advance as the means of notification and further communication at each manual start up and shut down is not necessary.</p>
<p>Response: Thank you for your comment.</p>		
<p>Texas RE</p>	<p>Yes</p>	<p>We support the intent and direction of this revision, but we provide several suggestions and corrections that should be addressed.</p> <ol style="list-style-type: none"> <li>1. When a unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown, the GOP should be required to provide the reason to the TOP as part of its notification.</li> <li>2. We suggest deleting footnotes 1 and 2, which attempt to define “start-up” and “shut-down.” There are differences in start-up and shut-down procedures and terminology in different regions and markets that make any attempt to globally define them problematic. These definitions are not needed here, and the details can be left to local practice, GOP procedures, and agreements between GOPs and TOPs.</li> <li>3. In footnote 3, we suggest changing “this WILL lead to a change in the associated Facility Ratings” to “this MAY lead to a change in the associated Facility Ratings,”</li> </ol>

Organization	Yes or No	Question 4 Comment
		<p>because the reactive power capability may not be the most limiting factor considered in a Facility Rating methodology.</p> <p>4. In Requirement R5, there appears to be a disconnect between the “Generator Owner’s” obligations in the first paragraph, and the reference to “Generator Operator” in subrequirement R5.1. It appears that these references should refer to the same entity - which one is it supposed to be? The Measures will need to be revised to match the requirement.</p> <p>5. The Data Retention provisions don’t refer to the correct measures, and they should be corrected and updated as needed. (For example, M5 applies to GO but is not referenced in Data Retention.) Also, the reference to “Compliance Monitor” should be updated to “Compliance Enforcement Authority.”</p> <p>6. We understand that revisions to the VSLs may be considered outside of the scope of this project, but some of the VSLs are technically insufficient and need to be corrected. In particular, the 5-10-15% limits in the VSL for R2 are much too large for this technical context, and a high or severe VSL should apply for a much smaller voltage variation.</p>
<p>Response: Thank you for your comment. (1) We agree, and this is addressed in the 2<sup>nd</sup> bullet of R1. (2) The SDT team was assigned the task of addressing the generator AVR status during start-up and shutdown; therefore, it was necessary to define these terms. (3) The SDT concurs, and has made the revision to Footnote 3. (4) This is a valid point; however, this is outside the scope of the rapid revision assigned to the SDT. These revisions can be considered under Project 2008-01. (5) This has been corrected, as per your suggestion. (6) The VSL table has been modified for R2 based on timing rather than percentage.</p>		
LG&E and KU Services	Yes	<p>LG&amp;E and KU Services recommend the proposed additions to R1 also be applied to R2 using the following language: R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o</p>



Organization	Yes or No	Question 4 Comment
		<p>That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. R2.1. When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p>
<p>Response: Thank you for your comment. The SDT was not originally assigned the task of addressing R2. Since then, we have made some minor changes to this requirement. We feel that it is redundant to add this verbiage to R2 since it is a repetitive to R1.</p>		
FirstEnergy	Yes	<p>We believe that the proposed implementation plan does not afford entities adequate time to develop any required procedures pursuant to Requirement R1. We suggest the implementation plan effective date be “The first day of the 2nd calendar quarter after applicable regulatory approval”.</p>
<p>Response: Thank you for your comment. The use of the word “procedure” was intended to mean as the dictionary defines it. “Procedure” is defined as a particular way of accomplishing something, or a series of steps to accomplish something. This can be detailed steps, or merely a few simple steps (i.e., when the generator reaches minimum load, the AVR will be placed into service and the TOP shall be formally informed). The SDT believes that compliance with the modification by the GOP is part of normal operating procedures for all generators. The SDT also added the option of using a “Real-time communication” for the notification to the TOP if “procedures” have not been communicated to the TOP.</p>		
Dominion	Yes	<p>If the language proposed in the Project is adopted, then Dominion suggests in the bullets added under R1, M1, and in footnotes 1 and 2; that the word ‘unit’ be replaced with ‘generator’, for consistency, as generator is already used in the Standard.</p>

Organization	Yes or No	Question 4 Comment
<p>Response: Thank you for your comment. The SDT agrees with your edit, and has modified the language accordingly.</p>		
<p>ISO/RTO Standards Review Committee</p>	<p>Yes</p>	<p>The IRC/SRC proposes the following changes to the draft:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup>mode pursuant to a procedure previously provided to the Transmission Operator; or. o That it notifies the Transmission Operator the reason that the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. We agree with the proposal however, there is no need for the Generator Operator to provide its procedure to the Transmission Operator.</p>
<p>Response: Thank you for your comment. The use of the word “procedure” was intended to mean as the dictionary defines it. “Procedure” is defined as a particular way of accomplishing something, or a series of steps to accomplish something. This can be detailed steps, or merely a few simple steps (i.e., when the generator reaches minimum load, the AVR will be placed into service and the TOP shall be formally informed).</p>		
<p>MISO Standards Collaborators</p>	<p>Yes</p>	<p>Constellation noted that calling the TOP and notifying them that a generator has its voltage regulator off automatic during startup or shutdown is unnecessary and a distraction from the GOP’s primary task at hand. It is common practice to take the voltage regulator off automatic during startup and shutdown. The TOP is not relying on VAR support from the generator during startup or shutdown. A strict reading of the new R1 implies that the GOP must still make the phone call, but rather than saying the voltage regulator is out of automatic, they must call to say that the voltage regulator is out of automatic because the unit is starting up or shutting down in accordance with an established procedure.</p>

Organization	Yes or No	Question 4 Comment
<p>Response: Thank you for your comment. The SDT does not agree that R1 requires the GOP to notify the TOP during start-up or shutdown. If the GOP has provided its procedure for AVR operation during start-up or shutdown, then no additional notifications are required.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>Yes</p>	<p>We recommend modifying the version history slightly by adding “previously approved” as a description before the VSLs and VRFs. Someone reading this version history in the future may believe that the VSLs and VRFs were created during this posting and did not previously exist.</p>
<p>Response: Thank you for your comment. The SDT agrees. The SDT has made modifications to the VSL table to improve the VSLs.</p>		
<p>Progress Energy</p>	<p>Yes</p>	<p>Section B: Requirement R1: Revise bullet points in requirement R1 as under: o That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. Revise definitions of startup and shutdown as: Note 1 Start-up is deemed to have ended when the unit is being ramped up for continuous operation. Note 2 Shutdown is deemed to begin when the unit is being ramped down and is preparing to go offline. Section B: Requirement R3: Revise requirement R3 as under: R3. For remotely started units with no onsite control room operator, transmission of information via SCADA is an acceptable form of conveying the AVR operating mode to the TOP. However, for all other generating units, each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] Section C: Measures M3: Revise as under. Delete the sentence “If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or</p>

Organization	Yes or No	Question 4 Comment
		attached.”Section D: Violation Risk Factors: Putting the criteria for different levels of violation risk factor in a matrix form is fine but do not revise existing penalties.
Response: Thank you for your comments. The SDT has modified the language in R1 to provide greater clarity. Revisions other than those required to address the interpretation request through a rapid revision are outside the scope of this process and can be addressed under Project 2008-01.		
FMPP	Yes	The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator has notified the Transmission Operator.Why is "Operator" deleted? It now states the Generator has notified the TOP. A Generator is not an entity. How can a non-entity notify anyone?
Response: Thank you for your comment. The SDT version contains the word “Operator.”		
Xcel Energy	Yes	Xcel Energy would request that the VSL’s be opened for revision as well. The measures are not clearly worded. A better definition of the % of deviation would be suggested, such as the % being from the target voltage or from the lower/upper limit allowed in the voltage schedule. Another clarification that would be of benefit is a time period allowed for the voltage to return to control following an upset. As currently written, the return could be interpreted as instantaneous, which is not feasible.
Response: Thank you for your comment. The VSLs for R2 have been revised to base the severity level on the time duration that the Generator Operator failed to maintain the voltage or Reactive Power schedule.		
Independent Electricity System Operator	Yes	The proposed implementation plan conflicts with Ontario regulatory practice respecting the effective date of the standard. It is suggested that this conflict be removed by appending to the implementation plan wording, after “applicable regulatory approval” in the Effective Dates Section A5 of the draft standard and P. 1

Organization	Yes or No	Question 4 Comment
		of the Implementation Plan, to the following effect:”, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.”
Response: Thank you for your comment. The SDT has made the revisions, as requested.		
Manitoba Hydro	Yes	<p>-Will attestations or other documentation be required to demonstrate that generating units are not operated in start-up or shut-down mode? If so, this adds an unnecessary compliance burden.</p> <p>-The data retention requirements are too uncertain for two reasons</p>
Response: Thank you for your comment. The SDT team change to R1 allows the GOP to submit a procedure to the TOP concerning the operation of the AVR. This will reduce the compliance burden. We cannot address your data retention concerns without the specific issues that you have.		
Indiana Municipal Power Agency	Yes	<p>IMPA believes the requirements for VAR-002 are very good and that the request by Constellation should have really been handled through the interpretation process. This was not a good request for the “Rapid” approach. An interpretation could have been used to clarify that an entity can used advance notice or a standing procedure with the TOP in order to give proper notice of the voltage regulator in manual during startup or shutdown. If requested by the TOP or if even needed, the GOP should be given the flexibility to define the startup or shutdown period for its generating units.</p>
Response: Thank you for your comment. The NERC Standards Committee felt this was a good candidate for the rapid revision process. Your comment will be forwarded to the NERC Standards Committee. The GOP does have the flexibility to define the star-up or shutdown period for its generating units.		
American Electric Power	Yes	<p>While we do not completely disagree with the proposed changes, the revisions beg the question if R1 is even necessary given the content of R2? Perhaps the best way to provide the clarity being sought is to remove R1 entirely and simply retain R2.How about simply stating that an entity shall operate in the agreed-upon mode unless</p>

Organization	Yes or No	Question 4 Comment
		<p>GOP notifies the TOP otherwise?</p>
<p>Response: Thank you for your comment. The SDT believes R1 provides direction to the GOP to operate with an AVR, while R2 provides direction to the GOP on how to operate the AVR.</p>		
<p>MidAmerican Energy</p>	<p>Yes</p>	<p>Delete the words “and the expected duration” to R3.1 and 3.2. Since this is a revision to the standard, the drafting team should consider deletions as wells as additions. MidAmerican contends that the words “and the expected duration” provide no practical Bulk Electric System reliability benefit and should be removed. Delete all added material to M1 or have M1 match revised wording in R1. Revise any VRFs or VSLs appropriately.</p>
<p>Response: Thank you for your comment. Revisions to R3 are outside the scope of this rapid revision process. Those modifications can be considered under Project 2008-01.</p>		
<p>Ameren</p>	<p>Yes</p>	<p>As stated above, we agree that the proposed revision addresses the issue raised for VAR-002, R1 interpretation. However, we suggest SDT to review how the proposed revision would impact VAR-001, R6. In particular, our concern is with regard to the first bullet in the proposed revision. The issue is while the GOP is required to provide the start-up and shutdown procedure, we believe that it would not be enough for the TOP to meet VAR-001-2, R6. This requirement is: R6. The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers. R6.1. When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule. Our concern is, to meet the above requirement, now TOP has to keep track of all generating units which is in a start-up and/or shut down mode, keep monitoring units' dispatch level, and when the unit reaches this pre-defined dispatch level (provided in the GOP procedure in advance) then assume that the status of AVR will change and provide a directive to the GOP. If our concern is not valid, please address it and clarify it in the next round of the revision. Assuming that</p>

Organization	Yes or No	Question 4 Comment
		<p>our concern is valid, we suggest the following changes to the proposed draft:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator. of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] o That the unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a procedure previously provided to the Transmission Operator; or. o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown, or o That the unit is being operated in start-up or shut down mode with automatic voltage control mode contrary to the procedure previously provided to the Transmission Operator.<sup>1</sup> Start-up is deemed to have ended when the unit is ramped up to its minimum load (specified in the GOP procedure) and the unit is preparing for continuous operation. <sup>2</sup> Shutdown is deemed to begin when the unit is ramped down to its minimum load (specified in the GOP procedure) and the unit is preparing to go offline.</p>
<p>Response: Thank you for your response. We agree with your concern; however, we feel by including a requirement that the GOP shall provide a procedure to the TOP, we have minimized work for both the GOP and the TOP and improved communications. In some regions, this method of using procedures is already being done.</p>		
EFH Luminant Energy	Yes	<p>R1 VSL - The original standard had varying amounts of incidents (failure to notify the TO that the AVR is not in voltage control mode) and was replaced with one failed incident under the Severe category. Varying amount of incidents should be placed in the VSL as follows: Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p> <p>R3 VSL - The original standard had varying amounts of incidents (failure to notify status change in AVR/PSS/reactive power source within 30 minutes) and was replaced with one incident under High (R3.1 or R3.2) and Severe category (R3.1 and</p>

Organization	Yes or No	Question 4 Comment
		<p>R3.2). Varying amount of incidents should be placed in the VSL as follows: Level 1: One incident of failing to notify the Transmission Operator; Level 2: More than one but less than 5 incidents of failing to notify the Transmission Operator; Level 3: More than 5 but less than 10 incidents of failing to notify the Transmission Operator; Level 4: Ten or more incidents of failing to notify the Transmission Operator.</p>
<p>Response: Thank you for your comment. R1 calls for the GOP to notify the TOP each time that the generator is not operated in AVR mode. This is a binary requirement and the VSL reflects this. R3 is outside the scope of the rapid revision project.</p>		
<p>American Transmission Company</p>	<p>Yes</p>	<p>Constellation asked for an interpretation for consistent application of the Standard by the regions. The “Rapid Revision” and the scope of the changes went beyond what was originally raised in the RFI and actually changed the Standard. As stated in the Drafting Team Considerations; “The drafting team has summarized this request as a clarification of a communications protocol as it relates to compliance and not to address any technical issues with respect to assumptions regarding the AVR status during start up and shut down mode”. (an example of how it changed the Standard)By stating (and it will be viewed by the industry as defining) what “start up and shut down” is in footnotes 1 and 2 below, the SDT is expanding the technical issues that they have stated they would not do. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. Footnote 1 - Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. Footnote 2 - Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline.</p>
<p>Response: Thank you for your comment. The SDT believes that the only way to address the interpretation was to reference when start-up and shutdown begin and end. In this manner, the GOP can provide a procedure to the TOP on the unit status for this operating period.</p>		
<p>Exelon</p>	<p>Yes</p>	<p>To reiterate, a standard revision is not preferable to an interpretation on VAR-002-1.1b R1. However, a standard revision project is much needed for VAR-001-2 R4 and</p>



Organization	Yes or No	Question 4 Comment
		VAR-002-1.1b R2. The Constellation interpretation request should be reconsidered, this rapid revision project should be remanded and a new project should be created to revise VAR-001-2 R4 and VAR-002-1.1b R2
<p>Response: Thank you for your comment. The scope of the rapid revision project has been expanded to include R2 and its VSL. The SDT has tied VAR-001-2, R4 with VAR-002-2b, R2 by revising the language of R2 and adding a footnote about the voltage schedule range. Further revisions of VAR-001 and VAR-002 will be handled under Project 2008-01.</p>		
E.ON CLIMATE & RENEWABLES	Yes	Going forward, it would be helpful if the SAR quoted the interpretation request it is resolving. In addition, it would be helpful to highlight (even in the clean version) the sections changed within the SAR. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. Furthermore, it is unclear who makes the judgments. Enabling stakeholders to better understand the process may make for a more effective deployment of this expedited revision process. While E.ON Climate & Renewables believes a full review and revision of the VAR standards is necessary in the near future.

Organization	Yes or No	Question 4 Comment
		<p>Response: Thank you for your comment. The SAR contains the exact language from the Interpretation Request. The “Detailed Description” section of the SAR contains the following language:</p> <p style="padding-left: 40px;">NERC received a request to interpret this requirement. The requester stated:</p> <p style="padding-left: 80px;">“During startup and shutdown of a generator, it is industry practice to have a generator’s...</p> <p>The Standards Committee determines, in conjunction with drafting teams, if a request for an interpretation of a standard would be better addressed by changing the language in the associated standard. At this point the Standards Committee is paying close attention to the teams that are making modifications to standards using the “Rapid Revision” process. The Standards Committee is still working to fine-tune the details of the rapid revision process. The rapid revision process is not different from the process already described in the Standard Processes Manual, it is the application of the standard development process as an alternative to processing an interpretation that is ‘new’.</p> <p>A drafting team was formed from the inactive Project 2008-01 team to work on this rapid revision. NERC has plans to reactivate Project 2008-01 in 2013 to perform a full review and revision of both VAR standards.</p>
<p>Kansas City Power &amp; Light</p>		<p>M1 is in need of modification to clearly state that a generator that has the AVR in any other mode other than automatic as a routine process of shutting down or starting up a generator, a submission of the procedure stating such is sufficient and no other notification by the generator is required. Recommend the following for clarity to replace the current M1 description: If a generator is being started up or shut down with the automatic voltage control off, the Generator Operator must provide evidence that the generator either notified the Transmission Operator each time the generator was started up or shut down of the AVR status, or the Generator Operator will have evidence it provided the generators procedure for placing the unit into automatic voltage control mode during start-up and placing the automatic voltage control mode to off during shutdown to the Transmission Operator. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. In any other operating condition, the generator shall provide evidence it notified its associated Transmission Operator any time the generator failed to operate a generator in the automatic voltage control mode as specified in</p>

Organization	Yes or No	Question 4 Comment
		Requirement 1.
<p>Response: Thank you for your comment. The SDT agrees with your comment, and has modified the language in R1 and M1 to read as follows:</p> <p>R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <ul style="list-style-type: none"> <li>• That the generator is being operated in start-up or shutdown mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or</li> <li>• That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.</li> </ul> <p>M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>		
Ingleside Cogeneration LP		<p>It should be a goal of every Interpretation Drafting Team to eliminate related Compliance Application Notices (CANs) wherever possible. In our view, CANs are not fully vetted by the industry to the extent required of a viable regulatory program. If too many CANs are in effect at any one time, it diminishes the legitimacy of NERC’s compliance effort. In this case, CAN-0022 “VAR-002 R1 and R3 Generator AVR Operation in Alternative Mode” covers much of the same ground as this rapid revision. We see this as an excellent opportunity to set a helpful precedent for the interpretations process.</p>

Organization	Yes or No	Question 4 Comment
Response: Thank you for your comment. CANs are retired upon approval of standards that address or clarify them.		

### **Standard Development Roadmap**

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

#### **Development Steps Completed:**

1. SAR and proposed standard drafted and approved for posting (January 2012).
2. SAR and draft standard posted for a 45-day concurrent formal comment period and initial ballot February 8 – March 23, 2012.

#### **Proposed Action Plan and Description of Current Draft:**

This is the second draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes previously approved Time Horizons, Violation Risk Factors, and Violation Severity Levels as well as revisions to R2 and its VSLs; and is being submitted for a 30-day concurrent formal comment period and successive ballot.

#### **Future Development Plan:**

<b>Anticipated Actions</b>	<b>Anticipated Date</b>
1. Post response to comments and conduct successive ballot.	May-June 2012
2. Develop responses to ballot comments.	June-July 2012
3. Post responses to comments and conduct recirculation ballot.	July 2012
4. BOT adoption.	August 2012
5. File with regulatory authorities.	October 2012

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, Reactive Power capability may change based on stability considerations and this may lead to a change in the associated Facility Ratings.

output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - R3.1.** 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.
  - R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
  - R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
    - R4.1.1.** Tap settings.
    - R4.1.2.** Available fixed tap ranges.
    - R4.1.3.** Impedance data.
    - R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
  - R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### **C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.

- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator’s directives as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC, or other applicable governmental authorities, shall serve as the Compliance Enforcement Authority.

**1.2. Data Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 4 and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measures 5 and 6)

The Compliance Monitor shall retain any audit data for three years.

**1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

- Compliance Audit
- Self-Certification
- Spot Checking
- Compliance Investigation
- Self-Reporting
- Complaint

**1.4. Additional Compliance Information**



None

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or Reactive Power schedule, the Generator Operator failed to meet the directed values for 5 minutes or less.	When directed by the Transmission Operator to maintain the generator voltage or Reactive Power schedule, the Generator Operator failed to meet the directed values for more than 5 minutes, up to and including 10 minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or Reactive Power schedule, the Generator Operator failed to meet the directed values for more than 10 minutes, up to and including 15 minutes.	When directed by the Transmission Operator to maintain the generator voltage or Reactive Power schedule, the Generator Operator failed to meet the directed values for more than 15 minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as

**Standard VAR-002-2b — Generator Operation for Maintaining Network Voltage Schedules**

			specified in either R3.1 or R3.2	specified in both R3.1 and R3.2
R4.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).
2. Appendix 2 – Interpretation of Applicability (February 10, 2009)

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
2b	TBD	Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.	Revised

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## **Appendix 2**

### **Interpretation of VAR-002-1a**

#### **Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

### Standard Development Roadmap

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

#### Development Steps Completed:

1. SAR and proposed standard drafted and approved for posting (January 2012).
2. SAR and draft standard posted for a 45-day concurrent formal comment period and initial ballot February 8 – March 23, 2012.

#### Proposed Action Plan and Description of Current Draft:

This is the second draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes previously approved Time Horizons, Violation Risk Factors, and Violation Severity Levels as well as revisions to R2 and its VSLs; and is being submitted for a 30-day concurrent formal comment period and successive ballot.

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Anticipated Actions	Anticipated Date
1. Post response to comments and conduct successive ballot.	May-June 2012
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3. Post responses to comments and conduct recirculation ballot.	July 2012
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## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- That the generator unit is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator; or
  - That the generator unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive

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<sup>1</sup> Start-up is deemed to have ended when the generator unit is ramped up to its minimum continuously sustainable load and the generator unit is prepareding for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator unit is ramped down to its minimum continuously sustainable load and the generator unit is prepareding to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, reactive-Reactive power-Power capability may change based on stability considerations and this will-may lead to a change in the associated Facility Ratings.

output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- R3.1.** 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.
- R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
- R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
- R4.1.1.** Tap settings.
- R4.1.2.** Available fixed tap ranges.
- R4.1.3.** Impedance data.
- R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
- R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### C. Measures

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification **of the automatic voltage regulator status is made** to the Transmission Operator ~~is made~~, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.

- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator’s directives as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

## **D. Compliance**

### **1. Compliance Monitoring Process**

#### **1.1. Compliance Monitoring Responsibility**

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC, or other applicable governmental authorities, shall serve as the Compliance Enforcement Authority.

#### **1.2. Data Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure ~~45~~ and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measures ~~5 and~~ 6)

The Compliance Monitor shall retain any audit data for three years.

#### **1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

- Compliance Audit
- Self-Certification
- Spot Checking
- Compliance Investigation
- Self-Reporting
- Complaint

#### **1.4. Additional Compliance Information**

None

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive-Reactive power Power schedule, output</del> the Generator Operator failed to meet the directed values <del>by for</del> 5 <del>minutes%</del> or less.	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive-Reactive power Power schedule, output</del> the Generator Operator failed to meet the directed values <del>for by</del> more than 5 <del>minutes, %</del> up to <del>(and including)</del> 10 <del>minutes, %</del> OR When a generator’s automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive-Reactive power Power output schedule, the</del> Generator Operator failed to meet the directed values <del>by for</del> more than 10 <del>minutes, %</del> up to <del>(and including)</del> 15 <del>minutes, %</del>	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive-Reactive power Power output schedule, the</del> Generator Operator failed to meet the directed values <del>by for</del> more than 15 <del>minutes%</del> . OR When a generator’s automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator	The Generator Operator failed to notify the Transmission Operator

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			within 30 minutes of the information as specified in either R3.1 or R3.2	within 30 minutes of the information as specified in both R3.1 and R3.2
R4.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

~~1.2.~~ Appendix 2 – Interpretation of Applicability (February 10, 2009)

**Version History**

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
<u>2b</u>	TBD	Revised R1 to address an Interpretation Request. Also added <u>previously approved</u> VRFs, Time Horizons and VSLs. <u>Revised R2 to address consistency issue with VAR-001-2, R4.</u>	Revised

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?



**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## Appendix 2

### Interpretation of VAR-002-1a

#### **Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-~~1-1b~~2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
- ~~5. **Effective Date:** Immediately after approval of applicable regulatory authorities.~~
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator ~~of one of the following:~~ *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication, or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power ~~output~~schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, ~~reactive power~~Reactive Power capability may change based on stability considerations and this ~~will~~may lead to a change in the associated Facility Ratings.

- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium]* *[Time Horizon: Real-time Operations]*
  - R3.1.** 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.
  - R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower]* *[Time Horizon: Real-time Operations]*
  - R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
    - R4.1.1.** Tap settings.
    - R4.1.2.** Available fixed tap ranges.
    - R4.1.3.** Impedance data.
    - R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium]* *[Time Horizon: Real-time Operations]*
  - R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### **C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. *If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.*

- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.
- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator’s directives as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

~~For entities that do not work for the Regional Reliability Organization.~~

~~Entity, the Regional Entity shall serve as the Compliance **Monitoring Period and Reset Time Frame** Enforcement Authority.~~

~~One calendar year.~~

~~For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC, or other applicable governmental authorities, shall serve as the Compliance Enforcement Authority.~~

**1.2. Data Retention**

~~The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.~~

The Generator Operator shall maintain evidence needed for Measure 1 through Measure ~~5~~4 and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. ~~(Measure(Measures 5 and 6))~~

The Compliance Monitor shall retain any audit data for three years.

**1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

**1.3.1.4. Additional Compliance Information**

~~The Generator Owner and Generator Operator shall each demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.~~

None

**2. Violation Severity Levels**

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive power output</del> <u>Reactive Power schedule</u> , the Generator Operator failed to meet the directed values <del>by for</del> <u>5% minutes</u> or less.	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive power output</del> <u>Reactive Power schedule</u> , the Generator Operator failed to meet the directed values <del>byfor</del> <u>more than 5% minutes</u> , up to (and including) <del>10%-</del> <u>minutes</u> .  OR When a generator’s automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.  OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive power output</del> <u>Reactive Power schedule</u> , the Generator Operator failed to meet the directed values <del>by for</del> <u>more than 10% minutes</u> , up to (and including) <del>15%-</del> <u>minutes</u> .	When directed by the Transmission Operator to maintain the generator voltage or <del>reactive power output</del> <u>Reactive Power schedule</u> , the Generator Operator failed to meet the directed values <del>byfor</del> <u>more than 15%- minutes</u> .  OR When a generator’s automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either R3.1 or R3.2	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1 and R3.2
R4.	The Responsible entity failed to provide to its associated	The Responsible entity failed to provide to its associated	The Responsible entity failed to provide to its associated	The Responsible entity failed to provide to its associated

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	<p>Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</p> <p>OR</p> <p>The information was provided in more than 30, but less than or equal to 35 calendar days of the request.</p>	<p>Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</p> <p>OR</p> <p>The information was provided in more than 35, but less than or equal to 40 calendar days of the request.</p>	<p>Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</p> <p>OR</p> <p>The information was provided in more than 40, but less than or equal to 45 calendar days of the request.</p>	<p>Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4</p> <p>OR</p> <p>The information was provided in more than 45 calendar days of the request.</p>
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.



**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).
2. Appendix 2 – Interpretation of Applicability (February 10, 2009)

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
<u>2b</u>	<u>TBD</u>	<u>Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.</u>	<u>Revised</u>

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## Appendix 2

### Interpretation of VAR-002-1a

**Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

# Unofficial Comment Form

## Project 2011-INT-02 - Rapid Revision to Address Interpretation of VAR-002 for Constellation

Please **DO NOT** use this form for submitting comments. Please use the [electronic form](#) to submit comments on the Standard. The electronic comment form must be completed by **June 20, 2012**.

If you have questions please contact Stephen Crutchfield at [Stephen.crutchfield@nerc.net](mailto:Stephen.crutchfield@nerc.net) or by telephone at 609-651-9455.

### Background Information

The drafting team received feedback from stakeholders concerning the rapid revision process as well as the specific language that was proposed to address the interpretation request. The drafting team is posting the revised standard for a concurrent 30 day formal comment period and successive ballot. The intent of the rapid revision is to add clarity to the existing FERC approved standard regarding the AVR status during generator startup and shut down. The Standards Committee and the SDT felt that a Rapid Revision provided greater clarity on the issue raised by the Interpretation request. The Rapid Revision provides a change in the VAR-002 Requirement language which directly addresses the Interpretation request. This approach gives greater certainty to the entities subject to the standard.

In response to industry comments on the rapid revision, the SDT has revised the wording to add further clarity to the standard. The revised requirement now reads:

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]
- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown.

<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is preparing for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is preparing to go offline.

## Project 2011-INT-02 - Project Name

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the AVR status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4:

- R4.** Each Transmission Operator shall specify a voltage or Reactive Power schedule<sup>1</sup> at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. 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 (AVR in service and controlling voltage).

The footnote associated with the above requirement states:

<sup>1</sup>The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.

The SDT has revised VAR-002-2b, R2 to change the word “output” to “schedule” to reflect the link between VAR-001-2, R4 and VAR-002-2b, R2. The SDT also added the footnote to VAR-002-2b, R2:

- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]
- R2.1.** When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.

### Project 2011-INT-02 - Project Name

Footnote 3 for R2 above is a variation of the footnote from VAR-001-2, R4 above, with more explanation about who establishes the target schedule and tolerance band:

<sup>3</sup>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

The VSLs for R2 were revised to reflect a violation based on the time the Generator Operator operated the generator outside the voltage or Reactive Power schedule range. The lower VSL is for violations of less than 5 minutes. The VSLs are written such that each is incremented 5 minutes until a severe VSL is:

When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 15 minutes.

## Project 2011-INT-02 - Project Name

You do not have to answer all questions. Enter all comments in simple text format. Bullets, numbers, and special formatting will not be retained.

Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

### Questions

1. The scope of the SDT has been revised to address deficiencies in Requirement R2 and its associated VSLs. Do you agree with the proposed revisions to Requirement R2 and its VSLs? If No, please explain your concerns.

Yes

No

Comments:

2. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here.

Comments:



## Implementation Plan

### Project 2011-INT-02 Interpretation of VAR-002 for Constellation

#### **Implementation Plan for VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules**

##### **Approvals Required**

VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules

##### **Prerequisite Approvals**

None

##### **Revisions to Glossary Terms**

None

##### **Applicable Entities**

Generator Operator

Generator Owner

##### **Conforming Changes to Other Standards**

None

##### **Effective Dates**

In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

##### **Retirements**

VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules should be retired at midnight of the day immediately prior to the Effective Date of VAR-002-2b in the particular jurisdiction in which the new standard is becoming effective.

# Implementation Plan

## Project 2011-INT-02 Interpretation of VAR-002 for Constellation

### Implementation Plan for VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules

#### Approvals Required

VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules

#### Prerequisite Approvals

None

#### Revisions to Glossary Terms

None

#### Applicable Entities

Generator Operator

Generator Owner

#### Conforming Changes to Other Standards

None

#### Effective Dates

In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

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## Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Mapping Document

### Mapping

Translation of VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules into VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules.

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
<p><b>R1.</b> The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.</p>	<p>Revised to address Interpretation Request.</p>	<p><b>R1.</b> The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: <i>[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</i></p> <ul style="list-style-type: none"> <li>That the <u>generator unit</u> is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode, pursuant to a <u>Real-time communication or a procedure that was</u> previously provided to the</li> </ul>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		<p>Transmission Operator; or-</p> <ul style="list-style-type: none"> <li>That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.</li> </ul> <p><u><sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.</u></p> <p><u><sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.</u></p>
<p><b>R2.</b> Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>1</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon:</p>	<p>Revised to address expanded scope approved by the SC April 11, 2012.</p>	<p><b>R2.</b> Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power <del>output-schedule</del><sup>3</sup> (within applicable Facility Ratings<sup>4</sup>), as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p><b>R2.1.</b> When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive</p>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
<p><b>Real-time Operations]</b></p> <p><b>R2.1.</b> When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p><b>R2.2.</b> When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p>		<p>output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p><b>R2.2.</b> When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p><sup>3</sup> <u>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.</u></p> <p><sup>4</sup> <u>When a Generator is operating in manual control, Reactive Power capability may change based on stability considerations, and this may lead to a change in the associated Facility Ratings.</u></p>
	All other	<del>R2. — Unless exempted by the Transmission Operator, each</del>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
	requirements remain unchanged, with the exception of the addition of Time Horizons and previously-approved Violation Risk Factors and Violation Severity Levels.	<p><del>Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</del></p> <p><del>R2.1.— When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</del></p> <p><del>R2.2.— When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</del></p> <p><b>R3.</b> Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p><b>R3.1.</b> 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.</p> <p><b>R3.2.</b> A status or capability change on any other Reactive Power resources under the Generator Operator’s control and the expected duration of the change in status or capability.</p>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		<p><b>R4.</b> The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. [Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]</p> <p><b>R4.1.</b> For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:</p> <p><b>R4.1.1.</b> Tap settings.</p> <p><b>R4.1.2.</b> Available fixed tap ranges.</p> <p><b>R4.1.3.</b> Impedance data.</p> <p><b>R4.1.4.</b> The +/- voltage range with step-change in % for load-tap changing transformers.</p> <p><b>R5.</b> 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: Medium] [Time Horizon: Real-time Operations]</p> <p><b>R5.1.</b> If the Generator Operator can't comply with the</p>

Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.



## Standards Authorization Request Form

NERC welcomes suggestions to improve the reliability of the bulk power system through improved reliability standards. Please use this form to submit your request to propose a new or a revision to a NERC's Reliability Standard.

Request to propose a new or a revision to a Reliability Standard			
Title of Proposed Standard:	Generator Operation for Maintaining Network Voltage Schedules		
Date Submitted:	January 13, 2012		
Date Revised:	April 11, 2012		
SAR Requester Information			
Name:	Stephen Crutchfield		
Organization:	NERC		
Telephone:	609-651-9455	E-mail:	Stephen.crutchfield@nerc.net
SAR Type (Check as many as applicable)			
<input type="checkbox"/> New Standard	<input type="checkbox"/> Withdrawal of existing Standard		
<input checked="" type="checkbox"/> Revision to existing Standard	<input type="checkbox"/> Urgent Action		

SAR Information
Industry Need (What is the industry problem this request is trying to solve?):
This SAR proposes to modify VAR-002-1b, R1 to address an ambiguity in the standard.
Purpose or Goal (How does this request propose to address the problem described above?):
N/A
Identify the Objectives of the proposed standard's requirements (What specific reliability deliverables are required to achieve the goal?):
N/A

## Standards Authorization Request Form

## SAR Information

Brief Description (Provide a paragraph that describes the scope of this standard action.)

This SAR proposes to modify VAR-002-1b, R1 to address an ambiguity in the standard.

Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)

Requirement R1 of VAR-002-1.1b states the following:

R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.

NERC received a request to interpret this requirement. The requester stated:

“During startup and shutdown of a generator, it is industry practice to have a generator’s AVR in the manual mode. Due to the instabilities associated with the changes in the field during these times, it is more reliable to have an operator control the generator than the AVR. Further, an AVR’s response is slower and more unreliable when the field current is low, which is the case during start up and shut down. Both the BA and TOP realize that during start up and shut down the real and reactive power from that generator cannot be counted upon for system stability.

Some regions have taken the stance that during start up and shut down of a generator, it is reasonable to assume that the AVR is in manual and that it will be switched to automatic once stable. This would not require contacting the TOP to state that the AVR is in manual for this time period. Other regions have taken the approach that all status changes of the AVR from automatic, regardless of industry practice and stability, needs to be communicated to the TOP.

Constellation is seeking clarification of Requirement R1 as to whether or not a communication must be conducted between a GOP and a TOP during start up or shut down of a generator, when

## SAR Information

the unit is not stable and is not counted upon for real or reactive power by the BA and TOP at that time.

Constellation has found two issues caused by the lack of clarity/incorrect interpretation of this standard:

1. There is not a consistent view across the regions with regard to this requirement. Such inconsistencies are contrary to the intent of NERC's CMEP and can expose entities to inconsistent evaluations. A procedure may be compliant in one region and may not be in another.
2. Requiring a GOP to communicate that the AVR is in manual during start up/shutdown is an unnecessary distraction at a time when the unit is unstable. A generator operator already communicates to the TOP that the unit is being started up or shutting down. Adding another communication imposes a redundant task when the generator operator is focused on controlling the unit and ensuring the reliability of the BES."

The Standards Committee approved the use of a "rapid modification" approach to clarify the requirement in question directly in lieu of a formal interpretation. The Interpretation Team is proposing the attached modification to the standard in lieu of an Interpretation. The redline standard includes the FERC approved VRFs and VSLs for this standard.

The drafting team posted its revised standard for a parallel comment and ballot period that ended March 23, 2012. The standard achieved a high quorum (87%), but only achieved a 63% weighted approval. Several stakeholders voted against the proposed modifications based, not on the modifications made, but on Requirement R2 and its associated VSLs. Stakeholders identified that the VSLs for Requirement R2 imply that the Transmission Operator will give the Generator Operator a voltage or reactive schedule that is a definitive number rather than an acceptable range, and such an interpretation is not practical.

The drafting team considered these comments and recommends modifying Requirement R2 and

**Standards Authorization Request Form**

**SAR Information**

its associated VSLs to clarify that Transmission Operator must give the Generator Operator a voltage or reactive schedule as a “range” of acceptable values.

**Reliability Functions**

The Standard will Apply to the Following Functions (Check each one that applies.)

<input type="checkbox"/> Regional Reliability Organization	Conducts the regional activities related to planning and operations, and coordinates activities of Responsible Entities to secure the reliability of the Bulk Electric System within the region and adjacent regions.
<input type="checkbox"/> Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator’s wide area view.
<input type="checkbox"/> Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
<input type="checkbox"/> Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/> Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/> Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/> Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/> Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
<input type="checkbox"/> Transmission Owner	Owns and maintains transmission facilities.
<input type="checkbox"/> Transmission	Ensures the real-time operating reliability of the transmission assets

Standards Authorization Request Form

Reliability Functions	
Operator	within a Transmission Operator Area.
<input type="checkbox"/> Distribution Provider	Delivers electrical energy to the End-use customer.
<input checked="" type="checkbox"/> Generator Owner	Owns and maintains generation facilities.
<input checked="" type="checkbox"/> Generator Operator	Operates generation unit(s) to provide real and reactive power.
<input type="checkbox"/> Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/> Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/> Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.

Reliability and Market Interface Principles	
Applicable Reliability Principles (Check all that apply).	
<input checked="" type="checkbox"/>	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.

Standards Authorization Request Form

Reliability and Market Interface Principles	
Does the proposed Standard comply with all of the following Market Interface Principles?	Enter (yes/no)
1. A reliability standard shall not give any market participant an unfair competitive advantage.	Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure.	Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.	Yes
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.	Yes

Related Standards	
Standard No.	Explanation

Related SARs	
SAR ID	Explanation

**Standards Authorization Request Form**

Related SARs	

Regional Variances	
Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
RFC	
SERC	
SPP	
WECC	

## Standards Authorization Request Form

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Date Submitted:	January 13, 2012		
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SAR Requester Information			
Name:	Stephen Crutchfield		
Organization:	NERC		
Telephone:	609-651-9455	E-mail:	Stephen.crutchfield@nerc.net
SAR Type (Check as many as applicable)			
<input type="checkbox"/> New Standard	<input type="checkbox"/> Withdrawal of existing Standard		
<input checked="" type="checkbox"/> Revision to existing Standard	<input type="checkbox"/> Urgent Action		

SAR Information
Industry Need (What is the industry problem this request is trying to solve?):
This SAR proposes to modify VAR-002-1b, R1 to address an ambiguity in the standard.
Purpose or Goal (How does this request propose to address the problem described above?):
N/A
Identify the Objectives of the proposed standard's requirements (What specific reliability deliverables are required to achieve the goal?):
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## Standards Authorization Request Form

## SAR Information

Brief Description (Provide a paragraph that describes the scope of this standard action.)

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Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)

Requirement R1 of VAR-002-1.1b states the following:

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NERC received a request to interpret this requirement. The requester stated:

“During startup and shutdown of a generator, it is industry practice to have a generator’s AVR in the manual mode. Due to the instabilities associated with the changes in the field during these times, it is more reliable to have an operator control the generator than the AVR. Further, an AVR’s response is slower and more unreliable when the field current is low, which is the case during start up and shut down. Both the BA and TOP realize that during start up and shut down the real and reactive power from that generator cannot be counted upon for system stability.

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## SAR Information

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The drafting team considered these comments and recommends modifying Requirement R2 and

SAR Information

its associated VSLs to clarify that Transmission Operator must give the Generator Operator a voltage or reactive schedule as a “range” of acceptable values.

Reliability Functions

The Standard will Apply to the Following Functions (Check each one that applies.)

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<input type="checkbox"/> Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/> Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/> Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/> Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/> Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
<input type="checkbox"/> Transmission Owner	Owns and maintains transmission facilities.
<input type="checkbox"/> Transmission	Ensures the real-time operating reliability of the transmission assets

## Standards Authorization Request Form

Reliability Functions	
Operator	within a Transmission Operator Area.
<input type="checkbox"/> Distribution Provider	Delivers electrical energy to the End-use customer.
<input checked="" type="checkbox"/> Generator Owner	Owns and maintains generation facilities.
<input checked="" type="checkbox"/> Generator Operator	Operates generation unit(s) to provide real and reactive power.
<input type="checkbox"/> Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/> Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/> Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.

Reliability and Market Interface Principles	
Applicable Reliability Principles (Check all that apply).	
<input checked="" type="checkbox"/>	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.

Standards Authorization Request Form

Reliability and Market Interface Principles	
Does the proposed Standard comply with all of the following Market Interface Principles?	Enter (yes/no)
1. A reliability standard shall not give any market participant an unfair competitive advantage.	Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure.	Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.	Yes
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.	Yes

Related Standards	
Standard No.	Explanation

Related SARs	
SAR ID	Explanation

## Standards Authorization Request Form

Related SARs	

Regional Variances	
Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
RFC	
SERC	
SPP	
WECC	

## Standards Announcement

Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation  
Successive Ballot Window Open through 8 p.m. Wednesday, June 27, 2012

### [Now Available](#)

A successive ballot for the rapid revision of VAR-002 – Generator Operation for Maintaining Network Voltage Schedules is open through **8 p.m. Eastern on Wednesday, June 27, 2012.**

### **Instructions**

Members of the ballot pool associated with this project may log in and submit their vote for the rapid revision of the Standard by clicking [here](#).

Due to modifications to NERC's balloting software, voters will no longer be able to submit commits via the balloting software.

### **Next Steps**

The drafting team will consider all comments received during the formal comment period and successive ballot and, if needed, make revisions to the standard. If the comments do not show the need for significant revisions, the rapid revision of the standard will proceed to a recirculation ballot.

### **Background**

Constellation Energy submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4.

### **Standards Development Process**

The [Standards Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend out thanks to all those who participate.

*For more information or assistance, please contact Monica Benson,  
Standards Process Administrator, at [monica.benson@nerc.net](mailto:monica.benson@nerc.net) or at 404-446-2560.*

## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation

**Formal Comment Period Open: May 22 – June 20, 2012**

**Upcoming:  
Successive Ballot Window Open: June 11 – June 20, 2012**

#### [Now Available](#)

A formal comment period for the rapid revision of VAR-002 – Generator Operation for Maintaining Network Voltage Schedules is open through 8 p.m. Eastern on Wednesday, June 20, 2012.

#### **Instructions for Commenting**

A formal comment period is open through **8 p.m. Eastern on Wednesday, June 20, 2012**. Please use this [electronic form](#) to submit comments. If you experience any difficulties in using the electronic form, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net). An off-line, unofficial copy of the comment form is posted on the [project page](#).

#### **Next Steps**

A successive ballot will be conducted beginning Monday, June 11, 2012 through 8 p.m. Wednesday, June 20, 2012.

#### **Background**

Constellation Energy submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4.

#### **Standards Development Process**

The [Standards Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate. For more information or assistance, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net).



## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation

#### Successive Ballot Results

##### [Now Available](#)

A successive ballot for the rapid revision of VAR-002 – Generator Operation for Maintaining Network Voltage Schedules concluded on Wednesday, June 27, 2012.

Voting statistics for each ballot are listed below, and the [Ballots Results](#) page provides a link to the detailed results.

Quorum:	85.98 %
Approval:	68.22%

#### Next Steps

The drafting team is considering all comments submitted, and based on the comments will determine whether to make additional changes. If the drafting team determines that no substantive changes to the standard are required, the team will submit the standard and implementation plan for a recirculation ballot. If the drafting team makes substantive changes to the standard, the team will submit it consideration of comments, along with the revised standard and implementation plan, for a quality review prior to posting for another successive ballot.

#### Background

Constellation Energy submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4.

Additional information is available on the [project page](#).

#### Standards Development Process

The [Standards Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

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- Ballot Pools
- Current Ballots
- Ballot Results
- Registered Ballot Body
- Proxy Voters

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Ballot Results	
<b>Ballot Name:</b>	Project 2011 -INT-02 VAR-002
<b>Ballot Period:</b>	6/18/2012 - 6/27/2012
<b>Ballot Type:</b>	Initial
<b>Total # Votes:</b>	276
<b>Total Ballot Pool:</b>	321
<b>Quorum:</b>	<b>85.98 % The Quorum has been reached</b>
<b>Weighted Segment Vote:</b>	68.22 %
<b>Ballot Results:</b>	<b>The drafting team will consider comments received.</b>

Summary of Ballot Results								
Segment	Ballot Pool	Segment Weight	Affirmative		Negative		Abstain	No Vote
			# Votes	Fraction	# Votes	Fraction	# Votes	
1 - Segment 1.	77	1	38	0.679	18	0.321	6	15
2 - Segment 2.	9	0.7	6	0.6	1	0.1	1	1
3 - Segment 3.	73	1	31	0.554	25	0.446	8	9
4 - Segment 4.	25	1	14	0.778	4	0.222	3	4
5 - Segment 5.	78	1	31	0.517	29	0.483	9	9
6 - Segment 6.	45	1	22	0.611	14	0.389	5	4
7 - Segment 7.	0	0	0	0	0	0	0	0
8 - Segment 8.	6	0.4	3	0.3	1	0.1	0	2
9 - Segment 9.	1	0.1	1	0.1	0	0	0	0
10 - Segment 10.	7	0.6	5	0.5	1	0.1	0	1
<b>Totals</b>	<b>321</b>	<b>6.8</b>	<b>151</b>	<b>4.639</b>	<b>93</b>	<b>2.161</b>	<b>32</b>	<b>45</b>

Individual Ballot Pool Results				
Segment	Organization	Member	Ballot	Comments
1	Ameren Services	Kirit Shah	Negative	
1	American Transmission Company, LLC	Andrew Z Pusztai	Negative	
1	Arizona Public Service Co.	Robert Smith	Affirmative	
1	Associated Electric Cooperative, Inc.	John Bussman		
1	Austin Energy	James Armke	Affirmative	
1	Avista Corp.	Scott J Kinney	Affirmative	
1	Balancing Authority of Northern California	Kevin Smith	Affirmative	
1	Baltimore Gas & Electric Company	Gregory S Miller	Abstain	

1	BC Hydro and Power Authority	Patricia Robertson	Abstain
1	Beaches Energy Services	Joseph S Stonecipher	Negative
1	Black Hills Corp	Eric Egge	
1	Bonneville Power Administration	Donald S. Watkins	Affirmative
1	Brazos Electric Power Cooperative, Inc.	Tony Kroskey	Negative
1	CenterPoint Energy Houston Electric, LLC	John Brockhan	Affirmative
1	City of Tacoma, Department of Public Utilities, Light Division, dba Tacoma Power	Chang G Choi	Affirmative
1	Clark Public Utilities	Jack Stamper	Affirmative
1	Colorado Springs Utilities	Paul Morland	Affirmative
1	Consolidated Edison Co. of New York	Christopher L de Graffenried	Affirmative
1	CPS Energy	Richard Castrejana	Affirmative
1	Dairyland Power Coop.	Robert W. Roddy	Negative
1	Dominion Virginia Power	Michael S Crowley	
1	Empire District Electric Co.	Ralph F Meyer	
1	Entergy Services, Inc.	Edward J Davis	Negative
1	FirstEnergy Corp.	William J Smith	Affirmative
1	Florida Keys Electric Cooperative Assoc.	Dennis Minton	Abstain
1	Florida Power & Light Co.	Mike O'Neil	
1	FortisBC	Curtis Klashinsky	Affirmative
1	Great River Energy	Gordon Pietsch	Negative
1	Hoosier Energy Rural Electric Cooperative, Inc.	Bob Solomon	
1	Hydro One Networks, Inc.	Ajay Garg	Affirmative
1	Idaho Power Company	Ronald D Schellberg	
1	Imperial Irrigation District	Tino Zaragoza	
1	International Transmission Company Holdings Corp	Michael Moltane	Affirmative
1	Kansas City Power & Light Co.	Michael Gammon	Affirmative
1	Lincoln Electric System	Doug Bantam	
1	Long Island Power Authority	Robert Ganley	
1	Los Angeles Department of Water & Power	John Burnett	Negative
1	Manitoba Hydro	Joe D Petaski	Affirmative
1	MidAmerican Energy Co.	Terry Harbour	Affirmative
1	Minnkota Power Coop. Inc.	Theresa Allard	
1	Nebraska Public Power District	Cole C Brodine	Negative
1	New York Power Authority	Bruce Metruck	Affirmative
1	Northeast Utilities	David Boguslawski	Affirmative
1	Northern Indiana Public Service Co.	Kevin M Largura	
1	NorthWestern Energy	John Canavan	Affirmative
1	Ohio Valley Electric Corp.	Robert Matthey	Negative
1	Oklahoma Gas and Electric Co.	Marvin E VanBebber	Abstain
1	Omaha Public Power District	Doug Peterchuck	Negative
1	Oncor Electric Delivery	Jen Fiegel	Abstain
1	PacifiCorp	Ryan Millard	Negative
1	PECO Energy	Ronald Schloendorn	Abstain
1	Platte River Power Authority	John C. Collins	Affirmative
1	Portland General Electric Co.	John T Walker	Affirmative
1	Potomac Electric Power Co.	David Thorne	Affirmative
1	PPL Electric Utilities Corp.	Brenda L Truhe	Negative
1	Progress Energy Carolinas	Brett A. Koelsch	Negative
1	Public Service Company of New Mexico	Laurie Williams	Affirmative
1	Public Service Electric and Gas Co.	Kenneth D. Brown	Negative
1	Puget Sound Energy, Inc.	Denise M Lietz	Affirmative
1	Rochester Gas and Electric Corp.	John C. Allen	Affirmative
1	Sacramento Municipal Utility District	Tim Kelley	Affirmative
1	Salt River Project	Robert Kondziolka	Affirmative
1	Santee Cooper	Terry L Blackwell	Affirmative
1	Seattle City Light	Pawel Krupa	Affirmative
1	Sierra Pacific Power Co.	Rich Salgo	Affirmative
1	Snohomish County PUD No. 1	Long T Duong	Affirmative
1	South California Edison Company	Steven Mavis	Affirmative
1	Southern Company Services, Inc.	Robert A. Schaffeld	Negative
1	Sunflower Electric Power Corporation	Noman Lee Williams	
1	Tampa Electric Co.	Beth Young	
1	Tennessee Valley Authority	Larry Akens	Negative
1	Tri-State G & T Association, Inc.	Tracy Sliman	Affirmative
1	Tucson Electric Power Co.	John Tolo	

1	United Illuminating Co.	Jonathan Appelbaum	Affirmative	
1	Westar Energy	Allen Klassen	Affirmative	
1	Western Area Power Administration	Brandy A Dunn	Affirmative	
1	Xcel Energy, Inc.	Gregory L Pieper	Negative	
2	Alberta Electric System Operator	Mark B Thompson	Affirmative	
2	BC Hydro	Venkataramakrishnan Vinnakota	Abstain	
2	Electric Reliability Council of Texas, Inc.	Charles B Manning	Affirmative	
2	Independent Electricity System Operator	Barbara Constantinescu	Affirmative	
2	ISO New England, Inc.	Kathleen Goodman	Affirmative	
2	Midwest ISO, Inc.	Marie Knox	Negative	
2	New Brunswick System Operator	Alden Briggs	Affirmative	
2	New York Independent System Operator	Gregory Campoli	Affirmative	
2	Southwest Power Pool, Inc.	Charles H. Yeung		
3	AEP	Michael E DeLoach	Negative	
3	Alabama Power Company	Richard J. Mandes	Negative	
3	Ameren Services	Mark Peters	Negative	
3	APS	Steven Norris	Affirmative	
3	Atlantic City Electric Company	NICOLE BUCKMAN	Affirmative	
3	BC Hydro and Power Authority	Pat G. Harrington	Abstain	
3	Bonneville Power Administration	Rebecca Berdahl	Affirmative	
3	City of Austin dba Austin Energy	Andrew Gallo	Affirmative	
3	City of Clewiston	Lynne Mila		
3	City of Garland	Ronnie C Hoeinghaus	Abstain	
3	City of Green Cove Springs	Gregg R Griffin	Negative	
3	City of Redding	Bill Hughes	Affirmative	
3	Cleco Corporation	Michelle A Corley	Negative	
3	ComEd	Bruce Krawczyk	Abstain	
3	Consolidated Edison Co. of New York	Peter T Yost	Affirmative	
3	Constellation Energy	CJ Ingersoll	Negative	
3	Consumers Energy	Richard Blumenstock	Affirmative	
3	Cowlitz County PUD	Russell A Noble		
3	CPS Energy	Jose Escamilla	Affirmative	
3	Delmarva Power & Light Co.	Michael R. Mayer		
3	Detroit Edison Company	Kent Kujala	Negative	
3	Dominion Resources Services	Michael F. Gildea	Abstain	
3	Duke Energy Carolina	Henry Ernst-Jr	Negative	
3	Entergy	Joel T Plessinger	Negative	
3	FirstEnergy Energy Delivery	Stephan Kern	Affirmative	
3	Florida Municipal Power Agency	Joe McKinney	Negative	
3	Florida Power Corporation	Lee Schuster	Negative	
3	Georgia Power Company	Danny Lindsey	Negative	
3	Great River Energy	Brian Glover	Negative	
3	Gulf Power Company	Paul C Caldwell	Negative	
3	Hydro One Networks, Inc.	David Kiguel	Affirmative	
3	Imperial Irrigation District	Jesus S. Alcaraz	Abstain	
3	JEA	Garry Baker	Affirmative	
3	Kansas City Power & Light Co.	Charles Locke		
3	Kissimmee Utility Authority	Gregory D Woessner	Affirmative	
3	Lakeland Electric	Norman D Harryhill		
3	Lincoln Electric System	Jason Fortik		
3	Los Angeles Department of Water & Power	Daniel D Kurowski	Abstain	
3	Louisville Gas and Electric Co.	Charles A. Freibert	Negative	
3	Manitoba Hydro	Greg C. Parent		
3	MidAmerican Energy Co.	Thomas C. Mielnik	Negative	
3	Mississippi Power	Jeff Franklin	Negative	
3	Municipal Electric Authority of Georgia	Steven M. Jackson	Affirmative	
3	Nebraska Public Power District	Tony Eddleman	Negative	
3	New York Power Authority	David R Rivera	Affirmative	
3	Niagara Mohawk (National Grid Company)	Michael Schiavone	Affirmative	
3	Northern Indiana Public Service Co.	William SeDoris	Affirmative	
3	Orange and Rockland Utilities, Inc.	David Burke	Affirmative	
3	Orlando Utilities Commission	Ballard K Mutters	Affirmative	
3	Owensboro Municipal Utilities	Thomas T Lyons	Negative	
3	Pacific Gas and Electric Company	John H Hagen	Affirmative	
3	PacifiCorp	Dan Zollner	Negative	
3	Platte River Power Authority	Terry L Baker	Affirmative	

3	PNM Resources	Michael Mertz	Affirmative
3	Potomac Electric Power Co.	Robert Reuter	
3	Progress Energy Carolinas	Sam Waters	Negative
3	Public Service Electric and Gas Co.	Jeffrey Mueller	Negative
3	Public Utility District No. 1 of Clallam County	David Proebstel	Abstain
3	Puget Sound Energy, Inc.	Erin Apperson	Affirmative
3	Sacramento Municipal Utility District	James Leigh-Kendall	Affirmative
3	Salt River Project	John T. Underhill	Affirmative
3	San Diego Gas & Electric	Scott Peterson	
3	Santee Cooper	James M Poston	Affirmative
3	Seattle City Light	Dana Wheelock	Affirmative
3	Seminole Electric Cooperative, Inc.	James R Frauen	Affirmative
3	Snohomish County PUD No. 1	Mark Oens	Affirmative
3	South Carolina Electric & Gas Co.	Hubert C Young	Abstain
3	Tampa Electric Co.	Ronald L. Donahey	Affirmative
3	Tennessee Valley Authority	Ian S Grant	Negative
3	Tri-State G & T Association, Inc.	Janelle Marriott	Affirmative
3	Westar Energy	Bo Jones	Affirmative
3	Wisconsin Electric Power Marketing	James R Keller	Negative
3	Xcel Energy, Inc.	Michael Ibold	Negative
4	Alliant Energy Corp. Services, Inc.	Kenneth Goldsmith	Negative
4	American Municipal Power	Kevin Koloini	Affirmative
4	City of Austin dba Austin Energy	Reza Ebrahimian	Affirmative
4	City of Clewiston	Kevin McCarthy	
4	City of Redding	Nicholas Zettel	Affirmative
4	City Utilities of Springfield, Missouri	John Allen	Affirmative
4	Consumers Energy	David Frank Ronk	
4	Cowlitz County PUD	Rick Syring	
4	Flathead Electric Cooperative	Russ Schneider	Abstain
4	Florida Municipal Power Agency	Frank Gaffney	Negative
4	Fort Pierce Utilities Authority	Thomas Richards	
4	Georgia System Operations Corporation	Guy Andrews	Affirmative
4	Indiana Municipal Power Agency	Jack Alvey	Affirmative
4	LaGen	Richard Comeaux	Abstain
4	Madison Gas and Electric Co.	Joseph DePoorter	Negative
4	Modesto Irrigation District	Spencer Tacke	Affirmative
4	Ohio Edison Company	Douglas Hohlbaugh	Affirmative
4	Old Dominion Electric Coop.	Mark Ringhausen	Abstain
4	Public Utility District No. 1 of Douglas County	Henry E. LuBean	Affirmative
4	Public Utility District No. 1 of Snohomish County	John D Martinsen	Affirmative
4	Sacramento Municipal Utility District	Mike Ramirez	Affirmative
4	Seattle City Light	Hao Li	Affirmative
4	Seminole Electric Cooperative, Inc.	Steven R Wallace	Affirmative
4	Tacoma Public Utilities	Keith Morisette	Affirmative
4	Wisconsin Energy Corp.	Anthony Jankowski	Negative
5	AEP Service Corp.	Brock Ondayko	
5	Amerenue	Sam Dwyer	Negative
5	Arizona Public Service Co.	Edward Cambridge	Affirmative
5	Associated Electric Cooperative, Inc.	Matthew Pacobit	
5	BC Hydro and Power Authority	Clement Ma	Abstain
5	Boise-Kuna Irrigation District/dba Lucky peak power plant project	Mike D Kukla	Affirmative
5	Bonneville Power Administration	Francis J. Halpin	Affirmative
5	Brazos Electric Power Cooperative, Inc.	Shari Heino	Negative
5	City and County of San Francisco	Daniel Mason	Abstain
5	City of Austin dba Austin Energy	Jeanie Doty	Affirmative
5	City of Redding	Paul A. Cummings	Affirmative
5	City Water, Light & Power of Springfield	Steve Rose	Affirmative
5	Cleco Power	Stephanie Huffman	Negative
5	Colorado Springs Utilities	Jennifer Eckels	Affirmative
5	Consolidated Edison Co. of New York	Wilket (Jack) Ng	Affirmative
5	Constellation Power Source Generation, Inc.	Amir Y Hammad	Negative
5	Consumers Energy Company	David C Greyerbiehl	Affirmative
5	Cowlitz County PUD	Bob Essex	
5	Detroit Edison Company	Christy Wicke	Negative
5	Dominion Resources, Inc.	Mike Garton	Abstain

5	Duke Energy	Dale Q Goodwine	Negative
5	Dynegy Inc.	Dan Roethemeyer	Affirmative
5	Edison Mission Marketing & Trading Inc.	Brenda J Frazer	Affirmative
5	Electric Power Supply Association	John R Cashin	
5	Energy Services, Inc.	Tracey Stubbs	Negative
5	Essential Power, LLC	Patrick Brown	Affirmative
5	Exelon Nuclear	Michael Korchynsky	Abstain
5	ExxonMobil Research and Engineering	Martin Kaufman	Negative
5	FirstEnergy Solutions	Kenneth Dresner	Affirmative
5	Florida Municipal Power Agency	David Schumann	Negative
5	Great River Energy	Preston L Walsh	Negative
5	ICF International	Brent B Hebert	Affirmative
5	Imperial Irrigation District	Marcela Y Caballero	Abstain
5	JEA	John J Babik	Negative
5	Kansas City Power & Light Co.	Brett Holland	Affirmative
5	Kissimmee Utility Authority	Mike Blough	Negative
5	Lakeland Electric	James M Howard	
5	Liberty Electric Power LLC	Daniel Duff	Negative
5	Lincoln Electric System	Dennis Florom	Affirmative
5	Los Angeles Department of Water & Power	Kenneth Silver	
5	Lower Colorado River Authority	Tom Foreman	Affirmative
5	Luminant Generation Company LLC	Mike Laney	Negative
5	Manitoba Hydro	S N Fernando	Affirmative
5	Massachusetts Municipal Wholesale Electric Company	David Gordon	Abstain
5	MEAG Power	Steven Grego	Affirmative
5	MidAmerican Energy Co.	Christopher Schneider	Negative
5	Muscatine Power & Water	Mike Avesing	Negative
5	Nebraska Public Power District	Don Schmit	Negative
5	New York Power Authority	Wayne Sipperly	Affirmative
5	NextEra Energy	Allen D Schriver	Negative
5	North Carolina Electric Membership Corp.	Jeffrey S Brame	Negative
5	Northern Indiana Public Service Co.	William O. Thompson	
5	Occidental Chemical	Michelle R DAntuono	Negative
5	Omaha Public Power District	Mahmood Z. Safi	Negative
5	PacifiCorp	Sandra L. Shaffer	Negative
5	Platte River Power Authority	Roland Thiel	Affirmative
5	Portland General Electric Co.	Gary L Tingley	Affirmative
5	PPL Generation LLC	Annette M Bannon	Negative
5	Progress Energy Carolinas	Wayne Lewis	Negative
5	PSEG Fossil LLC	Tim Kucey	Negative
5	Public Utility District No. 1 of Lewis County	Steven Grega	Abstain
5	Puget Sound Energy, Inc.	Tom Flynn	Affirmative
5	Sacramento Municipal Utility District	Bethany Hunter	Affirmative
5	Salt River Project	William Alkema	Affirmative
5	Santee Cooper	Lewis P Pierce	Affirmative
5	Seminole Electric Cooperative, Inc.	Brenda K. Atkins	
5	Snohomish County PUD No. 1	Sam Nietfeld	Affirmative
5	South Carolina Electric & Gas Co.	Edward Magic	
5	Southern California Edison Co.	Denise Yaffe	Affirmative
5	Southern Company Generation	William D Shultz	Negative
5	Tacoma Power	Claire Lloyd	Affirmative
5	Tampa Electric Co.	RJames Rocha	Affirmative
5	Tenaska, Inc.	Scott M. Helyer	Abstain
5	Tennessee Valley Authority	David Thompson	Negative
5	U.S. Army Corps of Engineers	Melissa Kurtz	Negative
5	U.S. Bureau of Reclamation	Martin Bauer	Abstain
5	Westar Energy	Bryan Taggart	Affirmative
5	Wisconsin Electric Power Co.	Linda Horn	Negative
6	AEP Marketing	Edward P. Cox	Negative
6	APS	Randy A. Young	Affirmative
6	Bonneville Power Administration	Brenda S. Anderson	Affirmative
6	City of Austin dba Austin Energy	Lisa L Martin	Affirmative
6	City of Redding	Marvin Briggs	Affirmative
6	Cleco Power LLC	Robert Hirschak	Negative
6	Consolidated Edison Co. of New York	Nickesha P Carrol	Affirmative
6	Constellation Energy Commodities Group	Brenda L Powell	Negative

6	Dominion Resources, Inc.	Louis S. Slade	Abstain
6	Entergy Services, Inc.	Terri F Benoit	Negative
6	Exelon Power Team	Pulin Shah	
6	FirstEnergy Solutions	Kevin Querry	Affirmative
6	Florida Municipal Power Agency	Richard L. Montgomery	Negative
6	Florida Municipal Power Pool	Thomas Washburn	
6	Florida Power & Light Co.	Silvia P. Mitchell	Negative
6	Great River Energy	Donna Stephenson	
6	Imperial Irrigation District	Cathy Bretz	Abstain
6	Kansas City Power & Light Co.	Jessica L Klinghoffer	Affirmative
6	Lincoln Electric System	Eric Ruskamp	Affirmative
6	Los Angeles Department of Water & Power	Brad Packer	
6	Luminant Energy	Brad Jones	Negative
6	Manitoba Hydro	Daniel Prowse	Affirmative
6	MidAmerican Energy Co.	Dennis Kimm	Negative
6	New York Power Authority	Saul Rojas	Affirmative
6	Northern Indiana Public Service Co.	Joseph O'Brien	Affirmative
6	NRG Energy, Inc.	Alan Johnson	Abstain
6	PacifiCorp	Scott L Smith	Negative
6	Platte River Power Authority	Carol Ballantine	Affirmative
6	Powerex Corp.	Daniel W. O'Hearn	Abstain
6	PPL EnergyPlus LLC	Mark A Heimbach	Negative
6	Progress Energy	John T Sturgeon	Negative
6	PSEG Energy Resources & Trade LLC	Peter Dolan	Negative
6	Public Utility District No. 1 of Chelan County	Hugh A. Owen	Abstain
6	Sacramento Municipal Utility District	Diane Enderby	Affirmative
6	Salt River Project	Steven J Hulet	Affirmative
6	Santee Cooper	Michael Brown	Affirmative
6	Seattle City Light	Dennis Sismaet	Affirmative
6	Seminole Electric Cooperative, Inc.	Trudy S. Novak	Affirmative
6	Snohomish County PUD No. 1	William T Moojen	Affirmative
6	South California Edison Company	Lujuanna Medina	Affirmative
6	Southern Company Generation and Energy Marketing	John J. Ciza	Negative
6	Tacoma Public Utilities	Michael C Hill	Affirmative
6	Tampa Electric Co.	Benjamin F Smith II	Affirmative
6	Tennessee Valley Authority	Marjorie S. Parsons	Negative
6	Westar Energy	Grant L Wilkerson	Affirmative
8		James A Maenner	Affirmative
8		Edward C Stein	
8		Roger C Zaklukiewicz	Affirmative
8	JDRJC Associates	Jim Cyrulewski	Affirmative
8	Massachusetts Attorney General	Frederick R Plett	
8	Volkman Consulting, Inc.	Terry Volkman	Negative
9	Commonwealth of Massachusetts Department of Public Utilities	Donald Nelson	Affirmative
10	New York State Reliability Council	Alan Adamson	Affirmative
10	Northeast Power Coordinating Council	Guy V. Zito	Affirmative
10	ReliabilityFirst Corporation	Anthony E Jablonski	Negative
10	SERC Reliability Corporation	Carter B Edge	
10	Southwest Power Pool RE	Emily Pennel	Affirmative
10	Texas Reliability Entity, Inc.	Donald G Jones	Affirmative
10	Western Electricity Coordinating Council	Steven L. Rueckert	Affirmative

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**Individual or group. (35 Responses)**  
**Name (20 Responses)**  
**Organization (20 Responses)**  
**Group Name (15 Responses)**  
**Lead Contact (15 Responses)**  
**Question 1 (30 Responses)**  
**Question 1 Comments (35 Responses)**  
**Question 2 (0 Responses)**  
**Question 2 Comments (35 Responses)**

Group
Northeast Power Coordinating Council
Guy Zito
Yes
Group
SPP Standards Review Group
Robert Rhodes
No
<p>The zero-tolerance for error interpretation presented in the VSLs for R2 is too restrictive. The Lower VSL is activated when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. That means if the GOP fails to stay on schedule 100% of the time, the GOP is non-compliant and subject to being penalized. We hope this was not the intent of the SDT and that the SDT will take action to correct this situation. While being off schedule can be a serious issue with possible repercussions for the reliability of the BES, typically the GOP would have time to make necessary adjustments and get back on schedule. RCs and TOPs are allowed to respond to an IROL exceedance within Tv (default of 30 minutes) without penalty. Exceeding an IROL is much more critical to the operation of the BES than a generator being off schedule. We suggest that allowances be incorporated into the VSLs which provide some flexibility for the GOP in maintaining voltage and Reactive Power schedules. For example, the appropriate section of the Lower VSL could be changed to read: '...failed to meet the directed values for more than 30 minutes but less than 40 minutes.' Similarly the Moderate VSL could be changed to read: '...for 40 minutes or more but less than 50 minutes.' The High VSL could be changed to read: '...for 50 minutes or more but less than 60 minutes.' The Severe VSL could be changed to read: '...for 60 minutes or more.' This would give the GOP 30 minutes without penalty to respond to whatever the issue is that is keeping it from maintaining the assigned schedule. When modifying the VSLs, the SDT may also want to factor in the amount of deviation from schedule. Being a few percentage points off schedule is not as critical as being 10-15% off schedule.</p>
<p>We generally agree with the proposed changes to R1 and R2 in the standard. That said, we do believe that the VAR standards need to be updated to bring the language into line with the latest technologies in use today, i.e. to incorporate language to cover non-synchronous generators and other resources. We recognize that this is beyond the scope of Project 2011-INT-02 but feel the standard needs a good review and update. We also believe that an exemption for power system stabilizer status during generator start-up and shutdown, covered in R3, should be incorporated into the standard.</p>
Group
Progress Energy
Jim Eckelkamp
Yes
<p>progress Energy does not agree with the SDT definition of "Shutdown" and would propose the following.Shutdown - Unit load being decreased in local plant control with the intent to come offline with the unit. The reasoning is generators (i.e.CTs) will be given the order to shutdown when at various load levels including full load, and at which point the TOP will no longer rely on that unit for</p>

voltage control.
Group
Duke Energy
Greg Rowland
Yes
<p>NERC’s CAN Process document dated April 2012 states on page 8 under section J that “CANs are retired when a revised standard or interpretation that addresses the compliance application issue in the CAN is approved by FERC and is enforceable”. The SDT should take this opportunity to fully incorporate CAN-0022 into the standard and retire CAN-0022. In our March 23 comments, we pointed out that the SDT’s proposed revision to the standard did not go far enough to resolve the request for interpretation. While the proposed revision does provide clarification that manual AVR status can be communicated via a start-up or shutdown procedure notification (as does CAN-0022), this change alone does not relieve the GOP from the existing 30-minute notification requirement under R3. Approved CAN-0022 allows the GOP to provide a blanket advance notification to the TOP in lieu of separate notifications for each change in status. In this instance, Constellation sought clarification of R1 as to whether or not a communication must be conducted between a GOP and TOP during start-up or shutdown of a generator. Thus we see a direct connection to CAN-0022 and R3 as well as R1. We agree with the SDT’s proposed change to R1 which provides for two different types of notification from the GOP to the TOP for situations when the unit is not being operated in automatic voltage control mode. The Standard Drafting Team should take this opportunity to fully incorporate the provisions of CAN-0022 into the standard, and retire CAN-0022. The following phrase from R1 should be added at the beginning of R3: “Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator,” If this or a similar change to R3 is not made, then CAN-0022 cannot be retired.</p>
Individual
Michael Falvo
Independent Electricity System Operator
Yes
The IESO supports the revised standard.
Group
MRO NSEF
Will Smith
Yes
<p>Please consider the following NSRF comments. Several commenters in the last posting expressed concern about the footnotes that seemed to attempt to define startup and shutdown. One of the standard drafting team responses included the following: “Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator” To better clarify that the operator is allowed to define start-up and shutdown parameters , the following change is recommended to R1: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: • That the generator is being operated in start-up or shutdown pursuant to a Real-time communication • That the generator is being operated in accordance with a start-up or shutdown procedure that was previously provided to the Transmission Operator • That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown. With this change to R1 and the intent indicated in the above comments from the drafting team, the footnotes should not be needed. By stating (and it will be viewed by the industry as defining) what “start up and shut down” is, the SDT is expanding the technical issues. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. (Note that within</p>

the PJM market, ramp is something that is associated with a schedule where by a GOP may not “ramp up” until five minutes before top of the hour but could be on line producing real and reactive power. The use of “ramp” within foot note 1 and 2 is ambiguous and will cause confusion.) There are too many different generator designs within our industry for the SDT to capture all possibilities by simply adding the proposed foot notes and bullets. In addition, whenever a foot note is used to clarify a Requirement, the Requirement becomes more ambiguous. Recommend that foot note 1 and 2 be deleted since they only provide examples to a certain type of generator. The SDT needs to write the Requirement whereby it can be universally used by all applicable entities. The NSRF recommends that R3 is clearly suited for incorporation of the requested interpretation. R3.1 is written to capture “...status or capacity changes on any generator...”, such as when a generator is not in the desired voltage response mode. The NSRF recommends R3 to be rewritten to capture the intent of the interpretation to read: R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes unless advanced notification has been provided of any of the following: (note: underlined words have been added by the NSRF) The noted “advance notification” will allow GOPs to establish an individual process for each generators that do not comply with R1 or fall within scope of R2. This will also allow GOPs and TOPs on how this advance warning is to be provided. It may be via written procedure, a mutually agreed SCADA point, etc. NERC has allowed stakeholders the authority to design their own programs based on their asset characteristics as in FAC-008, CIP-002, EOP-001, etc. The SDT should allow each applicable entity within this Standard the same authority. Delete the words “and the expected duration” to R3.1 and 3.2. Since this is a revision to the standard, the drafting team should consider deletions as wells as additions. The NSRF contends that the words “and the expected duration” provide no practical Bulk Electric System reliability benefit and should be removed. The TOP can request any “duration” during real time notification or by advance notice. Delete all added material to M1 or have M1 match revised wording in R1. Revise any VRFs or VSLs appropriately.

Group

Tennessee Valley Authority - GO/GOP

David Thompson

No

The proposed VSLs for R2 are unreasonable. In order to track and respond to the system voltage on 5-minute intervals, the generator operator would have to be solely dedicated to the function of monitoring system voltage. This places an unrealistic burden on the generator operator, who has other duties besides just monitoring system voltage. The VSLs should increment in 2-hour intervals, not 5-minute intervals. This proposed change is a major revision to the 5% intervals presently in the standard, and is not an interpretation as the title suggests.

Individual

Kenneth A Goldsmith

Alliant Energy

We do not agree with the proposed revisions to R1. R1, in our opinion, was well-written and adding the footnotes did nothing to clarify it. The SDT is making the effort to define start-up and shutdown, but we believe each individual GOP needs to define that.

Individual

Michelle R D'Antuono

Ingleside Cogeneration LP

Yes

Ingleside Cogeneration LP agrees that a clear linkage should be established between the voltage or Reactive Power schedule developed by the TOP in VAR-001-2 R4. This clarifies the intent of the requirement and is consistent with our standard operating procedures.

Ingleside Cogeneration LP appreciates the additional precision the project team has added to VAR-002-2b R1 and R2. We believe this will help drive consistent auditor findings – which have been inconsistent across the Regions. In addition, the allowance of blanket pre-notifications is a powerful means to address routine operating communications. Although each is important, many are so routine

that it is easy to miss one. Too many times, this has resulted in a violation even if the AVR was properly online during generator start-up or shut-down – as the GOP cannot prove their compliance. However, we are concerned that the ERO is expending so much energy to address a topic which has questionable reliability benefit. There is no evidence that offline AVRs during generator start-up and shut-down have led to a BES event or extended its scope. Instead, this feels like an over-extended interpretation of a requirement well beyond its original intent. (We are aware that NERC's Compliance Team began this process in CAN-022, but they are not supposed to drive the interpretations process.) Because of this factor, we can not support this Interpretation of VAR-002. FERC has begun to recognize that low-priority tasks are consuming the attention of industry stakeholders and has asked for examples of requirements which distract from those which are far more critical. Frankly, we believe this is an example of such a distraction and will be providing that feedback to them.

Individual

Thad Ness

American Electric Power

No

If Requirement 1 were removed from VAR-002, what reliability objective would \*not\* be met by the combination of VAR-001 and VAR-002? AEP strongly believes that the existing Requirement 1 can be eliminated if VAR-002 Requirement 2 has minor enhancements (or maybe no changes are required). The requirements of VAR-001 require the TOP to communicate the voltage schedule or Reactive Power schedule (or exempt the facility). In addition, the TOP is required to direct the units in real-time as necessary. Through this coordination initiated by the TOP and the language in VAR-002 Requirement 2, the GOP is required to follow the instructions of the TOP and be in the mode of operation the TOP deems necessary. For example, the TOP could provide guidance on startup and shutdown expectations for AVR modes, and the GOP would then be obligated to comply with these expectations via Requirement 2. Fundamentally, the problem with VAR-002 Requirement 1 and why it is subject to so many interpretations request is that it may conflict with the directions provided by the TOPs as required by VAR-001. The changes in this project and past interpretation requests do not address this fundamental issue. Furthermore, these proposed changes introduce additional complexities that will continue to create challenges. For example, it would be better for the TOP to provide procedures for reporting startup and shutdown expectations rather than the GOPs develop and provide the procedures.

See response to Question #1.

Group

Western Electricity Coordinating Council

Steve Rueckert

Yes

As indicated by our Affirmative vote, we agree that the revisions add clarity. However, from an auditing and enforcement perspective, the term "minimum continuously sustainable load" in foot note R1 is not defined and leaves too much room for open interpretation and inconsistent auditing. For instance, does the term mean a time constant is applied that they are able to sustain it for 1 min or 1 hr, or is it a set and fixed number? It would be clearer and more manageable to audit to have a benchmark that state: the minimum continuously sustainable load is a load that is set by the GOP and agreed upon by the GOP and TOP.

Individual

Don Schmit

NPPD

No

The zero-tolerance for error interpretation presented in the VSLs for R2 is too restrictive. The Lower VSL is activated when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. That means if the GOP fails to stay on schedule 100% of the time, the GOP is non-compliant and subject to being penalized. We hope this was not the intent of the SDT and that the SDT will take action to correct this situation. While being off schedule can be a serious issue with possible repercussions for the reliability of the BES, typically the GOP would have time to make necessary

adjustments and get back on schedule. RCs and TOPs are allowed to respond to an IROL exceedance within Tv (default of 30 minutes) without penalty. Exceeding an IROL is much more critical to the operation of the BES than a generator being off schedule. We suggest that allowances be incorporated into the VSLs which provide some flexibility for the GOP in maintaining voltage and Reactive Power schedules. For example, the appropriate section of the Lower VSL could be changed to read: ‘...failed to meet the directed values for more than 30 minutes but less than 40 minutes.’ Similarly the Moderate VSL could be changed to read: ‘...for 40 minutes or more but less than 50 minutes.’ The High VSL could be changed to read: ‘...for 50 minutes or more but less than 60 minutes.’ The Severe VSL could be changed to read: ‘...for 60 minutes or more.’ This would give the GOP 30 minutes without penalty to respond to whatever the issue is that is keeping it from maintaining the assigned schedule. When modifying the VSLs, the SDT may also want to factor in the amount of deviation from schedule. Being a few percentage points off schedule is not as critical as being 10-15% off schedule.

Individual

Kirit Shah

Ameren

No

We strongly believe that the VSLs should remain as a percentage of the voltage deviation as approved earlier by FERC. We also believe that the VSLs in the draft conflict with the statement provided in footnote 3, that the TOP is allowed to set a specified time period for following voltage schedules. In addition, we believe that the draft VSLs are not clearly defined. For example, it includes 5 minutes time frame as a lower VSL; is this a continuous 5 minute increment or it is an accumulated 5 minutes over a period? Again the GOP should follow the directives given by the TOP and VSL should be appropriately defined rather than as prescribed presently.

(1) We would recommend that requirements not be addressed as footnotes. However, If the SDT elects to choose this approach and provide footnotes as requirements then we recommend Requirement 1, footnote 3 should include “...specified period as directed by the Transmission Operator” at the end. (2) To keep the generator operators out of double jeopardy, we suggest the SDT to consider the following modified language for Measure M1 : The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no specific notification regarding automatic voltage control mode is made to the Transmission Operator, the Generator Operator will have evidence that it previously provided the Transmission Operator of its procedure for placing the unit into/or out of, automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

Individual

Ed Davis

Entergy Services

Yes

Entergy continues to believe R1 of this draft standard places undue burden and requirements on Transmission Operators and adds uncertainty on the operation of the BES. Therefore, we again submit our comments here that we submitted in response to the last posting of this draft standard: Entergy – believes the Transmission Operator should not be required to have, be required to update or maintain, nor be required to know the startup / shutdown procedures of all of the generators connected to its system. TOPs should not be required to dig through a procedure to find out if the AVR “should be” in manual or automatic mode during startup or shutdown. We also think it is not the best operation of the system for the TOP to “assume” the status of the AVR. All of the proposed changes, especially the provision of startup / shutdown procedures, places additional burdens on the TOP. These burdens also place unwritten requirements on the TOP which auditors will definitely “explore” during the next review, in any form, of the TOP. We view the requirement that the TOP receive the startup / shutdown procedures as placing new requirements on the TOP, in violation of the Interpretation process. Per Constellation in its Request for Interpretation “A generator operator

already communicates to the TOP that the unit is being started up or shutting down.”. It would appear that a GOP could include in its procedures a requirement that the TOP be informed of the status of the AVR when the GOP is communicating to the TOP that the unit is starting up or shutting down. TOPs only want to know the status of a generating unit’s AVR, is it in automatic or manual mode. That information can be provided when the startup / shutdown information is being communicated. Therefore we recommend the following changes to VAR-002-2b: Delete both of the new bullet points added to R1, including associated footnotes. Delete: □ That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or. • That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. And: 1 Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline. Also delete the new wording in M1: If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.

Individual

Anthony Jablonski

ReliabilityFirst

ReliabilityFirst votes in the Negative for this standard because the revision to standard does not address or include the TOPs acknowledgment of the receipt of the GOPs procedure (for the start-up/shutdown of their generator). ReliabilityFirst offers the following comments for consideration: 1. ReliabilityFirst fundamentally agrees that the included bullets somewhat resolve the issue raised in the interpretation request, though believes the first bullet is missing one key component. ReliabilityFirst believes it is crucial for the TOP to acknowledge receipt of the GOPs procedure for start-up/shutdown of their generators. Without required TOP acknowledgment of receipt of the procedure, there is a chance that vital information may not be communicated which could result in voltage levels, reactive flows, and reactive resources not being maintained.

Individual

Daniel Duff

Liberty Electric Power

No

I agree with the comments submitted by Exelon regarding the use of time criteria in the VSLs for a requirement which does not have a time component.

Individual

John Seelke

Public Service Enterprise Group

Yes

We suggest the following changes in R1: Capitalized terms are additional language. 1. Modify the opening paragraph: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator [DELETE “of one of the following”] OF THE CONDITIONS IN R1.1 OR R1.2: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] RATIONALE: Added new language to refer to renumbered bullets – see below. 2. Change the “bullets” to subparts as follows, delineating the information in the first bullet R1.1 That the generator is being operated in start-up [footnote 1] or shutdown [footnote 2] mode pursuant to: R1.1.1 A Real-time communication, or R1.1.2 A procedure that was previously provided to the Transmission Operator; HOWEVER, AFTER THE PROCEDURE HAS BEEN PROVIDED. NO NOTIFICATION IS REQUIRED BY THE GENERATOR

OPERATOR FOR EACH SUBSEQUENT START-UP OR SHUTDOWN. R1.2 That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. 3. Summary of 1 and 2: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator [DELETE "of one of the following"] OF THE CONDITIONS IN R1.1 OR R1.2: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] R1.1 That the generator is being operated in start-up [footnote 1] or shutdown [footnote 2] mode pursuant to: R1.1.1 A Real-time communication, or R1.1.2 A procedure that was previously provided to the Transmission Operator; HOWEVER, AFTER THE PROCEDURE HAS BEEN PROVIDED, NO NOTIFICATION IS REQUIRED BY THE GENERATOR OPERATOR FOR EACH SUBSEQUENT START-UP OR SHUTDOWN. R1.2 That the generator is not being operated in the automatic voltage control mode for a reason other than start up or shutdown. 4. Change the footnotes as follows: [1] Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load (AS DEFINED BY THE GENERATOR OPERATOR IN R1.1.1 OR IN R.1.1.2) and the generator is prepared for continuous operation. THE GENERATOR OPERATOR SHALL REPORT CHANGES IN THE AUTOMATIC VOLTAGE CONTROL MODE STATUS AT THE END OF START-UP PER R3. [2] Start-up is deemed to have ended when the generator is ramped down to its minimum continuously sustainable load (AS DEFINED BY THE GENERATOR OPERTOR IN R1.1.1 OR IN R.1.1.2) and the generator is prepared to go off-line. THE GENERATOR OPERATOR SHALL REPORT CHANGES IN THE AUTOMATIC VOLTAGE CONTROL MODE STATUS AT THE END OF SHUTDOWN PER R3.

Group

FirstEnergy

Sam Ciccone

Yes

FirstEnergy supports the revisions and thanks the drafting team for their hard work.

Individual

Howard Rulf

Wisconsin Electric dba We Energies

The Time Horizon for R1 is Real-time Operation, so it is reasonable to assume that the notifications in R1 take place in Real-time. R1 is worded such that even if a procedure was previously provided to the TOP as stated in the first bullet, a Real-time communication must be made to the TOP each time during startup or shutdown if the AVR is not in voltage control mode (AVR in service and controlling voltage). Please clarify that if the TOP has been provided a procedure, a Real-time communication is not necessary.

Group

Dominion

Mike Garton

Yes

Dominion maintains that the existing standard language is clear and the revision of Requirement 1 and the addition of footnotes 1 & 2 are unnecessary.

Group

Southern Company

Antonio Grayson

Yes

i) For clarity, we suggest the middle portion of the first bullet of R1 be revised as follows: "...mode pursuant to either a Real-time communication or a procedure that was previously provided to...". ii) We suggest seven changes to M1. First, that the first sentence of M1 be changed to replace "failed to" with "did not"; Second, insert "Real-time communication" in the second sentence between "no" and

"notification"; Third, change "will have evidence" to "should have evidence" in the second sentence; Fourth, replace "notified" with "previously provided" in the second sentence; Fifth, change "of its procedure" to "a procedure" in the second sentence; Sixth, change "procedure for placing" to "procedure indicating the normal practice for placing" in the second sentence; Seventh, add "during start up and shut down periods" at the end of the second sentence. With these changes, the second sentence will read as follows: "If a generator is being started up or shut down with the automatic voltage control off and no Real-time notification of the automatic voltage regulator status is made to the TOP, the GOP should have evidence that it previously provided the TOP a procedure indicating the normal practice for placing the unit into automatic voltage control mode during start up and shut down periods." iii) Does the wording of the data retention section D1.2 indicate that an open ended number of years that the data for M1-M4 and M7 must be retained? The current wording seems to indicate that all records for all time must be retained. iv) We suggest that the tardiness time frame given for the VSL for R2 more closely match the 30 minutes reporting time frame of requirement R3, and that the four thresholds for the various VSLs of R2 be 30 min, 45 min, 60 min, rather than 5, 10, and 15 min. Generating plant operators are responsible for many other things in addition to substation voltage. v) The word "directives" found in M3 should be changed to "directions" to eliminate possible confusion with a Reliability Directive". vi) The following phrase from R1 should be added to R3: "Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator,". This phrase permits a blanket notification serve as adequate communication of the switching of the AVR mode during start up or shutdown periods in lieu of the 30 minute notification.

Individual

Dale Fredrickson

Wisconsin Electric Power Company

Yes

R1: The modifications to R1 do not serve to clarify the intent, but only make this standard more complex than it needs to be. We strongly assert that the standard is not an appropriate place to define the terms "start-up" and "shutdown". Such definitions also have little meaning for facilities like wind farms and other intermittent resources. We also object to the requirement for either a "Real-time communication" or a "procedure" to be provided by the GOP to the TOP. There is no clear reliability-driven need to provide a procedure, which by definition is usually a more detailed and complex document. A simple "notification" by the GOP to the TOP of the circumstances and estimated timeframe that may require a generator being in an AVR mode other than Automatic is sufficient to assure coordination between the GOP and the TOP as it relates to the generator AVR status. We suggest that R1 be revised to remove the two bullets and add new wording as follows: The GOP shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (AVR in-service and controlling voltage) unless the GOP has notified the TOP (...SUGGESTED WORDING FOLLOWS...) "in advance by a Real-time communication or other previous notification." Likewise, we propose that M1 be revised to remove the 2nd sentence, which refers to startup or shutdown procedures. The 3rd sentence should be expanded to include "manual or electronic log entries."

Group

Bonneville Power Administration

Chris Higgins

BPA thanks you for the opportunity to provide comments on Project 2011-INT-02 Interpretation of VAR-002 for Constellation. At this time BPA has no comments or concerns.

Individual

Terri Pyle

Oklahoma Gas & Electric

No

The VSLs for R2 is too restrictive. The Lower VSL is applicable when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. While maintaining these schedules is important, we



do not believe that the SDT intended for this requirement to have virtually zero-tolerance. We would request that the SDT reconsider the timeframes for the VRLs to be more reflective of the potential impact and be in line with those that are currently active for IROLs.

The VAR standards need to be updated to bring the language in line iwth the latest technologies in use today; i.e., incorporate language to cover nonsynchronous generators and other resources. We also are in strong support of an exemption for power system stabilizer status during generator startup and shutdown (covered in R3) should be incorporated into the standard.

Individual

Martin Kaufman

ExxonMobil Research & Engineering

No

NERC has already established an SDT to review and modify the VAR standards. By stepping outside the normal process for drafting standards, regardless of the intent or end product, NERC is setting a precedent for superseding a pre-qualified SDT and the ANSI approved process for drafting standards. For the time being, a Generator Operator's compliance with its Transmission Operator's established scheduling process or a Generator Operator's verbal notification to the Transmission Operator that a unit is being brought online or offline and is in manual control should be sufficient notification that its AVR is not in service.

Group

PPL Corporation NERC Registered Affiliates

Stephen J. Berger

No

Footnote 4 to R2 does not adequately explain limitations on being able to maintain system voltage within the schedule bandwidth. This generally has nothing to do with GO Facility Ratings. The constraint is instead variation of the generation plant medium or low voltage bus from normal (typically max +/- 5%). Such limits are encountered well before approaching the generator OEM's D-curve boundary.

TO-issued voltage schedules for our entities, and probably everywhere, are tighter than the max and min limits that the TO and TOP themselves seek to maintain. It makes sense that firstly all generation plants should do what they can within the equipment limits, after which the TO/TOP take system-wide action; but a single generation plant is oftentimes not able to pull its node of the grid into compliance with the TO-issued voltage schedule during periods of high or low demand. It is unrealistic to assume that unanimity of GO actions occurs automatically as a result of VAR-002 requirements. The only means of getting all plants to pull together is through TO/TOP verbal directives. VAR-002 as presently written and in the proposed update (version 2b) sets a nearly impossible task in placing the entire burden of maintaining the schedule on each individual GO. To make matters worse, some TOs may set a bandwidth for GOs only a fraction of the amount the max/min variation that they themselves seek to maintain. It may be necessary to rewrite VAR-002 completely to address some fundamental issues with the current compliance approach.

Group

Luminant

Brenda Hampton

No

The VSL string (Lower and High) should be modified in the following manner to eliminate always being non-compliant under the Lower VSL scenario. Lower VSL should be "... the Generator Operator failed to meet the directed values within the 5 minutes or; When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator or; The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.

Individual

Tony Kroskey

Brazos Electric Power Cooperative
No
Please see the formal comments submitted by ACES Power Marketing.
Please see the formal comments submitted by ACES Power Marketing.
Group
ACES Power Marketing Standards Collaborators
Jason Marshall
No
(1) We agree with changing "output" to "schedule" for consistency with VAR-001-2 R4. (2) We do not agree with the VSLs. As written, they are open-ended and subject the Generator Operator to rapidly escalating sanctions. The VSLs do not define the time period over which the failure to maintain the generator voltage or Reactive Power schedule is measured. Is the time period a year, the audit period, or something else? The audit period for a GOP is six years. Thus, if a GOP experienced 16 minutes of failing to meet its voltage or reactive power schedule, it would achieve success for 99.99949% of the minutes over the six year period but still be assessed a severe violation. This success rate approaches the maximum theoretical availability/success of the Six Sigma process which is used by many industries for managing industrial processes. It does not seem reasonable to consider approaching a theoretical maximum a severe violation. (3) We appreciate that the drafting team included R2 in the revised SAR scope but we believe the changes still do not go far enough to satisfy the request for interpretation. The issue that Constellation identifies is essentially that the TOP may not grant an exemption for following the voltage or reactive power schedule pursuant to R2 during start up and shut down. The GOP can provide the TOP with a Real-Time communication or a procedure and the TOP may still not grant an exemption. Per R2 (since it is an independent requirement), unless the TOP grants an exemption, the GOP still must follow the voltage or reactive power schedule regardless of what R1 states. The GOP needs not only the changes to R1 but also changes to R2 that provide a blanket exemption during start-up or shut-down. They should not be put into a position to rely on the TOP providing an exemption during start up or shut down especially considering that the voltage or reactive power schedule provided by the TOP most likely assumed full unit capability.
Individual
Andrew Z. Puszta
American Transmission Company
Yes
ATC endorses and supports the comments submitted by the MRO NERC Standards Review Forum (NSRF).
Individual
John Babik
JEA
No
The VSLs changed using time and removed the percentages this change is unrealistic and have no merit to reliability. Footnote 3 states The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period. The footnote should state 'a tolerance band within which the target percentage value is to be maintained' We recommend changing the VSL's back to percentages for both reactive power output and voltage.
Group
Florida Municipal Power Agency
Frank Gaffney
Constellation is essentially asking "what does 'notify' mean as used in the standard", and asking if

previously arranged operating procedures between the GOP and TOP is notification, including operating for start-up and shutdown of a unit during which an AVR would be put into manual mode. An interpretation of what 'notify' means as used in the standard is more appropriate as opposed to changing the standard. The response to the request is too specific and introduces new terms into the standards that are ambiguous and will cause confusion depending on the type of generator being considered (e.g., start-up and shutdown), possibly spurring additional requests for interpretation of what start-up and shutdown mean for, say, a wind or solar farm, etc. In addition, while R1 has become clearer as to the intent, it leaves R3 unclear with the same question concerning the word 'notify'. An interpretation essentially saying that pre-arranged, conditional notification, between the GOP and TOP acts as notification in regards to both R1 and R3 is a preferably approach to a rapid revision (e.g., every time the unit is on outage, the AVR is out of service; every time the unit is below XX MW of output, the AVR is in manual mode, etc.).

Individual

Maggy Powell

Exelon Corporation and its affiliates

No

The revisions made to R2 fail to address the concerns present. VAR-002 version 1.1b and as proposed revision requires that each GOP shall maintain the generator voltage or Reactive Power output as directed and Measure R2 further clarifies that each GOP shall have evidence to show it controlled its generator voltage or Reactive Power schedule to meet the voltage or Reactive Power schedule provided by the TOP. However, in certain situations, a GOP may not be able to meet the schedule because of system variations outside of the GOP's control or internal operational constraints. In this situation, a GOP may be non-compliant with this requirement because of issues out of its control. This requirement should be revised to allow the GOP to contact the TOP when outside the schedule and to follow the TOP's instruction. The revisions to R2 do not address this compliance concern. Exelon concedes that use of the word "schedule" in place of "output" in R2 is more accurate. The proposed VSLs associated with VAR-002 Requirement R2 were revised on this draft to be contingent on a specified time limit for failure to meet the directed values of the generator voltage (or Reactive Power) schedule. This change to the VSL criteria is not reasonable, has no relation to increased reliability, and is not feasible to be implemented by most if not all Generator Operators. Voltage schedules are provided by the Transmission Operator or Transmission Owner (if delegated by the Transmission Operator) and vary from generator to generator based on the Transmission Operator/Owner methodology for maintaining system wide grid voltages and on generator location. Although it is an expectation that the voltage schedule be maintained, the voltage monitored is dynamic and regularly (and sometimes constantly) fluctuates. Once a Generator Operator has identified that the voltage has drifted outside of the voltage schedule, then it is reasonable to expect the Generator Operator to make timely adjustments (unless constrained by operating parameters) to bring the voltage back within the prescribed voltage schedule and to contact the Transmission Operator/Owner if attempts to bring the voltage back within the prescribed schedule are unsuccessful or not possible. It should be up to the discretion of the Transmission Operator/Owner, in consultation with the Generator Operator, to set the expectation for monitoring the voltage, time allowed to adjust the voltage back within band, and communications required in the event voltage cannot be brought back within the voltage schedule. The VSLs as currently proposed impose a time limit that has no technical justification or relation to increased reliability and is inconsistent with Requirement R2, which does not impose a time requirement. If approved as currently proposed, this Standard will require continual monitoring by a dedicated operator 24 hours a day/7 days a week/365 days a year. In addition, even if a dedicated operator is continuously monitoring, a Generator Operator will be in violation of the Standard if there is any deviation from the voltage schedule, regardless of the magnitude or duration of the voltage excursion or success of the operator in bringing the voltage back within the prescribed voltage schedule. Such a result is unreasonable and provides no increased level of reliability.

Content of the proposed Standard: • Constellation requested in their interpretation request that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. Defining the terms "start up" and "shut down" was not part of the request and creates more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague. • The first problem with Footnote 1 concerns the term "ramped up" that remains in the

language. This is an unnecessary qualifier. Secondly, the term “minimum” is too vague. The minimum in a generator user manual may be different than the minimum defined in a start up procedure. Footnote 2 attempts to define shut down of a unit. However, the definition used is only one of numerous ways a unit may be brought offline. Every unit has a unique sequence in which it is shut down. Therefore, Footnote 2 is too prescriptive. • Furthermore, the footnotes are not consistent with those in VAR-001. This revision stands to create further confusion relative to VAR-001. Process Concerns: • Exelon/Constellation reiterates the process concerns raised in the previous comment period. The use of a rapid revision project in place of an interpretation was misguided and misrepresented. • The response to comments does not sufficiently address the process concerns raised. It does not justify using an alternative process to the interpretation process. The Constellation request for interpretation kept with the BOT direction by being restricted to the words contained in the standard. Constellation’s explanation of concerns with VAR-001 and VAR-002 should have sufficiently illustrated that a “small adjustment to the wording” as allowed within a rapid revision was inappropriate. In general, the details of what constitutes this rapid revision process are not clearly defined. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. It is unclear who makes the judgments. This new process is under utilization without proper rollout or justification and appears to be used in place of approved and better understood processes. The Standard Committee elected to pursue the rapid revision process without understanding the interpretation request and without support of the interpretation requester. • As Constellation pointed out, there was a narrow question that an interpretation could have addressed while Project 2008-01 organized around the larger issues present in VAR-001 and VAR-002. Exelon/Constellation is optimistic that Project 2008-01 is able to efficiently and effectively address the problematic language in VAR-001 and VAR-002 and that NERC provide resources to Project 2008-01 to enable development of revision proposals in a timely manner.

Individual

Brett Holland

Kansas City Power & Light

No

The VSL’s for Requirement 2 stipulate time frames that are within spans of time up to a maximum of 15 minutes. This is not a reasonable expectation and is not in alignment with Requirement 3 which stipulates a Generator Operator to notify its Transmission Operator within 30 minutes of a “status” or “capability” change. Requirement 3 allows the Generator Operator some time to determine a reactive production problem exists and to make a notification to the Transmission Operator. Requirement 2 should afford at least the same time for the Generator Operator to recognize a problem exists and to attempt to take corrective action to meet operating expectations. Recommend modifying the VSL for Requirement 2 as follows: Low at 30 minutes, Medium at 45 minutes, High at 60 minutes and Severe at 75 minutes or longer.

Individual

Alice Ireland

Xcel Energy

No

1) Xcel Energy appreciates that the SDT has attempted to address the concern about the ambiguity in the term “minimum load” by adding the words “continuously sustainable”, but we do not believe this solves the ambiguity since it is not a widely accepted industry term. Xcel believes that if the SDT wants to avoid ambiguity it will have to set an arbitrary load value (e.g. 30% of rated MW). 2) Xcel Energy finds the VSL structure for Requirement R2 totally unworkable. The Lower VSL (less than five minutes) goes into effect for any deviation from the scheduled voltage band – even a one millisecond excursion would be a violation. The VSL, as written, would override any time allowance to correct for excursions given by the TOP in its Voltage Schedule provided to the GOP.

## Consideration of Comments

### Project 2011-INT-02 Interpretation of VAR-002 for Constellation

The 2011-INT-02 Drafting Team thanks all commenters who submitted comments on Draft 2 of VAR-002-2b, rapid revision project. These standards were posted for a 38-day<sup>1</sup> formal comment period from May 22, 2012 through June 27, 2012, with a successive ballot during the last ten days of the comment period. Stakeholders were asked to provide feedback on the standards and associated documents through a special electronic comment form. There were 35 sets of comments, including comments from approximately 112 different individuals from approximately 76 companies representing all 10 Industry Segments as shown in the table on the following pages.

All comments submitted may be reviewed in their original format on the standard's project page:

[http://www.nerc.com/filez/standards/Project\\_2011-INT-02\\_Int\\_of\\_VAR-002\\_for\\_Const.html](http://www.nerc.com/filez/standards/Project_2011-INT-02_Int_of_VAR-002_for_Const.html)

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President of Standards and Training, Herb Schrayshuen, at 404-446-2560 or at [herb.schrayshuen@nerc.net](mailto:herb.schrayshuen@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>2</sup>

**Summary Consideration:** The Standard Drafting Team received several suggestions for revisions to the language of the standard. The SDT believes that stakeholder consensus has been achieved with respect to standard language and does not believe further edits are necessary at this time. The SDT does acknowledge that there may be room for improvement in the language and will have these comments included in the NERC Issues database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.

Several commenters suggested revisions to the VSL for Requirement R2. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the "floor" must be at zero (not 30 minutes). Still, the SDT agrees that the timeframes in the VSL for Requirement R2 should be extended and has revised the timing elements of the VSLs as follows:

<sup>1</sup> The posting was for a 30-day comment period, but the period was extended when NERC learned that a technology malfunction had resulted in the announcement of the opening of the comment not being properly distributed.

<sup>2</sup> The appeals process is in the Standard Processes Manual:  
[http://www.nerc.com/files/Appendix\\_3A\\_StandardsProcessesManual\\_20120131.pdf](http://www.nerc.com/files/Appendix_3A_StandardsProcessesManual_20120131.pdf)

Lower: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.

Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.

High: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.

Severe: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.

A couple of commenters suggested that the VSLs include a percentage deviation from the schedule. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed for the different size units on the BES. Therefore, the SDT decided to remove the percentage-based VSLs.

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

- 1. The scope of the SDT has been revised to address deficiencies in Requirement R2 and its associated VSLs. Do you agree with the proposed revisions to Requirement R2 and its VSLs? If No, please explain your concerns..... 9
- 2. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here. .... 27

**The Industry Segments are:**

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

Group/Individual		Commenter	Organization	Registered Ballot Body Segment											
				1	2	3	4	5	6	7	8	9	10		
1.	Group	Guy Zito	Northeast Power Coordinating Council												X
Additional Member		Additional Organization		Region	Segment Selection										
1.	Alan Adamson	New York State Reliability Council, LLC		NPCC	10										
2.	Greg Campoli	New York Independent System Operator		NPCC	2										
3.	Sylvain Clermont	Hydro-Quebec TransEnergie		NPCC	1										
4.	Chris de Graffenried	Consolidated Edison Co. of New York, Inc.		NPCC	1										
5.	Gerry Dunbar	Northeast Power Coordinating Council		NPCC	10										
6.	Mike Garton	Dominion Resources Services, Inc.		NPCC	5										
7.	Kathleen Goodman	ISO - New England		NPCC	2										
8.	Michael Jones	National Grid		NPCC	1										
9.	David Kiguel	Hydro One Networks Inc.		NPCC	1										
10.	Michael R. Lombardi	Northeast Utilities		NPCC	1										



Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
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11. Randy MacDonald	New Brunswick Power Transmission	NPCC	9																	
12. Bruce Metruck	New York Power Authority	NPCC	6																	
13. Silvia Parada Mitchell	NextEra Energy, LLC	NPCC	5																	
14. Lee Pedowicz	Northeast Power Coordinating Council	NPCC	10																	
15. Robert Pellegrini	The United Illuminating Company	NPCC	1																	
16. Si Truc Phan	Hydro-Quebec TransEnergie	NPCC	1																	
17. David Ramkalawan	Ontario Power Generation, Inc.	NPCC	5																	
18. Brian Robinson	Utility Services	NPCC	8																	
19. Michael Schiavone	National Grid	NPCC	1																	
20. Wayne Sipperly	New York Power Authority	NPCC	5																	
21. Tina Teng	Independent Electricity System Operator	NPCC	2																	
22. Donald Weaver	New Brunswick System Operator	NPCC	2																	
23. Ben Wu	Orange and Rockland Utilities	NPCC	1																	
24. Peter Yost	Consolidated Edison Co. of New York, Inc.	NPCC	3																	
2.	Group	Robert Rhodes	SPP Standards Review Group		X															
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	John Allen	City Utilities of Springfield	SPP	1, 4																
2.	Ron Gunderson	Nebraska Public Power District	MRO	1, 3, 5																
3.	Tara Lightner	Sunflower Electric Power Corporation	SPP	1																
4.	Dan Lusk	Xcel Energy	SPP	1, 3, 5, 6																
5.	Jerry McVey	Sunflower Electric Power Corporation	SPP	1																
6.	Randy Root	Grand River Dam Authority	SPP	1, 3, 5																
7.	Chad Wasinger	Sunflower Electric Power Corporation	SPP	1																
8.	Terri Pyle	Oklahoma Gas & Electric	SPP	1, 3, 5																
3.	Group	Greg Rowland	Duke Energy		X		X		X	X										
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>																
1.	Doug Hils	Duke Energy	RFC	1																
2.	Ed Ernst	Duke Energy	SERC	3																
3.	Dale Goodwine	Duke Energy	SERC	5																
4.	Greg Cecil	Duke Energy	RFC	6																
4.	Group	Will Smith	MRO NSEF		X	X	X	X	X	X										

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5.	Group	Steve Rueckert	Western Electricity Coordinating Council									X																																																																								
No additional members listed.																																																																																				
6.	Group	Sam Ciccone	FirstEnergy	X		X	X	X	X																																																																											
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7.	Group	Mike Garton	Dominion	X		X		X	X																																																																											
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3.	Connie Lowe	Dominion Resources Services, Inc. NPCC	5, 6											
4.	Michael Crowley	Dominion Virginia Power	SERC 1, 3, 5, 6											
8.	Group	Chris Higgins	Bonneville Power Administration	X		X		X	X					
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Tim	Loepker	WECC 1											
2.	Don	Watkins	WECC 1											
9.	Group	Stephen J. Berger	PPL Corporation NERC Registered Affiliates	X				X						
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Annette Bannon	PPL Generation, LLC on behalf of its NERC Registered Entities	RFC 5											
2.			WECC 5											
3.	James Bedick	PPL Electric Utilities Corporation	RFC 1											
10.	Group	Brenda Hampton	Luminant						X					
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Mike Laney	Luminant Generation Company LLC	ERCOT 5											
11.	Group	Jason Marshall	ACES Power Marketing Standards Collaborators						X					
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Mark Ringhausen	Old Dominion Electric Cooperative	RFC 3, 4											
2.	Scott Brame	North Carolina Electric Membership Corporation	SERC 1, 3, 4, 5											
3.	Michael Brytowski	Great River Energy	MRO 1, 3, 4, 5											
4.	Shari Heino	Brazos Electric Power Cooperative, Inc.	ERCOT 1											
5.	Megan Wagner	Sunflower Electric Power Corporation	SPP 1											
12.	Group	Frank Gaffney	Florida Municipal Power Agency	X		X	X	X	X					
<b>Additional Member Additional Organization Region Segment Selection</b>														
1.	Timothy Beyrle	City of New Smyrna Beach	FRCC 4											
2.	Jim Howard	Lakeland Electric	FRCC 3											
3.	Greg Woessner	Kissimmee Utility Authority	FRCC 3											
4.	Lynne Mila	City of Clewiston	FRCC 3											
5.	Joe Stonecipher	Beaches Energy Services	FRCC 1											
6.	Cairo Vanegas	Fort Pierce Utility Authority	FRCC 4											

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
7.	Randy Hahn	Ocala Utility Services	FRCC	3																
13.	Individual	Jim Eckelkamp	Progress Energy	X		X		X	X											
14.	Individual	David Thompson	Tennessee Valley Authority - GO/GOP	X		X		X	X											
15.	Individual	Antonio Grayson	Southern Company	X		X		X	X											
16.	Individual	Michael Falvo	Independent Electricity System Operator		X															
17.	Individual	Kenneth A Goldsmith	Alliant Energy				X													
18.	Individual	Michelle R D'Antuono	Ingleside Cogeneration LP					X												
19.	Individual	Thad Ness	American Electric Power	X		X		X	X											
20.	Individual	Don Schmit	NPPD	X		X		X												
21.	Individual	Kirit Shah	Ameren	X		X		X	X											
22.	Individual	Ed Davis	Entergy Services	X		X		X	X											
23.	Individual	Anthony Jablonski	ReliabilityFirst																	X
24.	Individual	Daniel Duff	Liberty Electric Power					X												
25.	Individual	John Seelke	Public Service Enterprise Group	X		X		X	X											
26.	Individual	Howard Rulf	Wisconsin Electric dba We Energies			X	X	X												
27.	Individual	Dale Fredrickson	Wisconsin Electric Power Company			X	X	X												
28.	Individual	Terri Pyle	Oklahoma Gas & Electric	X																
29.	Individual	Martin Kaufman	ExxonMobil Research & Engineering	X				X			X									
30.	Individual	Tony Kroskey	Brazos Electric Power Cooperative	X																
31.	Individual	Andrew Z. Pusztai	American Transmission Company	X																
32.	Individual	John Babik	JEA	X		X		X												
33.	Individual	Maggy Powell	Exelon Corporation and its affiliates	X		X		X	X											
34.	Individual	Brett Holland	Kansas City Power & Light	X		X		X	X											
35.	Individual	Alice Ireland	Xcel Energy	X		X		X	X											

1. **The scope of the SDT has been revised to address deficiencies in Requirement R2 and its associated VSLs. Do you agree with the proposed revisions to Requirement R2 and its VSLs? If No, please explain your concerns.**

**Summary Consideration:** The Standard Drafting Team received several suggestions for revisions to the language of the standard. The SDT believes that stakeholder consensus has been achieved with respect to standard language and does not believe further edits are necessary at this time. The SDT does acknowledge that there may be room for improvement in the language and will have these comments included in the NERC Issues data base for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.

Several commenters suggested revisions to the VSL for Requirement R2. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). Still, the SDT agrees that the timeframes in the VSL for Requirement R2 should be extended and has revised the timing elements of the VSLs as follows:

**Lower:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.

**Moderate:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.

**High:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.

**Severe:** When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.

A couple of commenters suggested that the VSLs include a percentage deviation from the schedule. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed for the different size units on the BES. Therefore, the SDT decided to remove the percentage-based VSLs.

Organization	Yes or No	Question 1 Comment
SPP Standards Review Group	No	<p>The zero-tolerance for error interpretation presented in the VSLs for R2 is too restrictive. The Lower VSL is activated when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. That means if the GOP fails to stay on schedule 100% of the time, the GOP is non-compliant and subject to being penalized. We hope this was not the intent of the SDT and that the SDT will take action to correct this situation. While being off schedule can be a serious issue with possible repercussions for the reliability of the BES, typically the GOP would have time to make necessary adjustments and get back on schedule. RCs and TOPs are allowed to respond to an IROL exceedance within Tv (default of 30 minutes) without penalty. Exceeding an IROL is much more critical to the operation of the BES than a generator being off schedule. We suggest that allowances be incorporated into the VSLs which provide some flexibility for the GOP in maintaining voltage and Reactive Power schedules. For example, the appropriate section of the Lower VSL could be changed to read: ‘...failed to meet the directed values for more than 30 minutes but less than 40 minutes.’ Similarly the Moderate VSL could be changed to read: ‘...for 40 minutes or more but less than 50 minutes.’ The High VSL could be changed to read: ‘...for 50 minutes or more but less than 60 minutes.’ The Severe VSL could be changed to read: ‘...for 60 minutes or more.’ This would give the GOP 30 minutes without penalty to respond to whatever the issue is that is keeping it from maintaining the assigned schedule. When modifying the VSLs, the SDT may also want to factor in the amount of deviation from schedule. Being a few percentage points off schedule is not as critical as being 10-15% off schedule.</p>
NPPD	No	<p>The zero-tolerance for error interpretation presented in the VSLs for R2 is too restrictive. The Lower VSL is activated when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. That means if the GOP fails to stay on schedule 100% of the time, the GOP is non-compliant and subject</p>

Organization	Yes or No	Question 1 Comment
		<p>to being penalized. We hope this was not the intent of the SDT and that the SDT will take action to correct this situation. While being off schedule can be a serious issue with possible repercussions for the reliability of the BES, typically the GOP would have time to make necessary adjustments and get back on schedule. RCs and TOPs are allowed to respond to an IROL exceedance within Tv (default of 30 minutes) without penalty. Exceeding an IROL is much more critical to the operation of the BES than a generator being off schedule. We suggest that allowances be incorporated into the VSLs which provide some flexibility for the GOP in maintaining voltage and Reactive Power schedules. For example, the appropriate section of the Lower VSL could be changed to read: ‘...failed to meet the directed values for more than 30 minutes but less than 40 minutes.’ Similarly the Moderate VSL could be changed to read: ‘...for 40 minutes or more but less than 50 minutes.’ The High VSL could be changed to read: ‘...for 50 minutes or more but less than 60 minutes.’ The Severe VSL could be changed to read: ‘...for 60 minutes or more.’ This would give the GOP 30 minutes without penalty to respond to whatever the issue is that is keeping it from maintaining the assigned schedule. When modifying the VSLs, the SDT may also want to factor in the amount of deviation from schedule. Being a few percentage points off schedule is not as critical as being 10-15% off schedule.</p>
<p><b>Response:</b> SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended, so it has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the</p>		

Organization	Yes or No	Question 1 Comment
<p>Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p>Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p>High: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p>Severe: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p> <p>With respect to deviation from the scheduled value, the SDT agrees that in some cases, a significant deviation from the schedule is a concern. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage-based VSLs.</p>		
<p>PPL Corporation NERC Registered Affiliates</p>	<p>No</p>	<p>Footnote 4 to R2 does not adequately explain limitations on being able to maintain system voltage within the schedule bandwidth. This generally has nothing to do with GO Facility Ratings. The constraint is instead variation of the generation plant medium or low voltage bus from normal (typically max +/- 5%). Such limits are encountered well before approaching the generator OEM's D-curve boundary.</p>
<p>Response: The SDT thanks you for your comment. The SDT agrees that footnote 4 does not necessarily address all potential limitations. This footnote was in the original VAR-002 standard and the SDT will have your comment included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		
<p>Luminant</p>	<p>No</p>	<p>The VSL string (Lower and High) should be modified in the following manner to eliminate always being non-compliant under the Lower VSL scenario.</p>



Organization	Yes or No	Question 1 Comment
		<p>Lower VSL should be "... the Generator Operator failed to meet the directed values within the 5 minutes or; When a generator’s automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator or; The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</p>
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>No</p>	<p>(1) We agree with changing “output” to “schedule” for consistency with VAR-001-2 R4.</p> <p>(2) We do not agree with the VSLs. As written, they are open-ended and subject the Generator Operator to rapidly escalating sanctions. The VSLs do not define the time period over which the failure to maintain the generator voltage or Reactive Power schedule is measured. Is the time period a year,</p>

Organization	Yes or No	Question 1 Comment
		<p>the audit period, or something else? The audit period for a GOP is six years. Thus, if a GOP experienced 16 minutes of failing to meet its voltage or reactive power schedule, it would achieve success for 99.99949% of the minutes over the six year period but still be assessed a severe violation. This success rate approaches the maximum theoretical availability/success of the Six Sigma process which is used by many industries for managing industrial processes. It does not seem reasonable to consider approaching a theoretical maximum a severe violation.</p> <p>(3) We appreciate that the drafting team included R2 in the revised SAR scope but we believe the changes still do not go far enough to satisfy the request for interpretation. The issue that Constellation identifies is essentially that the TOP may not grant an exemption for following the voltage or reactive power schedule pursuant to R2 during start up and shut down. The GOP can provide the TOP with a Real-Time communication or a procedure and the TOP may still not grant an exemption. Per R2 (since it is an independent requirement), unless the TOP grants an exemption, the GOP still must follow the voltage or reactive power schedule regardless of what R1 states. The GOP needs not only the changes to R1 but also changes to R2 that provide a blanket exemption during start-up or shut-down. They should not be put into a position to rely on the TOP providing an exemption during start up or shut down especially considering that the voltage or reactive power schedule provided by the TOP most likely assumed full unit capability.</p>
<p><b>Response: The SDT thanks you for your comment.</b></p> <p><b>1) Thank you for your comment.</b></p> <p><b>2) Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30</b></p>		

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<p>minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p> <p>3) The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		
<p>Tennessee Valley Authority - GO/GOP</p>	<p>No</p>	<p>The proposed VSLs for R2 are unreasonable. In order to track and respond to the system voltage on 5-minute intervals, the generator operator would have to be solely dedicated to the function of monitoring system voltage. This places an unrealistic burden on the generator operator, who has other duties besides just monitoring system voltage. The VSLs should increment in 2-hour intervals, not 5-minute intervals. This proposed change is a major revision to the 5% intervals presently in the standard, and is not an interpretation as the title suggests.</p>
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and</p>		

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<p>has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
<p>American Electric Power</p>	<p>No</p>	<p>If Requirement 1 were removed from VAR-002, what reliability objective would *not* be met by the combination of VAR-001 and VAR-002? AEP strongly believes that the existing Requirement 1 can be eliminated if VAR-002 Requirement 2 has minor enhancements (or maybe no changes are required). The requirements of VAR-001 require the TOP to communicate the voltage schedule or Reactive Power schedule (or exempt the facility). In addition, the TOP is required to direct the units in real-time as necessary. Through this coordination initiated by the TOP and the language in VAR-002 Requirement 2, the GOP is required to follow the instructions of the TOP and be in the mode of operation the TOP deems necessary. For example, the TOP could provide guidance on startup and shutdown expectations for AVR modes, and the GOP would then be obligated to comply with these expectations via Requirement 2. Fundamentally, the problem with VAR-002 Requirement 1 and why it is subject to so many interpretations request is that it may conflict with the directions provided by the TOPs as required by VAR-001. The changes in this project and past interpretation requests do not address this fundamental issue. Furthermore, these proposed changes introduce additional complexities that will continue to create challenges. For example, it would be better for the TOP to provide procedures for</p>

Organization	Yes or No	Question 1 Comment
		reporting startup and shutdown expectations rather than the GOPs develop and provide the procedures.
<p>Response: The Standard Drafting Team thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		
Ameren	No	<p>We strongly believe that the VSLs should remain as a percentage of the voltage deviation as approved earlier by FERC. We also believe that the VSLs in the draft conflict with the statement provided in footnote 3, that the TOP is allowed to set a specified time period for following voltage schedules. In addition, we believe that the draft VSLs are not clearly defined. For example, it includes 5 minutes time frame as a lower VSL; is this a continuous 5 minute increment or it is an accumulated 5 minutes over a period? Again the GOP should follow the directives given by the TOP and VSL should be appropriately defined rather than as prescribed presently.</p>
<p>Response: The SDT thanks you for your comment. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage VSLs.</p> <p>Several commenters suggested similar revisions to the VSL. It was also suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p>		

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<p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
Liberty Electric Power	No	I agree with the comments submitted by Exelon regarding the use of time criteria in the VSLs for a requirement which does not have a time component.
<p><b>Response:</b> The SDT thanks you for your comment. Please see the response to Exelon’s comments.</p>		
Oklahoma Gas & Electric	No	The VSLs for R2 is too restrictive. The Lower VSL is applicable when a GOP is off its voltage or Reactive Power schedule for less than 5 minutes. While maintaining these schedules is important, we do not believe that the SDT intended for this requirement to have virtually zero-tolerance. We would request that the SDT reconsider the timeframes for the VRLs to be more reflective of the potential impact and be in line with those that are currently active for IROLs.
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p>		

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<p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
Brazos Electric Power Cooperative	No	Please see the formal comments submitted by ACES Power Marketing.
<p><b>Response:</b> The SDT thanks you for your comment. Please responses to the comments submitted by ACES.</p>		
JEA	No	<p>The VSLs changed using time and removed the percentages this change is unrealistic and have no merit to reliability.</p> <p>Footnote 3 states The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period. The footnote should state 'a tolerance band within which the target percentage value is to be maintained'. We recommend changing the VSL's back to percentages for both reactive power output and voltage.</p>
<p><b>Response:</b> The SDT thanks you for your comment. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove it. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage-based VSLs.</p>		

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<p>Exelon Corporation and its affiliates</p>	<p>No</p>	<p>The revisions made to R2 fail to address the concerns present. VAR-002 version 1.1b and as proposed revision requires that each GOP shall maintain the generator voltage or Reactive Power output as directed and Measure R2 further clarifies that each GOP shall have evidence to show it controlled its generator voltage or Reactive Power schedule to meet the voltage or Reactive Power schedule provided by the TOP. However, in certain situations, a GOP may not be able to meet the schedule because of system variations outside of the GOP’s control or internal operational constraints. In this situation, a GOP may be non-compliant with this requirement because of issues out of its control. This requirement should be revised to allow the GOP to contact the TOP when outside the schedule and to follow the TOP’s instruction. The revisions to R2 do not address this compliance concern. Exelon concedes that use of the word “schedule” in place of “output” in R2 is more accurate. The proposed VSLs associated with VAR-002 Requirement</p>



Organization	Yes or No	Question 1 Comment
		<p>R2 were revised on this draft to be contingent on a specified time limit for failure to meet the directed values of the generator voltage (or Reactive Power) schedule. This change to the VSL criteria is not reasonable, has no relation to increased reliability, and is not feasible to be implemented by most if not all Generator Operators. Voltage schedules are provided by the Transmission Operator or Transmission Owner (if delegated by the Transmission Operator) and vary from generator to generator based on the Transmission Operator/Owner methodology for maintaining system wide grid voltages and on generator location. Although it is an expectation that the voltage schedule be maintained, the voltage monitored is dynamic and regularly (and sometimes constantly) fluctuates. Once a Generator Operator has identified that the voltage has drifted outside of the voltage schedule, then it is reasonable to expect the Generator Operator to make timely adjustments (unless constrained by operating parameters) to bring the voltage back within the prescribed voltage schedule and to contact the Transmission Operator/Owner if attempts to bring the voltage back within the prescribed schedule are unsuccessful or not possible. It should be up to the discretion of the Transmission Operator/Owner, in consultation with the Generator Operator, to set the expectation for monitoring the voltage, time allowed to adjust the voltage back within band, and communications required in the event voltage cannot be brought back within the voltage schedule. The VSLs as currently proposed impose a time limit that has no technical justification or relation to increased reliability and is inconsistent with Requirement R2, which does not impose a time requirement. If approved as currently proposed, this Standard will require continual monitoring by a dedicated operator 24 hours a day/7 days a week/365 days a year. In addition, even if a dedicated operator is continuously monitoring, a Generator Operator will be in violation of the Standard if there is any deviation from the voltage schedule, regardless of the magnitude or duration of the voltage excursion or success of the operator in bringing the</p>

Organization	Yes or No	Question 1 Comment
		voltage back within the prescribed voltage schedule. Such a result is unreasonable and provides no increased level of reliability.
<p>Response: The SDT thanks you for your comment. The original VSLs addressed being off by certain percentages, however, the SDT discussed this prior to the last posting and decided to remove the percentage references. A voltage schedule may be conducive to a VSL that uses percentage deviations, but a Reactive Power schedule may not. In the case where the Reactive Power schedule is very small (e.g., 1 MVAR), it would be impossible for a Generator Operator to comply unless the tolerance band were quite large. The SDT believes that this sort of VSL would be impossible to craft given the varying schedules that could be developed. Therefore, the SDT decided to remove the percentage-based VSLs.</p> <p>Several commenters suggested similar revisions to the VSL. It was also suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p>Lower: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p>Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p>High: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p>Severe: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p> <p>The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		

Organization	Yes or No	Question 1 Comment
Kansas City Power & Light	No	<p>The VSL’s for Requirement 2 stipulate time frames that are within spans of time up to a maximum of 15 minutes. This is not a reasonable expectation and is not in alignment with Requirement 3 which stipulates a Generator Operator to notify its Transmission Operator within 30 minutes of a “status” or “capability” change. Requirement 3 allows the Generator Operator some time to determine a reactive production problem exists and to make a notification to the Transmission Operator. Requirement 2 should afford at least the same time for the Generator Operator to recognize a problem exists and to attempt to take corrective action to meet operating expectations. Recommend modifying the VSL for Requirement 2 as follows: Low at 30 minutes, Medium at 45 minutes, High at 60 minutes and Severe at 75 minutes or longer.</p>
<p><b>Response:</b> The SDT thanks you for your comment. Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</p> <p><b>Lower:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</p> <p><b>Moderate:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</p> <p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		

Organization	Yes or No	Question 1 Comment
Xcel Energy	No	<p>1) Xcel Energy appreciates that the SDT has attempted to address the concern about the ambiguity in the term “minimum load” by adding the words “continuously sustainable”, but we do not believe this solves the ambiguity since it is not a widely accepted industry term. Xcel believes that if the SDT wants to avoid ambiguity it will have to set an arbitrary load value (e.g. 30% of rated MW).</p> <p>2) Xcel Energy finds the VSL structure for Requirement R2 totally unworkable. The Lower VSL (less than five minutes) goes into effect for any deviation from the scheduled voltage band - even a one millisecond excursion would be a violation. The VSL, as written, would override any time allowance to correct for excursions given by the TOP in its Voltage Schedule provided to the GOP.</p>
<p><b>Response: The SDT thanks you for your comment.</b></p> <p><b>1) The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p> <p><b>2) Several commenters suggested similar revisions to the VSL. It was suggested that the timing elements of the VSLs be in-line with Requirement R3, which allows the Generator Operator 30 minutes to notify the Transmission Operator of changes in the status or capability of reactive resources. Requirement R2 does not build in a 30-minute window, as Requirement R3 does, so the SDT notes that the VSLs must apply after a violation has been identified and therefore the “floor” must be at zero (not 30 minutes). The SDT agrees that the timeframes in the VSL should be extended and has revised the timing elements of the VSLs as follows:</b></p> <p><b>Lower: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</b></p> <p><b>Moderate: When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</b></p>		

Organization	Yes or No	Question 1 Comment
<p><b>High:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</p> <p><b>Severe:</b> When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</p>		
ExxonMobil Research & Engineering	No	
Ingleside Cogeneration LP	Yes	Ingleside Cogeneration LP agrees that a clear linkage should be established between the voltage or Reactive Power schedule developed by the TOP in VAR-001-2 R4. This clarifies the intent of the requirement and is consistent with our standard operating procedures.
<p><b>Response:</b> The SDT thanks you for your comment.</p>		
Northeast Power Coordinating Council	Yes	
Duke Energy	Yes	
MRO NSEF	Yes	
Western Electricity Coordinating Council	Yes	
FirstEnergy	Yes	
Dominion	Yes	
Progress Energy	Yes	
Southern Company	Yes	

Organization	Yes or No	Question 1 Comment
Independent Electricity System Operator	Yes	
Entergy Services	Yes	
Public Service Enterprise Group	Yes	
Wisconsin Electric Power Company	Yes	
American Transmission Company	Yes	

**2. If you have any other comments on the SAR or on the proposed Standard that you have not provided above, please provide them here.**

**Summary Consideration:** The SDT received several suggestions for revisions to the language of the standard. The SDT believes that stakeholder consensus has been achieved with respect to standard language and does not believe further edits are necessary at this time. The SDT does acknowledge that there may be room for improvement in the language and will have these comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.

Organization	Yes or No	Question 2 Comment
Southern Company		<p>i) For clarity, we suggest the middle portion of the first bullet of R1 be revised as follows: "...mode pursuant to either a Real-time communication or a procedure that was previously provided to..."</p> <p>ii) We suggest seven changes to M1. First, that the first sentence of M1 be changed to replace "failed to" with "did not"; Second, insert "Real-time communication" in the second sentence between "no" and "notification"; Third, change "will have evidence" to "should have evidence" in the second sentence; Fourth, replace "notified" with "previously provided" in the second sentence; Fifth, change "of its procedure" to "a procedure" in the second sentence; Sixth, change "procedure for placing" to "procedure indicating the normal practice for placing" in the second sentence; Seventh, add "during start up and shut down periods" at the end of the second sentence. With these changes, the second sentence will read as follows: "If a generator is being started up or shut down with the automatic voltage control off and no Real-time notification of the automatic voltage regulator status is made to the TOP, the GOP should have evidence that it previously provided the TOP a procedure indicating the normal practice for placing the unit into automatic voltage control mode during start up and shut down periods."</p> <p>iii) Does the wording of the data retention section D1.2 indicate that an open ended number of years that the data for M1-M4 and M7 must be retained?</p>

Organization	Yes or No	Question 2 Comment
		<p>The current wording seems to indicate that all records for all time must be retained.</p> <p>iv) We suggest that the tardiness time frame given for the VSL for R2 more closely match the 30 minutes reporting time frame of requirement R3, and that the four thresholds for the various VSLs of R2 be 30 min, 45 min, 60 min, rather than 5, 10, and 15 min. Generating plant operators are responsible for many other things in addition to substation voltage.</p> <p>v) The word "directives" found in M3 should be changed to "directions" to eliminate possible confusion with a Reliability Directive".</p> <p>vi) The following phrase from R1 should be added to R3: "Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator,". This phrase permits a blanket notification serve as adequate communication of the switching of the AVR mode during start up or shutdown periods in lieu of the 30 minute notification.</p>
<p><b>Response: The SDT thanks you for your comment.</b></p> <p><b>i), ii), vi) The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p> <p><b>iii) The intent is for the current year and previous year. The item has been revised to make this clear.</b></p> <p><b>iv) The SDT concurs and has made the suggested revision to the VSLs.</b></p> <p><b>v) The SDT concurs and has corrected the error.</b></p>		
Ameren		<p>(1) We would recommend that requirements not be addressed as footnotes. However, If the SDT elects to choose this approach and provide footnotes as requirements then we recommend Requirement 1, footnote 3 should include</p>



Organization	Yes or No	Question 2 Comment
		<p>“...specified period as directed by the Transmission Operator” at the end.</p> <p>(2) To keep the generator operators out of double jeopardy, we suggest the SDT to consider the following modified language for Measure M1 : The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no specific notification regarding automatic voltage control mode is made to the Transmission Operator, the Generator Operator will have evidence that it previously provided the Transmission Operator of its procedure for placing the unit into/or out of, automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Western Electricity Coordinating Council</p>		<p>As indicated by our Affirmative vote, we agree that the revisions add clarity. However, from an auditing and enforcement perspective, the term “minimum continuously sustainable load” in foot note R1 is not defined and leaves too much room for open interpretation and inconsistent auditing. For instance, does the term mean a time constant is applied that they are able to sustain it for 1 min or 1 hr, or is it a set and fixed number? It would be clearer and more manageable to audit to have a bench mark that state: the minimum continuously sustainable load is a load that is set by the GOP and agreed upon by the GOP and TOP.</p>
<p><b>Response: The SDT thanks you for your comment. While the suggestion is outside the scope of the SAR for this project, the SDT will have your comment included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of</b></p>		

Organization	Yes or No	Question 2 Comment
<p><b>work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>American Transmission Company</p>		<p>ATC endorses and supports the comments submitted by the MRO NERC Standards Review Forum (NSRF).</p>
<p><b>Response: The SDT thanks you for your comment. Please see responses to MRO NSRF comments.</b></p>		
<p>Florida Municipal Power Agency</p>		<p>Constellation is essentially asking "what does 'notify' mean as used in the standard", and asking if previously arranged operating procedures between the GOP and TOP is notification, including operating for start-up and shutdown of a unit during which an AVR would be put into manual mode. An interpretation of what 'notify' means as used in the standard is more appropriate as opposed to changing the standard. The response to the request is too specific and introduces new terms into the standards that are ambiguous and will cause confusion depending on the type of generator being considered (e.g., start-up and shutdown), possibly spurring additional requests for interpretation of what start-up and shutdown mean for, say, a wind or solar farm, etc. In addition, while R1 has become clearer as to the intent, it leaves R3 unclear with the same question concerning the word 'notify'. An interpretation essentially saying that pre-arranged, conditional notification, between the GOP and TOP acts as notification in regards to both R1 and R3 is a preferably approach to a rapid revision (e.g., every time the unit is on outage, the AVR is out of service; every time the unit is below XX MW of output, the AVR is in manual mode, etc.).</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Exelon Corporation and its affiliates</p>		<p>Content of the proposed Standard: o Constellation requested in their interpretation request that Requirement 1 be interpreted to clarify the expectation and communication of having an automatic</p>

Organization	Yes or No	Question 2 Comment
		<p>voltage regulator in manual (or automatic) during the start up and shut down sequences of a generating unit. Defining the terms “start up” and “shut down” was not part of the request and creates more confusion than it resolves. The proposed definitions in the footnotes are unclear and vague.</p> <p>o The first problem with Footnote 1 concerns the term “ramped up” that remains in the language. This is an unnecessary qualifier. Secondly, the term “minimum” is too vague. The minimum in a generator user manual may be different than the minimum defined in a start up procedure. Footnote 2 attempts to define shut down of a unit. However, the definition used is only one of numerous ways a unit may be brought offline. Every unit has a unique sequence in which it is shut down. Therefore, Footnote 2 is too prescriptive.</p> <p>o Furthermore, the footnotes are not consistent with those in VAR-001. This revision stands to create further confusion relative to VAR-001.</p> <p>Process Concerns:</p> <p>o Exelon/Constellation reiterates the process concerns raised in the previous comment period. The use of a rapid revision project in place of an interpretation was misguided and misrepresented.</p> <p>o The response to comments does not sufficiently address the process concerns raised. It does not justify using an alternative process to the interpretation process. The Constellation request for interpretation kept with the BOT direction by being restricted to the words contained in the standard. Constellation’s explanation of concerns with VAR-001 and VAR-002 should have sufficiently illustrated that a “small adjustment to the wording” as allowed within a rapid revision was inappropriate. In general, the details of what constitutes this rapid revision process are not clearly defined. It is unclear what criteria are used to judge an issue to determine its qualification for rapid revision. It is unclear who makes the judgments. This new process is under utilization without proper rollout or justification and appears to be used in place of approved and better understood processes. The Standard Committee</p>

Organization	Yes or No	Question 2 Comment
		<p>elected to pursue the rapid revision process without understanding the interpretation request and without support of the interpretation requester.</p> <p>o As Constellation pointed out, there was a narrow question that an interpretation could have addressed while Project 2008-01 organized around the larger issues present in VAR-001 and VAR-002. Exelon/Constellation is optimistic that Project 2008-01 is able to efficiently and effectively address the problematic language in VAR-001 and VAR-002 and that NERC provide resources to Project 2008-01 to enable development of revision proposals in a timely manner.</p>
<p><b>Response:</b> The SDT thanks you for your comment.</p> <p><b>Content of the proposed Standard:</b> The SDT disagrees that the footnotes create confusion. The large majority of stakeholders support the use of the footnotes. Regarding the footnotes in VAR-002 matching those of VAR-001, the SDT included footnote 3 in VAR-002 to ensure the linkage between the VAR-001 and VAR-002. The language of the footnote in VAR-002 was changed for two reasons: First, the footnote in VAR-001 did not contain language about the Reactive Power schedule, which is clearly stated in the Requirement. Second, including the footnote in VAR-002 as worded in VAR-001 did not provide the necessary linkage between the two standards. The revised footnote 3 addresses both of these issues.</p> <p><b>Process Concerns:</b> The SDT recognizes that Exelon and Constellation have merged since this project began. The Standards Committee agreed to use the existing Rapid Revision process to address this interpretation request in January 2012. This was done with the consent of the requestor. It should be noted that the Rapid Revision process is limited in scope by the SAR and helps avoid having multiple interpretations attached to a standard such as the case with VAR-002.</p>		
Dominion		<p>Dominion maintains that the existing standard language is clear and the revision of Requirement 1 and the addition of footnotes 1 &amp; 2 are unnecessary.</p>
<p><b>Response:</b> The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</p>		

Organization	Yes or No	Question 2 Comment
Entergy Services		<p>Entergy continues to believe R1 of this draft standard places undue burden and requirements on Transmission Operators and adds uncertainty on the operation of the BES. Therefore, we again submit our comments here that we submitted in response to the last posting of this draft standard: Entergy - believes the Transmission Operator should not be required to have, be required to update or maintain, nor be required to know the startup / shutdown procedures of all of the generators connected to its system. TOPs should not be required to dig through a procedure to find out if the AVR “should be” in manual or automatic mode during startup or shutdown. We also think it is not the best operation of the system for the TOP to “assume” the status of the AVR. All of the proposed changes, especially the provision of startup / shutdown procedures, places additional burdens on the TOP. These burdens also place unwritten requirements on the TOP which auditors will definitely “explore” during the next review, in any form, of the TOP. We view the requirement that the TOP receive the startup / shutdown procedures as placing new requirements on the TOP, in violation of the Interpretation process. Per Constellation in its Request for Interpretation “A generator operator already communicates to the TOP that the unit is being started up or shutting down.”. It would appear that a GOP could include in its procedures a requirement that the TOP be informed of the status of the AVR when the GOP is communicating to the TOP that the unit is starting up or shutting down. TOPs only want to know the status of a generating unit’s AVR, is it in automatic or manual mode. That information can be provided when the startup / shutdown information is being communicated. Therefore we recommend the following changes to VAR-002-2b: Delete both of the new bullet points added to R1, including associated footnotes. Delete:   <ul style="list-style-type: none"> <li>• That the unit is being operated in start-up1 or shutdown2mode pursuant to a procedure previously provided to the Transmission Operator; or</li> <li>o That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown. And:1 Start-up is deemed to have ended when the unit is ramped up to its minimum load and the unit is preparing for continuous operation. 2 Shutdown is deemed to begin when the unit is ramped down to its minimum load and the unit is preparing to go offline. Also</li> </ul> </p>

Organization	Yes or No	Question 2 Comment
		<p>delete the new wording in M1: If a generator is being started up or shut down with the automatic voltage control off and no notification to the Transmission Operator is made, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues data base for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Ingleside Cogeneration LP</p>		<p>Ingleside Cogeneration LP appreciates the additional precision the project team has added to VAR-002-2b R1 and R2. We believe this will help drive consistent auditor findings - which have been inconsistent across the Regions. In addition, the allowance of blanket pre-notifications is a powerful means to address routine operating communications. Although each is important, many are so routine that it is easy to miss one. Too many times, this has resulted in a violation even if the AVR was properly online during generator start-up or shut-down - as the GOP cannot prove their compliance. However, we are concerned that the ERO is expending so much energy to address a topic which has questionable reliability benefit. There is no evidence that offline AVRs during generator start-up and shut-down have led to a BES event or extended its scope. Instead, this feels like an over-extended interpretation of a requirement well beyond its original intent. (We are aware that NERC’s Compliance Team began this process in CAN-022, but they are not supposed to drive the interpretations process.) Because of this factor, we cannot support this Interpretation of VAR-002. FERC has begun to recognize that low-priority tasks are consuming the attention of industry stakeholders and has asked for examples of requirements which distract from those which are far more critical. Frankly, we believe this is an example of such a distraction and will be providing that feedback to</p>

Organization	Yes or No	Question 2 Comment
		them.
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
ExxonMobil Research & Engineering		<p>NERC has already established an SDT to review and modify the VAR standards. By stepping outside the normal process for drafting standards, regardless of the intent or end product, NERC is setting a precedent for superseding a pre-qualified SDT and the ANSI approved process for drafting standards. For the time being, a Generator Operator’s compliance with its Transmission Operator’s established scheduling process or a Generator Operator’s verbal notification to the Transmission Operator that a unit is being brought online or offline and is in manual control should be sufficient notification that its AVR is not in service.</p>
<p><b>Response: The SDT thanks you for your comment. Members of the pre-qualified SDT were responsible for developing this rapid revision of VAR-002. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
Duke Energy		<p>NERC’s CAN Process document dated April 2012 states on page 8 under section J that “CANs are retired when a revised standard or interpretation that addresses the compliance application issue in the CAN is approved by FERC and is enforceable”. The SDT should take this opportunity to fully incorporate CAN-0022 into the standard and retire CAN-0022. In our March 23 comments, we pointed out that the SDT’s proposed revision to the standard did not go far enough to resolve the request for interpretation. While the proposed revision does provide clarification that manual AVR status can be communicated via a start-up or shutdown procedure notification (as does CAN-0022), this change alone does not relieve the GOP from the existing 30-</p>

Organization	Yes or No	Question 2 Comment
		<p>minute notification requirement under R3. Approved CAN-0022 allows the GOP to provide a blanket advance notification to the TOP in lieu of separate notifications for each change in status. In this instance, Constellation sought clarification of R1 as to whether or not a communication must be conducted between a GOP and TOP during start-up or shutdown of a generator. Thus we see a direct connection to CAN-0022 and R3 as well as R1. We agree with the SDT’s proposed change to R1 which provides for two different types of notification from the GOP to the TOP for situations when the unit is not being operated in automatic voltage control mode. The Standard Drafting Team should take this opportunity to fully incorporate the provisions of CAN-0022 into the standard, and retire CAN-0022. The following phrase from R1 should be added at the beginning of R3: “Unless the Generator Operator has notified the Transmission Operator that the unit is being operated in start-up or shutdown mode pursuant to a procedure previously provided to the Transmission Operator.” If this or a similar change to R3 is not made, then CAN-0022 cannot be retired.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
MRO NSRF		<p>Please consider the following NSRF comments. Several commenters in the last posting expressed concern about the footnotes that seemed to attempt to define startup and shutdown. One of the standard drafting team responses included the following: “Flexibility has been given to the generator operators to provide documentation to the TOP that allows the GO to define the start-up, shut-down parameters for any particular generator” To better clarify that the operator is allowed to define start-up and shutdown parameters , the following change is recommended to R1: R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the</p>



Organization	Yes or No	Question 2 Comment
		<p>following:</p> <ul style="list-style-type: none"> <li>o That the generator is being operated in start-up or shutdown pursuant to a Real-time communication</li> <li>o That the generator is being operated in accordance with a start-up or shutdown procedure that was previously provided to the Transmission Operator</li> <li>o That the generator is not being operated in the automatic voltage control mode for a reason other than start-up, shutdown. With this change to R1 and the intent indicated in the above comments from the drafting team, the footnotes should not be needed. By stating (and it will be viewed by the industry as defining) what “start up and shut down” is, the SDT is expanding the technical issues. The drafting team should not attempt to define, start up, shut down, ramp up, or ramp down or place those words within a Requirement. (Note that within the PJM market, ramp is something that is associated with a schedule where by a GOP may not “ramp up” until five minutes before top of the hour but could be on line producing real and reactive power. The use of “ramp” within foot note 1 and 2 is ambiguous and will cause confusion.) There are too many different generator designs within our industry for the SDT to capture all possibilities by simply adding the proposed foot notes and bullets. In addition, whenever a foot note is used to clarify a Requirement, the Requirement becomes more ambiguous. Recommend that foot note 1 and 2 be deleted since they only provide examples to a certain type of generator. The SDT needs to write the Requirement whereby it can be universally used by all applicable entities. The NSRF recommends that R3 is clearly suited for incorporation of the requested interpretation. R3.1 is written to capture “...status or capacity changes on any generator...”, such as when a generator is not in the desired voltage response mode. The NSRF recommends R3 to be rewritten to capture the intent of the interpretation to read: R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes unless advanced notification has been provided of any of the following: (note: underlined words have been added by the NSRF) The noted “advance notification” will allow GOPs to establish an individual process for each generators that do not comply with R1 or fall within scope of R2. This will also allow GOPs and TOPs on how this advance warning is to be provided. It may be via written procedure, a mutually agreed</li> </ul>

Organization	Yes or No	Question 2 Comment
		<p>SCADA point, etc. NERC has allowed stakeholders the authority to design their own programs based on their asset characteristics as in FAC-008, CIP-002, EOP-001, etc. The SDT should allow each applicable entity within this Standard the same authority. Delete the words “and the expected duration” to R3.1 and 3.2. Since this is a revision to the standard, the drafting team should consider deletions as wells as additions. The NSRF contends that the words “and the expected duration” provide no practical Bulk Electric System reliability benefit and should be removed. The TOP can request any “duration” during real time notification or by advance notice. Delete all added material to M1 or have M1 match revised wording in R1. Revise any VRFs or VSLs appropriately.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
Brazos Electric Power Cooperative		Please see the formal comments submitted by ACES Power Marketing.
<p><b>Response: The SDT thanks you for your comment. Please see responses to ACES’s comments.</b></p>		
Progress Energy		<p>progress Energy does not agree with the SDT definition of "Shutdown" and would propose the following. Shutdown - Unit load being decreased in local plant control with the intent to come offline with the unit. The reasoning is generators (i.e.CTs) will be given the order to shutdown when at various load levels including full load, and at which point the TOP will no longer rely on that unit for voltage control.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		

Organization	Yes or No	Question 2 Comment
Wisconsin Electric Power Company		<p>R1: The modifications to R1 do not serve to clarify the intent, but only make this standard more complex than it needs to be. We strongly assert that the standard is not an appropriate place to define the terms “start-up” and “shutdown”. Such definitions also have little meaning for facilities like wind farms and other intermittent resources. We also object to the requirement for either a “Real-time communication” or a “procedure” to be provided by the GOP to the TOP. There is no clear reliability-driven need to provide a procedure, which by definition is usually a more detailed and complex document. A simple “notification” by the GOP to the TOP of the circumstances and estimated timeframe that may require a generator being in an AVR mode other than Automatic is sufficient to assure coordination between the GOP and the TOP as it relates to the generator AVR status. We suggest that R1 be revised to remove the two bullets and add new wording as follows: The GOP shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (AVR in-service and controlling voltage) unless the GOP has notified the TOP (...SUGGESTED WORDING FOLLOWS...) "in advance by a Real-time communication or other previous notification." Likewise, we propose that M1 be revised to remove the 2nd sentence, which refers to startup or shutdown procedures. The 3rd sentence should be expanded to include "manual or electronic log entries."</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
ReliabilityFirst		<p>ReliabilityFirst votes in the Negative for this standard because the revision to standard does not address or include the TOPs acknowledgment of the receipt of the GOPs procedure (for the start-up/shutdown of their generator). ReliabilityFirst offers the following comments for consideration:1. ReliabilityFirst fundamentally agrees that the included bullets somewhat resolve the issue raised in the interpretation</p>

Organization	Yes or No	Question 2 Comment
		<p>request, though believes the first bullet is missing one key component. ReliabilityFirst believes it is crucial for the TOP to acknowledge receipt of the GOPs procedure for start-up/shutdown of their generators. Without required TOP acknowledgment of receipt of the procedure, there is a chance that vital information may not be communicated which could result in voltage levels, reactive flows, and reactive resources not being maintained.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
American Electric Power		See response to Question #1.
<p><b>Response: The SDT thanks you for your comment. Please see responses to question 1 comments.</b></p>		
Wisconsin Electric dba We Energies		<p>The Time Horizon for R1 is Real-time Operation, so it is reasonable to assume that the notifications in R1 take place in Real-time. R1 is worded such that even if a procedure was previously provided to the TOP as stated in the first bullet, a Real-time communication must be made to the TOP each time during startup or shutdown if the AVR is not in voltage control mode (AVR in service and controlling voltage). Please clarify that if the TOP has been provided a procedure, a Real-time communication is not necessary.</p>
<p><b>Response: The SDT thanks you for your comment. Your assessment is correct. If the TOP has been provided a procedure, a Real-time communication is not necessary.</b></p>		
Oklahoma Gas & Electric		<p>The VAR standards need to be updated to bring the language in line with the latest technologies in use today; i.e., incorporate language to cover non-synchronous generators and other resources. We also are in strong support of an exemption for power system stabilizer status during generator startup and shutdown (covered in</p>

Organization	Yes or No	Question 2 Comment
		R3) should be incorporated into the standard.
<p><b>Response: The SDT thanks you for your comment. The SDT acknowledges that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>PPL Corporation NERC Registered Affiliates</p>		<p>TO-issued voltage schedules for our entities, and probably everywhere, are tighter than the max and min limits that the TO and TOP themselves seek to maintain. It makes sense that firstly all generation plants should do what they can within the equipment limits, after which the TO/TOP take system-wide action; but a single generation plant is oftentimes not able to pull its node of the grid into compliance with the TO-issued voltage schedule during periods of high or low demand. It is unrealistic to assume that unanimity of GO actions occurs automatically as a result of VAR-002 requirements. The only means of getting all plants to pull together is through TO/TOP verbal directives. VAR-002 as presently written and in the proposed update (version 2b) sets a nearly impossible task in placing the entire burden of maintaining the schedule on each individual GO. To make matters worse, some TOs may set a bandwidth for GOs only a fraction of the amount the max/min variation that they themselves seek to maintain. It may be necessary to rewrite VAR-002 completely to address some fundamental issues with the current compliance approach.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Alliant Energy</p>		<p>We do not agree with the proposed revisions to R1. R1, in our opinion, was well-written and adding the footnotes did nothing to clarify it. The SDT is making the effort to define start-up and shutdown, but we believe each individual GOP needs to define that.</p>

Organization	Yes or No	Question 2 Comment
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>SPP Standards Review Group</p>		<p>We generally agree with the proposed changes to R1 and R2 in the standard. That said, we do believe that the VAR standards need to be updated to bring the language into line with the latest technologies in use today, i.e. to incorporate language to cover non-synchronous generators and other resources. We recognize that this is beyond the scope of Project 2011-INT-02 but feel the standard needs a good review and update. We also believe that an exemption for power system stabilizer status during generator start-up and shutdown, covered in R3, should be incorporated into the standard.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the Project 2008-01 drafting team to consider in its revisions to the standard.</b></p>		
<p>Public Service Enterprise Group</p>		<p>We suggest the following changes in R1: Capitalized terms are additional language.1. Modify the opening paragraph:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator [DELETE “of one of the following”] OF THE CONDITIONS IN R1.1 OR R1.2: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations] RATIONALE: Added new language to refer to renumbered bullets - see below.2. Change the “bullets” to subparts as follows, delineating the information in the first bulletR1.1 That the generator is being operated in start-up [footnote 1] or shutdown [footnote 2] mode pursuant to:R1.1.1 A Real-time communication, or R1.1.2 A procedure that was previously provided to</p>

Organization	Yes or No	Question 2 Comment
		<p>the Transmission Operator; HOWEVER, AFTER THE PROCEDURE HAS BEEN PROVIDED, NO NOTIFICATION IS REQUIRED BY THE GENERATOR OPERATOR FOR EACH SUBSEQUENT START-UP OR SHUTDOWN.R1.2 That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.3. Summary of 1 and 2:R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage), unless the Generator Operator has notified the Transmission Operator [DELETE “of one of the following”] OF THE CONDITIONS IN R1.1 OR R1.2: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]R1.1 That the generator is being operated in start-up [footnote 1] or shutdown [footnote 2] mode pursuant to:R1.1.1 A Real-time communication, or R1.1.2 A procedure that was previously provided to the Transmission Operator; HOWEVER, AFTER THE PROCEDURE HAS BEEN PROVIDED, NO NOTIFICATION IS REQUIRED BY THE GENERATOR OPERATOR FOR EACH SUBSEQUENT START-UP OR SHUTDOWN. R1.2 That the generator is not being operated in the automatic voltage control mode for a reason other than start up or shutdown.4. Change the footnotes as follows:[1] Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load (AS DEFINED BY THE GENERATOR OPERATOR IN R1.1.1 OR IN R.1.1.2) and the generator is prepared for continuous operation. THE GENERATOR OPERATOR SHALL REPORT CHANGES IN THE AUTOMATIC VOLTAGE CONTROL MODE STATUS AT THE END OF START-UP PER R3.[2] Start-up is deemed to have ended when the generator is ramped down to its minimum continuously sustainable load (AS DEFINED BY THE GENERATOR OPERTOR IN R1.1.1 OR IN R.1.1.2) and the generator is prepared to go off-line. THE GENERATOR OPERATOR SHALL REPORT CHANGES IN THE AUTOMATIC VOLTAGE CONTROL MODE STATUS AT THE END OF SHUTDOWN PER R3.</p>
<p><b>Response: The SDT thanks you for your comment. The SDT believes that stakeholder consensus has been achieved with respect to standard language. The SDT does acknowledge that there may be room for improvement in the language and will have your comments included in the NERC Issues Database for the VAR-002 standard. This will be included in the scope of work for the</b></p>		

Organization	Yes or No	Question 2 Comment
<b>Project 2008-01 drafting team to consider in its revisions to the standard.</b>		
Independent Electricity System Operator		The IESO supports the revised standard.
<b>Response: The SDT thanks you for your comment.</b>		
FirstEnergy		FirstEnergy supports the revisions and thanks the drafting team for their hard work.
<b>Response: The SDT thanks you for your comment.</b>		
Bonneville Power Administration		BPA thanks you for the opportunity to provide comments on Project 2011-INT-02 Interpretation of VAR-002 for Constellation. At this time BPA has no comments or concerns.
<b>Response: The SDT thanks you for your comment.</b>		

END OF REPORT



### **Standard Development Roadmap**

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

#### **Development Steps Completed:**

1. SAR and proposed standard drafted and approved for posting (January 2012).
2. SAR and draft standard posted for a 45-day concurrent formal comment period and initial ballot February 8 – March 23, 2012.
3. Draft standard posted for a 30-day concurrent formal comment period and successive ballot May 22 – June 27, 2012. The comment period and ballot were extended one week due to issues with stakeholder notification.

#### **Proposed Action Plan and Description of Current Draft:**

This is the third draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes non-substantive changes to Measure M3, Data Retention Section, item 1.2 (second paragraph) and a revision to the Lower VSL for Requirement R2; and is being submitted for a 10-day recirculation ballot.

#### **Future Development Plan:**

<b>Anticipated Actions</b>	<b>Anticipated Date</b>
1. Develop responses to ballot comments and make non-substantive revisions to the standard.	June-July 2012
2. Post responses to comments and conduct recirculation ballot, including non-binding poll on VSLs.	July 2012
3. BOT adoption.	August 2012
4. File with regulatory authorities.	October 2012

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this may lead to a change in the associated Facility Ratings.

output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - R3.1.** 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.
  - R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
  - R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
    - R4.1.1.** Tap settings.
    - R4.1.2.** Available fixed tap ranges.
    - R4.1.3.** Impedance data.
    - R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
  - R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### **C. Measures**

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.

- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator’s direction as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

**1.2. Data Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 4 and Measure 7 for the current and previous calendar year.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measures 5 and 6)

The Compliance Monitor shall retain any audit data for three years.

**1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

- Compliance Audit**
- Self-Certification**
- Spot Checking**
- Compliance Investigation**
- Self-Reporting**
- Complaint**

**1.4. Additional Compliance Information**

None

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1

**Standard VAR-002-2b — Generator Operation for Maintaining Network Voltage Schedules**

			R3.1 or R3.2	and R3.2
R4.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
2b	TBD	Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.	Revised



## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## **Appendix 2**

### **Interpretation of VAR-002-1a**

**Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

### Standard Development Roadmap

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

#### Development Steps Completed:

1. SAR and proposed standard drafted and approved for posting (January 2012).
- ~~2.~~ SAR and draft standard posted for a 45-day concurrent formal comment period and initial ballot February 8 – March 23, 2012.
- ~~2.3.~~ Draft standard posted for a 30-day concurrent formal comment period and successive ballot May 22 – June 27, 2012. The comment period and ballot were extended one week due to issues with stakeholder notification.

#### Proposed Action Plan and Description of Current Draft:

This is the ~~second~~third draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes ~~previously approved Time Horizons, Violation Risk Factors, and Violation Severity Levels as well as revisions to R2 and its VSLs~~non-substantive changes to Measure M3, Data Retention Section, item 1.2 (second paragraph) and a revision to the Lower VSL for Requirement R2; and is being submitted for a ~~130-day concurrent formal comment period and successive~~recirculation ballot.

#### Future Development Plan:

Anticipated Actions	Anticipated Date
<del>1. Develop responses to comments and develop second version draft standard.</del>	<del>March – April 2012</del>
<del>2. Post response to comments and conduct successive ballot.</del>	<del>May – June 2012</del>
<del>3.</del> <u>13.</u> Develop responses to ballot comments <u>and make non-substantive revisions to the standard.</u>	June-July 2012
<del>4.</del> <u>24.</u> Post responses to comments and conduct recirculation ballot, <u>including non-binding poll on VSLs.</u>	July 2012
<del>5.</del> <u>35.</u> BOT adoption.	August 2012
<del>6.</del> <u>46.</u> File with regulatory authorities.	October 2012

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-2b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.
5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this may lead to a change in the associated Facility Ratings.

output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.

- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
  - R3.1.** 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.
  - R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
  - R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
    - R4.1.1.** Tap settings.
    - R4.1.2.** Available fixed tap ranges.
    - R4.1.3.** Impedance data.
    - R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
  - R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### C. Measures

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.
- M2.** The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.

- M3.** The Generator Operator shall have evidence to show that it responded to the Transmission Operator’s direction~~on~~yes as identified in Requirement 2.1 and Requirement 2.2.
- M4.** The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5.** The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6.** The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement 5.
- M7.** The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn’t comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement 5.1.

## **D. Compliance**

### **1. Compliance Monitoring Process**

#### **1.1. Compliance Monitoring Responsibility**

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

#### **1.2. Data Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 4 and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measures 5 and 6)

The Compliance Monitor shall retain any audit data for three years.

#### **1.3. Compliance Monitoring and Enforcement Processes:**

**The following processes may be used:**

**Compliance Audit**

**Self-Certification**

**Spot Checking**

**Compliance Investigation**

**Self-Reporting**

**Complaint**

#### **1.4. Additional Compliance Information**

None



2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
R2.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for <u>-up to and including 45</u> minutes <del>or less</del> .	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than <u>45</u> minutes up to and including <u>640</u> minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than <u>640</u> minutes up to and including <u>+75</u> minutes.	When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than <u>45-75</u> minutes. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.
R3.	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1

**Standard VAR-002-2b — Generator Operation for Maintaining Network Voltage Schedules**

			R3.1 or R3.2	and R3.2
R4.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
R5.	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
R5.1.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
2b	TBD	Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.	Revised

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## Appendix 2

### Interpretation of VAR-002-1a

**Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

**Standard Development Roadmap**

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

**Development Steps Completed:**

1. SAR and proposed standard drafted and approved for posting (January 2012).
2. SAR and draft standard posted for a 45-day concurrent formal comment period and initial ballot February 8 – March 23, 2012.
3. Draft standard posted for a 30-day concurrent formal comment period and successive ballot May 22 – June 27, 2012. The comment period and ballot were extended one week due to issues with stakeholder notification.

**Proposed Action Plan and Description of Current Draft:**

This is the third draft of the proposed standard to address an interpretation request by Constellation. The draft standard includes non-substantive changes to Measure M3, Data Retention Section, item 1.2 (second paragraph) and a revision to the Lower VSL for Requirement R2; and is being submitted for a 10-day recirculation ballot.

**Future Development Plan:**

<b><u>Anticipated Actions</u></b>	<b><u>Anticipated Date</u></b>
<u>1. Develop responses to ballot comments and make non-substantive revisions to the standard.</u>	<u>June-July 2012</u>
<u>2. Post responses to comments and conduct recirculation ballot, including non-binding poll on VSLs.</u>	<u>July 2012</u>
<u>3. BOT adoption.</u>	<u>August 2012</u>
<u>4. File with regulatory authorities.</u>	<u>October 2012</u>

## A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-~~1.1b2b~~
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
  - 4.1. Generator Operator.
  - 4.2. Generator Owner.

~~5. **Effective Date:** Immediately after approval of applicable regulatory authorities.~~

5. **Effective Date:** In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

## B. Requirements

- R1.** The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator ~~of one of the following:~~ *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- That the generator is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
  - That the generator is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.
- R2.** Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power ~~output~~ schedule<sup>3</sup> (within applicable Facility Ratings<sup>4</sup>) as directed by the Transmission Operator. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*

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<sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.

<sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.

<sup>3</sup> The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.

<sup>4</sup> When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this ~~will~~ may lead to a change in the associated Facility Ratings.



- R2.1.** When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
- R2.2.** When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3.** Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*
- R3.1.** 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.
- R3.2.** A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4.** The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. *[Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]*
- R4.1.** For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
- R4.1.1.** Tap settings.
- R4.1.2.** Available fixed tap ranges.
- R4.1.3.** Impedance data.
- R4.1.4.** The +/- voltage range with step-change in % for load-tap changing transformers.
- R5.** 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: Medium] [Time Horizon: Real-time Operations]*
- R5.1.** If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

### C. Measures

- M1.** The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1. *If a generator is being started up or shut down with the automatic voltage control off and no notification of the automatic voltage regulator status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode. Such evidence must include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached.*

- M2. The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.
- M3. The Generator Operator shall have evidence to show that it responded to the Transmission Operator's ~~directives~~direction as identified in Requirement 2.1 and Requirement 2.2.
- M4. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.
- M5. The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4
- M6. The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator's documentation as identified in Requirement 5.
- M7. The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn't comply with the Transmission Operator's step-up transformer tap specifications as identified in Requirement 5.1.

## D. Compliance

### 1. Compliance Monitoring Process

#### 1.1. Compliance Monitoring Responsibility

~~For entities that do not work for the Regional Reliability Organization.~~

~~1.3. Entity, the Regional Entity shall serve as the Compliance Monitoring Period and Reset Time Frame Enforcement Authority.~~

~~One calendar year~~For functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

#### 1.4.1.2. Data Retention

~~The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.~~

~~The~~ Generator Operator shall maintain evidence needed for Measure 1 through Measure 5 and Measure 7 for the current and previous calendar yearsyear.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. ~~(Measure(Measures 5 and 6))~~

The Compliance Monitor shall retain any audit data for three years.

#### 1.3. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

**1.5.1.4. Additional Compliance Information**

~~The Generator Owner and Generator Operator shall each demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.~~

None

**2. Violation Severity Levels of Non-Compliance for Generator Operator**

~~2.1. Level 1: There shall be a Level 1 non-compliance if any of the following conditions exist:~~

~~2.1.1 One incident of failing to notify the Transmission Operator as identified in, R3.1, R3.2 or R5.1.~~

~~2.1.2 One incident of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.2. Level 2: There shall be a Level 2 non-compliance if any of the following conditions exist:~~

~~2.2.1 More than one but less than five incidents of failing to notify the Transmission as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.2.2 More than one but less than five incidents of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.3. Level 3: There shall be a Level 3 non-compliance if any of the following conditions exist:~~

~~2.3.1 More than five but less than ten incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.3.2 More than five but less than ten incidents of failing to maintain a voltage or reactive power schedule (R2).~~

~~2.4. Level 4: There shall be a Level 4 non-compliance if any of the following conditions exist:~~

~~2.4.1 Failed to comply with the Transmission Operator's directives as identified in R2.~~

~~2.4.2 Ten or more incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.~~

~~2.4.3 Ten or more incidents of failing to maintain a voltage or reactive power schedule (R2).~~

**3. Levels of Non-Compliance for Generator Owner:**

~~3.1.1 Level One: Not applicable.~~

~~3.1.2 Level Two: Documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage was missing two of the data types identified in R4.1.1 through R4.1.4.~~

~~3.1.3 Level Three: No documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage~~

~~3.1.4 Level Four: Did not ensure generating unit step-up transformer settings were changed in compliance with the specifications provided by the Transmission Operator as identified in R5.~~

R.#	Lower VSL	Moderate VSL	High VSL	Severe VSL
<u>R1.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity did not operate each generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.</u>

<p><u>R2.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for up to and including 45 minutes.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 45 minutes up to and including 60 minutes.</u> <u>OR</u> <u>When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</u> <u>OR</u> <u>The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 60 minutes up to and including 75 minutes.</u></p>	<p><u>When directed by the Transmission Operator to maintain the generator voltage or reactive power schedule the Generator Operator failed to meet the directed values for more than 75 minutes.</u> <u>OR</u> <u>When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator Operator failed to provide an explanation of why the voltage schedule could not be met.</u></p>
<p><u>R3.</u></p>	<p><u>N/A</u></p>	<p><u>N/A</u></p>	<p><u>The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either R3.1 or R3.2</u></p>	<p><u>The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1 and R3.2</u></p>
<p><u>R4.</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u> <u>OR</u> <u>The information was</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4</u> <u>OR</u></p>	<p><u>The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4</u> <u>OR</u></p>

**Standard VAR-002-1.1b2b — Generator Operation for Maintaining Network Voltage Schedules**

	<u>provided in more than 30, but less than or equal to 35 calendar days of the request.</u>	<u>OR</u> <u>The information was provided in more than 35, but less than or equal to 40 calendar days of the request.</u>	<u>The information was provided in more than 40, but less than or equal to 45 calendar days of the request.</u>	<u>The information was provided in more than 45 calendar days of the request.</u>
<u>R5.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity failed to ensure that transformer tap positions were changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.</u>
<u>R5.1.</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The responsible entity failed to notify the Transmission Operator and to provide technical justification.</u>

**E. Regional Differences**

None identified.

**F. Associated Documents**

1. Appendix 1 — Interpretation of Requirements R1 and R2 (August 1, 2007).

**Version History**

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised
<u>2b</u>	<u>TBD</u>	<u>Revised R1 to address an Interpretation Request. Also added previously approved VRFs, Time Horizons and VSLs. Revised R2 to address consistency issue with VAR-001-2, R4.</u>	<u>Revised</u>

## Appendix 1

### Interpretation of Requirements R1 and R2

#### Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?



**Interpretation:**

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

**Interpretation:** No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

**Interpretation:** Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

## Appendix 2

### Interpretation of VAR-002-1a

**Request:**

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

**Response:** All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

## Implementation Plan

### Project 2011-INT-02 Interpretation of VAR-002 for Constellation

#### **Implementation Plan for VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules**

##### **Approvals Required**

VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules

##### **Prerequisite Approvals**

None

##### **Revisions to Glossary Terms**

None

##### **Applicable Entities**

Generator Operator

Generator Owner

##### **Conforming Changes to Other Standards**

None

##### **Effective Dates**

In those jurisdictions where regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after applicable regulatory approval or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

##### **Retirements**

VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules should be retired at midnight of the day immediately prior to the Effective Date of VAR-002-2b in the particular jurisdiction in which the new standard is becoming effective.

## Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Mapping Document

### Mapping

Translation of VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules into VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules.

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
<p><b>R1.</b> The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.</p>	<p>Revised to address Interpretation Request.</p>	<p><b>R1.</b> The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator of one of the following: <i>[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</i></p> <ul style="list-style-type: none"> <li>That the <u>generator unit</u> is being operated in start-up<sup>1</sup> or shutdown<sup>2</sup> mode, pursuant to a <u>Real-time communication or a procedure that was</u> previously provided to the</li> </ul>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		<p>Transmission Operator; or-</p> <ul style="list-style-type: none"> <li>That the unit is not being operated in the automatic voltage control mode for a reason other than start-up or shutdown.</li> </ul> <p><u><sup>1</sup> Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.</u></p> <p><u><sup>2</sup> Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.</u></p>
<p><b>R2.</b> Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>1</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon:</p>	<p>Revised to address expanded scope approved by the SC April 11, 2012.</p>	<p><b>R2.</b> Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power <del>output-schedule</del><sup>3</sup> (within applicable Facility Ratings<sup>4</sup>), as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p><b>R2.1.</b> When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive</p>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
<p><b>Real-time Operations]</b></p> <p><b>R2.1.</b> When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p><b>R2.2.</b> When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p>		<p>output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</p> <p><b>R2.2.</b> When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</p> <p><sup>3</sup> <u>The voltage or Reactive Power schedule is a target value communicated by the Transmission Operator to the Generator Operator establishing a tolerance band within which the target value is to be maintained during a specified period.</u></p> <p><sup>4</sup> <u>When a Generator is operating in manual control, Reactive Power capability may change based on stability considerations, and this may lead to a change in the associated Facility Ratings.</u></p>
	All other	<del>R2. — Unless exempted by the Transmission Operator, each</del>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
	<p>requirements remain unchanged, with the exception of the addition of Time Horizons and previously-approved Violation Risk Factors and Violation Severity Levels.</p>	<p><del>Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings<sup>3</sup>) as directed by the Transmission Operator. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</del></p> <p><del>R2.1.— When a generator’s automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.</del></p> <p><del>R2.2.— When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.</del></p> <p><b>R3.</b> Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]</p> <p><b>R3.1.</b> 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.</p> <p><b>R3.2.</b> A status or capability change on any other Reactive Power resources under the Generator Operator’s control and the expected duration of the change in status or capability.</p>

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		<p><b>R4.</b> The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request. [Violation Risk Factor: Lower] [Time Horizon: Real-time Operations]</p> <p><b>R4.1.</b> For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:</p> <p><b>R4.1.1.</b> Tap settings.</p> <p><b>R4.1.2.</b> Available fixed tap ranges.</p> <p><b>R4.1.3.</b> Impedance data.</p> <p><b>R4.1.4.</b> The +/- voltage range with step-change in % for load-tap changing transformers.</p> <p><b>R5.</b> 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: Medium] [Time Horizon: Real-time Operations]</p> <p><b>R5.1.</b> If the Generator Operator can't comply with the</p>



Project 2011-INT-02 - Interpretation of VAR-002 for Constellation

Standard: VAR-002-2b		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed language in VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules
		Transmission Operator’s specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

## Unofficial Comment Form

### Project 2011-INT-02 - Rapid Revision to Address Interpretation of VAR-002 for Constellation

Please **DO NOT** use this form for submitting comments. Please use the [electronic form](#) to submit comments on the revisions to the VSLs for Requirement R2. The electronic comment form must be completed by **July 27, 2012**. If you have questions please contact Scott Barfield at [scott.barfield@nerc.net](mailto:scott.barfield@nerc.net) or by telephone at 404.446.9698.

#### Background Information

In response to industry comments, the Drafting Team has made revisions to the VSLs for Requirement R2. The Drafting Team is soliciting stakeholder input on the modifications to the VSLs.

Enter all comments in simple text format. Bullets, numbers, and special formatting will not be retained.

#### Questions

1. Do you agree with the revisions to the VSLs for Requirement R2? If No, please provide specific suggestions for improvement.

Yes

No

Comments:

# Justification for Assignment of Violation Severity Levels for VAR-002-2b

In developing the VSLs for the VAR-002-2b standard, the SDT anticipated the evidence that would be reviewed during an audit, and developed its VSLs based on the noncompliance an auditor may find during a typical audit. The SDT based its assignment of VSLs on the following NERC criteria:

Lower	Moderate	High	Severe
<p>Missing a minor element (or a small percentage) of the required performance</p> <p>The performance or product measured has significant value as it almost meets the full intent of the requirement.</p>	<p>Missing at least one significant element (or a moderate percentage) of the required performance.</p> <p>The performance or product measured still has significant value in meeting the intent of the requirement.</p>	<p>Missing more than one significant element (or is missing a high percentage) of the required performance or is missing a single vital component.</p> <p>The performance or product has limited value in meeting the intent of the requirement.</p>	<p>Missing most or all of the significant elements (or a significant percentage) of the required performance.</p> <p>The performance measured does not meet the intent of the requirement or the product delivered cannot be used in meeting the intent of the requirement.</p>

FERC’s VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in VAR-002-2b meet the FERC Guidelines for assessing VSLs:

**Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

**Guideline 2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

**Guideline 3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

VSLs should not expand on what is required in the requirement.

**Guideline 4: Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations**

. . . unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

**VSLs for VAR-002-2b, Requirement R2:**

R#	Compliance with NERC's VSL Guidelines	Guideline 1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	Guideline 2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties  Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent  Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language	Guideline 3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	Guideline 4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations
<b>R2</b>	Meets NERC's VSL guidelines. There is an incremental aspect to the violation and the VSLs follow the guidelines for incremental violations.	The proposed requirement is a revision of VAR-002-b1, R2. The initial approved VSLs were percentage based as applied to a target voltage or reactive power output. However, the requirement was revised to add a tolerance band around a target value. Based on the VSL Guidance, the SDT developed four VSLs based on the amount of time the voltage was operated outside of the tolerance band.	The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.	The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.	The VSLs are based on a single violation and not cumulative violations.

## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation

Recirculation Ballot and Non-Binding Poll Window Open July 18, 2012 through July 27, 2012

#### [Now Available](#)

The drafting team for VAR-002-2b - Generator Operation for Maintaining Network Voltage Schedules has posted its consideration of comments received during a parallel formal comment period and successive ballot that ended June 27, 2012. The drafting team made no changes to the Requirements, but made two minor corrections:

- In Measure M3, the word 'directive' was changed to 'direction' to conform to the language in the associated Requirement R2.
- In the Data Retention section, the word 'years' was changed from plural to singular in response to a quality review suggestion.

A recirculation ballot of VAR-002-2b is open from **Wednesday, July 18, 2012 through 8 p.m. Eastern on Friday, July 27, 2012.**

In addition, the team has made revisions to the response time frame for the VSLs for Requirement R2 in response to stakeholder comments. In conjunction with the recirculation ballot, a non-binding poll of these VSL changes is being conducted and the non-binding poll window is also open from **Wednesday, July 18, 2012 through 8 p.m. Eastern on Friday, July 27, 2012.** A comment form is available for stakeholders to provide input on the revised VSLs for Requirement R2.

#### Instructions

In the recirculation ballot, votes are counted by exception. Only members of the ballot pool may cast a ballot; all ballot pool members may change their previously cast votes. A ballot pool member who failed to cast a ballot during the last ballot window may cast a ballot in the recirculation ballot window. If a ballot pool member does not participate in the recirculation ballot, that member's vote cast in the previous ballot will be carried over as that member's vote in the recirculation ballot.

The ballot pool for the standard was cloned to create a ballot pool for the non-binding poll. Recognizing that the scope of this drafting team is limited by the SAR for the project, ballot pool members are asked to cast their opinions only on the VSLs changes, but not on VRFs and VSLs that were not changed from the previously approved standard, since the scope of the drafting team is limited by the SAR for this project.

Members of the ballot pools associated with this project may log in and submit their votes and opinions for the standard and VSL changes by clicking [here](#).

### **Instructions for Commenting on Proposed Revisions to VSLs for Requirement R2**

A comment period to collect stakeholder input on the proposed to the VSLs associated with Requirement R2 is open through 8 p.m. Eastern on Friday, July 27, 2012. As noted in the NERC Standard Processes Manual, there is no formal comment period concurrent with the recirculation ballot and no obligation for the drafting team to respond to any comments submitted during the recirculation ballot.” Therefore, the comment form is limited strictly to collecting comments on the VSL changes.

Please use this [electronic form](#) to submit comments. If you experience any difficulties in using the electronic form, please contact Monica Benson at [monica.benson@nerc.net](mailto:monica.benson@nerc.net). An off-line, unofficial copy of the comment form is posted on the [project page](#).

### **Next Steps**

If approved, the standard will be presented to the Board of Trustees for adoption. The drafting team will review comments received on the proposed changes to the VSLs associated with Requirement R2 and work with NERC staff to determine whether additional changes to the VSLs are required prior to presenting the standard for adoption.

### **Background**

Constellation Energy submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down.

The scope of the rapid revision project was also expanded to include revisions to Requirement R2 and its VSLs. The SDT received approval from the SC to address deficiencies in Requirement R2 and has made further changes to R2 to address stakeholder concerns. Requirement R2 is intrinsically linked to VAR-001-2, Requirement R4.

### **Standards Development Process**

The [Standards Processes Manual](#) (SPM) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

*For more information or assistance, please contact Monica Benson,  
Standards Process Administrator, at [monica.benson@nerc.net](mailto:monica.benson@nerc.net) or at 404-446-2560.*

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## Standards Announcement

### Project 2011-INT-02 Rapid Revision of VAR-002 for Constellation

#### Recirculation Ballot and Non-Binding Poll Results

##### [Now Available](#)

An initial ballot of **VAR-002** – Generator Operation for Maintaining Network Voltage Schedules concluded Friday, July 27, 2012 and a non-binding poll of the revised VSL for Requirement R2 concluded Monday, July 30, 2012.

Voting statistics for each ballot are listed below, and the [Ballots Results](#) page provides a link to the detailed results.

Approval	Non-binding Poll Results
Quorum: 90.97%	Quorum: 81.31%
Approval: 69.81%	Supportive Opinions: 60.93%

#### Next Steps

VAR-002-2b – Generator Operation for Maintaining Network Voltage Schedules will be presented to the NERC Board of Trustees for adoption and subsequently filed with regulatory authorities. The drafting team will review the comments submitted on the revised VSLs to determine if additional changes are needed to the VSLs prior to presenting to the board for approval.

#### Background

Constellation Energy submitted a request for interpretation of VAR-002-1.1b asking for clarification of Requirement R1 and whether the requirement requires generation units to be operated in automatic voltage control mode during start-up and shut-down.

At its July 2011 meeting, the Standards Committee authorized the SDT to address the request for interpretation through a revision of the VAR-002-2b standard. The Standards Committee, under its authority to do so in the NERC Standard Processes Manual, waived the initial 30-day comment period and directed the SDT to post the standard and SAR for a formal 45-day comment period and initial ballot. The Standards Committee has used the shorthand term ‘rapid revision’ process to refer to instances where it has exercised its authority to waive the initial 30-day comment period.



Generally, the projects being addressed in this manner are projects that are narrowly defined to address a specific issue, such as certain requests for interpretation.

### **Standards Development Process**

The [Standards Processes Manual](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

*For more information or assistance, please contact Monica Benson,  
Standards Process Administrator, at [monica.benson@nerc.net](mailto:monica.benson@nerc.net) or at 404-446-2560.*

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Ballot Results	
<b>Ballot Name:</b>	Project 2011-INT-02 Rapid Revision of VAR-002 Constellation Interpretation_in
<b>Ballot Period:</b>	7/18/2012 - 7/28/2012
<b>Ballot Type:</b>	Initial
<b>Total # Votes:</b>	292
<b>Total Ballot Pool:</b>	321
<b>Quorum:</b>	<b>90.97 % The Quorum has been reached</b>
<b>Weighted Segment Vote:</b>	69.81 %
<b>Ballot Results:</b>	<b>The Standard has Passed</b>

Summary of Ballot Results									
Segment	Ballot Pool	Segment Weight	Affirmative		Negative		Abstain # Votes	No Vote	
			# Votes	Fraction	# Votes	Fraction			
1 - Segment 1.		77	1	47	0.746	16	0.254	6	8
2 - Segment 2.		9	0.7	6	0.6	1	0.1	1	1
3 - Segment 3.		73	1	31	0.544	26	0.456	10	6
4 - Segment 4.		25	1	16	0.842	3	0.158	3	3
5 - Segment 5.		78	1	34	0.567	26	0.433	11	7
6 - Segment 6.		45	1	21	0.618	13	0.382	8	3
7 - Segment 7.		0	0	0	0	0	0	0	0
8 - Segment 8.		6	0.5	3	0.3	2	0.2	0	1
9 - Segment 9.		1	0.1	1	0.1	0	0	0	0
10 - Segment 10.		7	0.6	5	0.5	1	0.1	1	0
<b>Totals</b>		<b>321</b>	<b>6.9</b>	<b>164</b>	<b>4.817</b>	<b>88</b>	<b>2.083</b>	<b>40</b>	<b>29</b>

Individual Ballot Pool Results				
Segment	Organization	Member	Ballot	Comments
1	Ameren Services	Kirit Shah	Negative	
1	American Transmission Company, LLC	Andrew Z Pusztai	Abstain	
1	Arizona Public Service Co.	Robert Smith	Affirmative	
1	Associated Electric Cooperative, Inc.	John Bussman	Affirmative	
1	Austin Energy	James Armke	Affirmative	
1	Avista Corp.	Scott J Kinney	Affirmative	
1	Balancing Authority of Northern California	Kevin Smith	Affirmative	

1	Baltimore Gas & Electric Company	Gregory S Miller	Negative
1	BC Hydro and Power Authority	Patricia Robertson	Abstain
1	Beaches Energy Services	Joseph S Stonecipher	Affirmative
1	Black Hills Corp	Eric Egge	Affirmative
1	Bonneville Power Administration	Donald S. Watkins	Affirmative
1	Brazos Electric Power Cooperative, Inc.	Tony Kroskey	Negative
1	CenterPoint Energy Houston Electric, LLC	John Brockhan	Affirmative
1	City of Tacoma, Department of Public Utilities, Light Division, dba Tacoma Power	Chang G Choi	Affirmative
1	Clark Public Utilities	Jack Stamper	Affirmative
1	Colorado Springs Utilities	Paul Morland	Affirmative
1	Consolidated Edison Co. of New York	Christopher L de Graffenried	Affirmative
1	CPS Energy	Richard Castrejana	Affirmative
1	Dairyland Power Coop.	Robert W. Roddy	Affirmative
1	Dominion Virginia Power	Michael S Crowley	
1	Empire District Electric Co.	Ralph F Meyer	Affirmative
1	Entergy Services, Inc.	Edward J Davis	Negative
1	FirstEnergy Corp.	William J Smith	Affirmative
1	Florida Keys Electric Cooperative Assoc.	Dennis Minton	Affirmative
1	Florida Power & Light Co.	Mike O'Neil	Negative
1	FortisBC	Curtis Klashinsky	Affirmative
1	Great River Energy	Gordon Pietsch	Negative
1	Hoosier Energy Rural Electric Cooperative, Inc.	Bob Solomon	
1	Hydro One Networks, Inc.	Ajay Garg	Affirmative
1	Idaho Power Company	Ronald D Schellberg	
1	Imperial Irrigation District	Tino Zaragoza	
1	International Transmission Company Holdings Corp	Michael Moltane	Affirmative
1	Kansas City Power & Light Co.	Michael Gammon	Affirmative
1	Lincoln Electric System	Doug Bantam	
1	Long Island Power Authority	Robert Ganley	Affirmative
1	Los Angeles Department of Water & Power	John Burnett	Negative
1	Manitoba Hydro	Joe D Petaski	Affirmative
1	MidAmerican Energy Co.	Terry Harbour	Affirmative
1	Minnkota Power Coop. Inc.	Theresa Allard	Affirmative
1	Nebraska Public Power District	Cole C Brodine	Negative
1	New York Power Authority	Bruce Metruck	Affirmative
1	Northeast Utilities	David Boguslawski	Affirmative
1	Northern Indiana Public Service Co.	Kevin M Largura	Affirmative
1	NorthWestern Energy	John Canavan	Affirmative
1	Ohio Valley Electric Corp.	Robert Matthey	Negative
1	Oklahoma Gas and Electric Co.	Marvin E VanBebber	Abstain
1	Omaha Public Power District	Doug Peterchuck	Affirmative
1	Oncor Electric Delivery	Jen Fiegel	Abstain
1	PacifiCorp	Ryan Millard	Negative
1	PECO Energy	Ronald Schloendorn	Abstain
1	Platte River Power Authority	John C. Collins	Affirmative
1	Portland General Electric Co.	John T Walker	Affirmative
1	Potomac Electric Power Co.	David Thorne	Affirmative
1	PPL Electric Utilities Corp.	Brenda L Truhe	Negative
1	Progress Energy Carolinas	Brett A. Koelsch	Negative
1	Public Service Company of New Mexico	Laurie Williams	Affirmative
1	Public Service Electric and Gas Co.	Kenneth D. Brown	Affirmative
1	Puget Sound Energy, Inc.	Denise M Lietz	Affirmative
1	Rochester Gas and Electric Corp.	John C. Allen	Affirmative
1	Sacramento Municipal Utility District	Tim Kelley	Affirmative
1	Salt River Project	Robert Kondziolka	Affirmative
1	Santee Cooper	Terry L Blackwell	Negative
1	Seattle City Light	Pawel Krupa	Affirmative
1	Sierra Pacific Power Co.	Rich Salgo	Affirmative
1	Snohomish County PUD No. 1	Long T Duong	Abstain
1	South California Edison Company	Steven Mavis	Affirmative
1	Southern Company Services, Inc.	Robert A. Schaffeld	Negative
1	Sunflower Electric Power Corporation	Noman Lee Williams	
1	Tampa Electric Co.	Beth Young	
1	Tennessee Valley Authority	Larry Akens	Negative
1	Tri-State G & T Association, Inc.	Tracy Sliman	Affirmative

1	Tucson Electric Power Co.	John Tolo	
1	United Illuminating Co.	Jonathan Appelbaum	Affirmative
1	Westar Energy	Allen Klassen	Affirmative
1	Western Area Power Administration	Brandy A Dunn	Affirmative
1	Xcel Energy, Inc.	Gregory L Pieper	Negative
2	Alberta Electric System Operator	Mark B Thompson	Affirmative
2	BC Hydro	Venkataramakrishnan Vinnakota	Abstain
2	Electric Reliability Council of Texas, Inc.	Charles B Manning	Affirmative
2	Independent Electricity System Operator	Barbara Constantinescu	Affirmative
2	ISO New England, Inc.	Kathleen Goodman	Affirmative
2	Midwest ISO, Inc.	Marie Knox	Negative
2	New Brunswick System Operator	Alden Briggs	Affirmative
2	New York Independent System Operator	Gregory Campoli	Affirmative
2	Southwest Power Pool, Inc.	Charles H. Yeung	
3	AEP	Michael E DeLoach	Negative
3	Alabama Power Company	Richard J. Mandes	Negative
3	Ameren Services	Mark Peters	Negative
3	APS	Steven Norris	Affirmative
3	Atlantic City Electric Company	NICOLE BUCKMAN	Affirmative
3	BC Hydro and Power Authority	Pat G. Harrington	Abstain
3	Bonneville Power Administration	Rebecca Berdahl	Affirmative
3	City of Austin dba Austin Energy	Andrew Gallo	Affirmative
3	City of Clewiston	Lynne Mila	
3	City of Garland	Ronnie C Hoeinghaus	Abstain
3	City of Green Cove Springs	Gregg R Griffin	Negative
3	City of Redding	Bill Hughes	Affirmative
3	Cleco Corporation	Michelle A Corley	Negative
3	ComEd	Bruce Krawczyk	Abstain
3	Consolidated Edison Co. of New York	Peter T Yost	Affirmative
3	Constellation Energy	CJ Ingersoll	Negative
3	Consumers Energy	Richard Blumenstock	Affirmative
3	Cowlitz County PUD	Russell A Noble	
3	CPS Energy	Jose Escamilla	Affirmative
3	Delmarva Power & Light Co.	Michael R. Mayer	Affirmative
3	Detroit Edison Company	Kent Kujala	Negative
3	Dominion Resources Services	Michael F. Gildea	Abstain
3	Duke Energy Carolina	Henry Ernst-Jr	Negative
3	Entergy	Joel T Plessinger	Negative
3	FirstEnergy Energy Delivery	Stephan Kern	Affirmative
3	Florida Municipal Power Agency	Joe McKinney	Negative
3	Florida Power Corporation	Lee Schuster	Negative
3	Georgia Power Company	Danny Lindsey	Negative
3	Great River Energy	Brian Glover	Negative
3	Gulf Power Company	Paul C Caldwell	Negative
3	Hydro One Networks, Inc.	David Kiguel	Affirmative
3	Imperial Irrigation District	Jesus S. Alcaraz	Abstain
3	JEA	Garry Baker	Affirmative
3	Kansas City Power & Light Co.	Charles Locke	Affirmative
3	Kissimmee Utility Authority	Gregory D Woessner	Negative
3	Lakeland Electric	Norman D Harryhill	Affirmative
3	Lincoln Electric System	Jason Fortik	
3	Los Angeles Department of Water & Power	Daniel D Kurowski	Abstain
3	Louisville Gas and Electric Co.	Charles A. Freibert	Negative
3	Manitoba Hydro	Greg C. Parent	
3	MidAmerican Energy Co.	Thomas C. Mielnik	Negative
3	Mississippi Power	Jeff Franklin	Negative
3	Municipal Electric Authority of Georgia	Steven M. Jackson	Affirmative
3	Nebraska Public Power District	Tony Eddleman	Negative
3	New York Power Authority	David R Rivera	Affirmative
3	Niagara Mohawk (National Grid Company)	Michael Schiavone	Affirmative
3	Northern Indiana Public Service Co.	William SeDoris	Affirmative
3	Orange and Rockland Utilities, Inc.	David Burke	Affirmative
3	Orlando Utilities Commission	Ballard K Mutters	Affirmative
3	Owensboro Municipal Utilities	Thomas T Lyons	Negative
3	Pacific Gas and Electric Company	John H Hagen	Affirmative
3	PacifiCorp	Dan Zollner	Negative

3	Platte River Power Authority	Terry L Baker	Affirmative
3	PNM Resources	Michael Mertz	Abstain
3	Potomac Electric Power Co.	Robert Reuter	
3	Progress Energy Carolinas	Sam Waters	Negative
3	Public Service Electric and Gas Co.	Jeffrey Mueller	Affirmative
3	Public Utility District No. 1 of Clallam County	David Proebstel	Abstain
3	Puget Sound Energy, Inc.	Erin Apperson	Affirmative
3	Sacramento Municipal Utility District	James Leigh-Kendall	Affirmative
3	Salt River Project	John T. Underhill	Affirmative
3	San Diego Gas & Electric	Scott Peterson	
3	Santee Cooper	James M Poston	Negative
3	Seattle City Light	Dana Wheelock	Affirmative
3	Seminole Electric Cooperative, Inc.	James R Frauen	Affirmative
3	Snohomish County PUD No. 1	Mark Oens	Abstain
3	South Carolina Electric & Gas Co.	Hubert C Young	Abstain
3	Tampa Electric Co.	Ronald L. Donahey	Affirmative
3	Tennessee Valley Authority	Ian S Grant	Negative
3	Tri-State G & T Association, Inc.	Janelle Marriott	Affirmative
3	Westar Energy	Bo Jones	Affirmative
3	Wisconsin Electric Power Marketing	James R Keller	Negative
3	Xcel Energy, Inc.	Michael Ibold	Negative
4	Alliant Energy Corp. Services, Inc.	Kenneth Goldsmith	Negative
4	American Municipal Power	Kevin Koloini	Affirmative
4	City of Austin dba Austin Energy	Reza Ebrahimian	Affirmative
4	City of Clewiston	Kevin McCarthy	
4	City of Redding	Nicholas Zettel	Affirmative
4	City Utilities of Springfield, Missouri	John Allen	Affirmative
4	Consumers Energy	David Frank Ronk	Affirmative
4	Cowlitz County PUD	Rick Syring	
4	Flathead Electric Cooperative	Russ Schneider	Abstain
4	Florida Municipal Power Agency	Frank Gaffney	Negative
4	Fort Pierce Utilities Authority	Thomas Richards	
4	Georgia System Operations Corporation	Guy Andrews	Affirmative
4	Indiana Municipal Power Agency	Jack Alvey	Affirmative
4	LaGen	Richard Comeaux	Abstain
4	Madison Gas and Electric Co.	Joseph DePoorter	Affirmative
4	Modesto Irrigation District	Spencer Tacke	Affirmative
4	Ohio Edison Company	Douglas Hohlbaugh	Affirmative
4	Old Dominion Electric Coop.	Mark Ringhausen	Affirmative
4	Public Utility District No. 1 of Douglas County	Henry E. LuBean	Affirmative
4	Public Utility District No. 1 of Snohomish County	John D Martinsen	Abstain
4	Sacramento Municipal Utility District	Mike Ramirez	Affirmative
4	Seattle City Light	Hao Li	Affirmative
4	Seminole Electric Cooperative, Inc.	Steven R Wallace	Affirmative
4	Tacoma Public Utilities	Keith Morissette	Affirmative
4	Wisconsin Energy Corp.	Anthony Jankowski	Negative
5	AEP Service Corp.	Brock Ondayko	
5	Amerenue	Sam Dwyer	Negative
5	Arizona Public Service Co.	Edward Cambridge	Affirmative
5	Associated Electric Cooperative, Inc.	Matthew Pacobit	
5	BC Hydro and Power Authority	Clement Ma	Abstain
5	Boise-Kuna Irrigation District/dba Lucky peak power plant project	Mike D Kukla	Abstain
5	Bonneville Power Administration	Francis J. Halpin	Affirmative
5	Brazos Electric Power Cooperative, Inc.	Shari Heino	Negative
5	City and County of San Francisco	Daniel Mason	Abstain
5	City of Austin dba Austin Energy	Jeanie Doty	Affirmative
5	City of Redding	Paul A. Cummings	Affirmative
5	City Water, Light & Power of Springfield	Steve Rose	Affirmative
5	Cleco Power	Stephanie Huffman	Negative
5	Colorado Springs Utilities	Jennifer Eckels	Affirmative
5	Consolidated Edison Co. of New York	Wilket (Jack) Ng	Affirmative
5	Constellation Power Source Generation, Inc.	Amir Y Hammad	Negative
5	Consumers Energy Company	David C Greyerbiehl	Affirmative
5	Cowlitz County PUD	Bob Essex	
5	Detroit Edison Company	Christy Wicke	Negative

5	Dominion Resources, Inc.	Mike Garton	Abstain
5	Duke Energy	Dale Q Goodwine	Negative
5	Dynegy Inc.	Dan Roethemeyer	Affirmative
5	Edison Mission Marketing & Trading Inc.	Brenda J Frazer	Affirmative
5	Electric Power Supply Association	John R Cashin	
5	Energy Services, Inc.	Tracey Stubbs	Affirmative
5	Essential Power, LLC	Patrick Brown	Affirmative
5	Exelon Nuclear	Michael Korchynsky	Abstain
5	ExxonMobil Research and Engineering	Martin Kaufman	Negative
5	FirstEnergy Solutions	Kenneth Dresner	Affirmative
5	Florida Municipal Power Agency	David Schumann	Negative
5	Great River Energy	Preston L Walsh	Negative
5	ICF International	Brent B Hebert	Affirmative
5	Imperial Irrigation District	Marcela Y Caballero	Abstain
5	JEA	John J Babik	Affirmative
5	Kansas City Power & Light Co.	Brett Holland	Affirmative
5	Kissimmee Utility Authority	Mike Blough	Negative
5	Lakeland Electric	James M Howard	Negative
5	Liberty Electric Power LLC	Daniel Duff	Negative
5	Lincoln Electric System	Dennis Florom	Affirmative
5	Los Angeles Department of Water & Power	Kenneth Silver	
5	Lower Colorado River Authority	Tom Foreman	Affirmative
5	Luminant Generation Company LLC	Mike Laney	Negative
5	Manitoba Hydro	S N Fernando	Affirmative
5	Massachusetts Municipal Wholesale Electric Company	David Gordon	Abstain
5	MEAG Power	Steven Grego	Affirmative
5	MidAmerican Energy Co.	Christopher Schneider	Affirmative
5	Muscatine Power & Water	Mike Avesing	Negative
5	Nebraska Public Power District	Don Schmit	Negative
5	New York Power Authority	Wayne Sipperly	Negative
5	NextEra Energy	Allen D Schriver	Negative
5	North Carolina Electric Membership Corp.	Jeffrey S Brame	Negative
5	Northern Indiana Public Service Co.	William O. Thompson	
5	Occidental Chemical	Michelle R DAntuono	Negative
5	Omaha Public Power District	Mahmood Z. Safi	Affirmative
5	PacifiCorp	Sandra L. Shaffer	Negative
5	Platte River Power Authority	Roland Thiel	Affirmative
5	Portland General Electric Co.	Gary L Tingley	Affirmative
5	PPL Generation LLC	Annette M Bannon	Negative
5	Progress Energy Carolinas	Wayne Lewis	Abstain
5	PSEG Fossil LLC	Tim Kucey	Affirmative
5	Public Utility District No. 1 of Lewis County	Steven Grega	Affirmative
5	Puget Sound Energy, Inc.	Tom Flynn	Affirmative
5	Sacramento Municipal Utility District	Bethany Hunter	Affirmative
5	Salt River Project	William Alkema	Affirmative
5	Santee Cooper	Lewis P Pierce	Negative
5	Seminole Electric Cooperative, Inc.	Brenda K. Atkins	
5	Snohomish County PUD No. 1	Sam Nietfeld	Abstain
5	South Carolina Electric & Gas Co.	Edward Magic	Affirmative
5	Southern California Edison Co.	Denise Yaffe	Affirmative
5	Southern Company Generation	William D Shultz	Negative
5	Tacoma Power	Claire Lloyd	Affirmative
5	Tampa Electric Co.	RJames Rocha	Affirmative
5	Tenaska, Inc.	Scott M. Helyer	Abstain
5	Tennessee Valley Authority	David Thompson	Negative
5	U.S. Army Corps of Engineers	Melissa Kurtz	Negative
5	U.S. Bureau of Reclamation	Martin Bauer	Abstain
5	Westar Energy	Bryan Taggart	Affirmative
5	Wisconsin Electric Power Co.	Linda Horn	Negative
6	AEP Marketing	Edward P. Cox	Negative
6	APS	Randy A. Young	Affirmative
6	Bonneville Power Administration	Brenda S. Anderson	Affirmative
6	City of Austin dba Austin Energy	Lisa L Martin	Affirmative
6	City of Redding	Marvin Briggs	Affirmative
6	Cleco Power LLC	Robert Hirschak	Negative
6	Consolidated Edison Co. of New York	Nickesha P Carrol	Affirmative

6	Constellation Energy Commodities Group	Brenda L Powell	Negative
6	Dominion Resources, Inc.	Louis S. Slade	Abstain
6	Entergy Services, Inc.	Terri F Benoit	Negative
6	Exelon Power Team	Pulin Shah	
6	FirstEnergy Solutions	Kevin Querry	Affirmative
6	Florida Municipal Power Agency	Richard L. Montgomery	Negative
6	Florida Municipal Power Pool	Thomas Washburn	Affirmative
6	Florida Power & Light Co.	Silvia P. Mitchell	Negative
6	Great River Energy	Donna Stephenson	
6	Imperial Irrigation District	Cathy Bretz	Abstain
6	Kansas City Power & Light Co.	Jessica L Klinghoffer	Affirmative
6	Lincoln Electric System	Eric Ruskamp	Affirmative
6	Los Angeles Department of Water & Power	Brad Packer	
6	Luminant Energy	Brad Jones	Abstain
6	Manitoba Hydro	Daniel Prowse	Affirmative
6	MidAmerican Energy Co.	Dennis Kimm	Negative
6	New York Power Authority	Saul Rojas	Affirmative
6	Northern Indiana Public Service Co.	Joseph O'Brien	Affirmative
6	NRG Energy, Inc.	Alan Johnson	Abstain
6	PacifiCorp	Scott L Smith	Negative
6	Platte River Power Authority	Carol Ballantine	Affirmative
6	Powerex Corp.	Daniel W. O'Hearn	Abstain
6	PPL EnergyPlus LLC	Mark A Heimbach	Negative
6	Progress Energy	John T Sturgeon	Negative
6	PSEG Energy Resources & Trade LLC	Peter Dolan	Affirmative
6	Public Utility District No. 1 of Chelan County	Hugh A. Owen	Abstain
6	Sacramento Municipal Utility District	Diane Enderby	Affirmative
6	Salt River Project	Steven J Hulet	Affirmative
6	Santee Cooper	Michael Brown	Negative
6	Seattle City Light	Dennis Sismaet	Affirmative
6	Seminole Electric Cooperative, Inc.	Trudy S. Novak	Affirmative
6	Snohomish County PUD No. 1	William T Moojen	Abstain
6	South California Edison Company	Lujuanna Medina	Affirmative
6	Southern Company Generation and Energy Marketing	John J. Ciza	Negative
6	Tacoma Public Utilities	Michael C Hill	Affirmative
6	Tampa Electric Co.	Benjamin F Smith II	Affirmative
6	Tennessee Valley Authority	Marjorie S. Parsons	Negative
6	Westar Energy	Grant L Wilkerson	Abstain
8		Roger C Zaklukiewicz	Affirmative
8		Edward C Stein	
8		James A Maenner	Affirmative
8	JDRJC Associates	Jim Cyrulewski	Negative
8	Massachusetts Attorney General	Frederick R Plett	Affirmative
8	Volkman Consulting, Inc.	Terry Volkman	Negative
9	Commonwealth of Massachusetts Department of Public Utilities	Donald Nelson	Affirmative
10	New York State Reliability Council	Alan Adamson	Affirmative
10	Northeast Power Coordinating Council	Guy V. Zito	Affirmative
10	ReliabilityFirst Corporation	Anthony E Jablonski	Negative
10	SERC Reliability Corporation	Carter B. Edge	Abstain
10	Southwest Power Pool RE	Emily Pennel	Affirmative
10	Texas Reliability Entity, Inc.	Donald G Jones	Affirmative
10	Western Electricity Coordinating Council	Steven L. Rueckert	Affirmative

[Legal and Privacy](#)

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## Non-binding Poll Results

Project 2011-INT-02

Rapid Revision of VAR-002 to Address Constellation Request for Interpretation

Non-binding Poll Results				
<b>Non-binding Poll Name:</b>	Project 2011-INT-02 VAR-002 Non-binding Poll (VSL Changes)			
<b>Poll Period:</b>	7/18/2012 - 7/30/2012			
<b>Total # Opinions:</b>	261			
<b>Total Ballot Pool:</b>	321			
<b>Summary Results:</b>	81.31% of those who registered to participate provided an opinion or an abstention; 60.93% of those who provided an opinion indicated support for the VSLs.			
Individual Ballot Pool Results				
Segment	Organization	Member	Opinion	Comments
1	American Transmission Company, LLC	Andrew Z Puszta	Abstain	
1	Arizona Public Service Co.	Robert Smith	Affirmative	
1	Associated Electric Cooperative, Inc.	John Bussman	Affirmative	
1	Austin Energy	James Armke	Affirmative	
1	Avista Corp.	Scott J Kinney	Affirmative	
1	Balancing Authority of Northern California	Kevin Smith	Abstain	
1	Baltimore Gas & Electric Company	Gregory S Miller	Negative	
1	BC Hydro and Power Authority	Patricia Robertson	Abstain	
1	Beaches Energy Services	Joseph S Stonecipher	Affirmative	
1	Black Hills Corp	Eric Egge		
1	Bonneville Power Administration	Donald S. Watkins	Negative	
1	Brazos Electric Power Cooperative, Inc.	Tony Kroskey	Negative	
1	CenterPoint Energy Houston Electric, LLC	John Brockhan	Abstain	
1	City of Tacoma, Department of Public Utilities, Light Division, dba Tacoma Power	Chang G Choi	Affirmative	
1	Clark Public Utilities	Jack Stamper	Affirmative	
1	Colorado Springs Utilities	Paul Morland	Affirmative	
1	Consolidated Edison Co. of New York	Christopher L de Graffenried	Affirmative	
1	CPS Energy	Richard Castrejana	Affirmative	
1	Dairyland Power Coop.	Robert W. Roddy	Affirmative	
1	Dominion Virginia Power	Michael S Crowley		
1	Empire District Electric Co.	Ralph F Meyer	Affirmative	
1	Entergy Services, Inc.	Edward J Davis		
1	FirstEnergy Corp.	William J Smith	Negative	
1	Florida Keys Electric Cooperative Assoc.	Dennis Minton		

1	Florida Power & Light Co.	Mike O'Neil	Negative	
1	FortisBC	Curtis Klashinsky	Affirmative	
1	Great River Energy	Gordon Pietsch		
1	Hoosier Energy Rural Electric Cooperative, Inc.	Bob Solomon		
1	Hydro One Networks, Inc.	Ajay Garg	Affirmative	
1	Idaho Power Company	Ronald D Schellberg		
1	Imperial Irrigation District	Tino Zaragoza	Abstain	
1	International Transmission Company Holdings Corp	Michael Moltane	Abstain	
1	Kansas City Power & Light Co.	Michael Gammon	Affirmative	
1	Lincoln Electric System	Doug Bantam	Affirmative	
1	Long Island Power Authority	Robert Ganley	Affirmative	
1	Los Angeles Department of Water & Power	John Burnett	Abstain	
1	Manitoba Hydro	Joe D Petaski		
1	MidAmerican Energy Co.	Terry Harbour	Affirmative	
1	Minnkota Power Coop. Inc.	Theresa Allard	Affirmative	
1	Nebraska Public Power District	Cole C Brodine	Abstain	
1	New York Power Authority	Bruce Metruck	Affirmative	
1	Northeast Utilities	David Boguslawski	Abstain	
1	Northern Indiana Public Service Co.	Kevin M Largura	Affirmative	
1	NorthWestern Energy	John Canavan	Affirmative	
1	Ohio Valley Electric Corp.	Robert Matthey	Negative	
1	Oklahoma Gas and Electric Co.	Marvin E VanBebber	Affirmative	
1	Omaha Public Power District	Doug Peterchuck	Affirmative	
1	Oncor Electric Delivery	Jen Fiegel	Abstain	
1	PacifiCorp	Ryan Millard	Abstain	
1	PECO Energy	Ronald Schloendorn	Negative	
1	Platte River Power Authority	John C. Collins	Abstain	
1	Portland General Electric Co.	John T Walker	Affirmative	
1	Potomac Electric Power Co.	David Thorne	Abstain	
1	PPL Electric Utilities Corp.	Brenda L Truhe	Negative	
1	Progress Energy Carolinas	Brett A. Koelsch	Negative	
1	Public Service Company of New Mexico	Laurie Williams	Affirmative	
1	Public Service Electric and Gas Co.	Kenneth D. Brown	Abstain	
1	Puget Sound Energy, Inc.	Denise M Lietz	Affirmative	
1	Rochester Gas and Electric Corp.	John C. Allen	Affirmative	
1	Sacramento Municipal Utility District	Tim Kelley	Abstain	
1	Salt River Project	Robert Kondziolka	Affirmative	
1	Santee Cooper	Terry L Blackwell	Negative	
1	Seattle City Light	Pawel Krupa	Affirmative	
1	Sierra Pacific Power Co.	Rich Salgo	Abstain	
1	Snohomish County PUD No. 1	Long T Duong	Abstain	
1	South California Edison Company	Steven Mavis	Affirmative	
1	Southern Company Services, Inc.	Robert A. Schaffeld	Negative	
1	Sunflower Electric Power Corporation	Noman Lee Williams	Negative	

1	Tampa Electric Co.	Beth Young		
1	Tennessee Valley Authority	Larry G Akens	Negative	
1	Tri-State G & T Association, Inc.	Tracy Sliman	Affirmative	
1	Tucson Electric Power Co.	John Tolo		
1	United Illuminating Co.	Jonathan Appelbaum	Affirmative	
1	Westar Energy	Allen Klassen	Affirmative	
1	Western Area Power Administration	Brandy A Dunn	Affirmative	
1	Xcel Energy, Inc.	Gregory L Pieper		
2	Alberta Electric System Operator	Mark B Thompson		
2	BC Hydro	Venkatamakrishnan Vinnakota	Abstain	
2	Electric Reliability Council of Texas, Inc.	Charles B Manning	Affirmative	
2	Independent Electricity System Operator	Barbara Constantinescu	Affirmative	
2	ISO New England, Inc.	Kathleen Goodman		
2	Midwest ISO, Inc.	Marie Knox	Negative	
2	New Brunswick System Operator	Alden Briggs	Abstain	
2	New York Independent System Operator	Gregory Campoli		
2	Southwest Power Pool, Inc.	Charles H. Yeung	Abstain	
3	AEP	Michael E DeLoach		
3	Alabama Power Company	Richard J. Mandes	Negative	
3	Ameren Services	Mark Peters	Negative	
3	APS	Steven Norris	Affirmative	
3	Atlantic City Electric Company	NICOLE BUCKMAN	Abstain	
3	BC Hydro and Power Authority	Pat G. Harrington	Abstain	
3	Bonneville Power Administration	Rebecca Berdahl	Negative	
3	City of Austin dba Austin Energy	Andrew Gallo	Affirmative	
3	City of Clewiston	Lynne Mila	Negative	
3	City of Garland	Ronnie C Hoeinghaus		
3	City of Green Cove Springs	Gregg R Griffin	Abstain	
3	City of Redding	Bill Hughes	Affirmative	
3	Cleco Corporation	Michelle A Corley	Negative	
3	ComEd	Bruce Krawczyk	Negative	
3	Consolidated Edison Co. of New York	Peter T Yost	Affirmative	
3	Constellation Energy	CJ Ingersoll		
3	Consumers Energy	Richard Blumenstock	Affirmative	
3	Cowlitz County PUD	Russell A Noble		
3	CPS Energy	Jose Escamilla	Affirmative	
3	Delmarva Power & Light Co.	Michael R. Mayer	Abstain	
3	Detroit Edison Company	Kent Kujala	Negative	
3	Dominion Resources Services	Michael F. Gildea		
3	Duke Energy Carolina	Henry Ernst-Jr	Negative	
3	Entergy	Joel T Plessinger		
3	FirstEnergy Energy Delivery	Stephan Kern		
3	Florida Municipal Power Agency	Joe McKinney	Negative	
3	Florida Power Corporation	Lee Schuster	Negative	

3	Georgia Power Company	Danny Lindsey	Negative	
3	Great River Energy	Brian Glover	Negative	
3	Gulf Power Company	Paul C Caldwell	Negative	
3	Hydro One Networks, Inc.	David Kiguel	Affirmative	
3	Imperial Irrigation District	Jesus S. Alcaraz		
3	JEA	Garry Baker	Affirmative	
3	Kansas City Power & Light Co.	Charles Locke	Affirmative	
3	Kissimmee Utility Authority	Gregory D Woessner	Negative	
3	Lakeland Electric	Norman D Harryhill	Affirmative	
3	Lincoln Electric System	Jason Fortik		
3	Los Angeles Department of Water & Power	Daniel D Kurowski	Abstain	
3	Louisville Gas and Electric Co.	Charles A. Freibert		
3	Manitoba Hydro	Greg C. Parent		
3	MidAmerican Energy Co.	Thomas C. Mielnik	Affirmative	
3	Mississippi Power	Jeff Franklin	Negative	
3	Municipal Electric Authority of Georgia	Steven M. Jackson	Affirmative	
3	Nebraska Public Power District	Tony Eddleman	Negative	
3	New York Power Authority	David R Rivera	Affirmative	
3	Niagara Mohawk (National Grid Company)	Michael Schiavone	Affirmative	
3	Northern Indiana Public Service Co.	William SeDoris	Affirmative	
3	Orange and Rockland Utilities, Inc.	David Burke	Affirmative	
3	Orlando Utilities Commission	Ballard K Mutters	Abstain	
3	Owensboro Municipal Utilities	Thomas T Lyons	Negative	
3	Pacific Gas and Electric Company	John H Hagen	Affirmative	
3	PacifiCorp	Dan Zollner	Abstain	
3	Platte River Power Authority	Terry L Baker	Abstain	
3	PNM Resources	Michael Mertz	Abstain	
3	Potomac Electric Power Co.	Robert Reuter		
3	Progress Energy Carolinas	Sam Waters	Negative	
3	Public Service Electric and Gas Co.	Jeffrey Mueller	Abstain	
3	Public Utility District No. 1 of Clallam County	David Proebstel		
3	Puget Sound Energy, Inc.	Erin Apperson	Affirmative	
3	Sacramento Municipal Utility District	James Leigh-Kendall	Abstain	
3	Salt River Project	John T. Underhill	Affirmative	
3	San Diego Gas & Electric	Scott Peterson		
3	Santee Cooper	James M Poston	Negative	
3	Seattle City Light	Dana Wheelock	Affirmative	
3	Seminole Electric Cooperative, Inc.	James R Frauen	Affirmative	
3	Snohomish County PUD No. 1	Mark Oens	Abstain	
3	South Carolina Electric & Gas Co.	Hubert C Young	Affirmative	
3	Tampa Electric Co.	Ronald L. Donahey		
3	Tennessee Valley Authority	Ian S Grant	Negative	
3	Tri-State G & T Association, Inc.	Janelle Marriott	Affirmative	
3	Westar Energy	Bo Jones		

3	Wisconsin Electric Power Marketing	James R Keller	Abstain	
3	Xcel Energy, Inc.	Michael Ibold	Negative	
4	Alliant Energy Corp. Services, Inc.	Kenneth Goldsmith		
4	American Municipal Power	Kevin Koloini	Affirmative	
4	City of Austin dba Austin Energy	Reza Ebrahimian	Affirmative	
4	City of Clewiston	Kevin McCarthy	Negative	
4	City of Redding	Nicholas Zettel	Affirmative	
4	City Utilities of Springfield, Missouri	John Allen	Affirmative	
4	Consumers Energy	David Frank Ronk	Affirmative	
4	Cowlitz County PUD	Rick Syring		
4	Flathead Electric Cooperative	Russ Schneider	Abstain	
4	Florida Municipal Power Agency	Frank Gaffney	Negative	
4	Fort Pierce Utilities Authority	Thomas Richards		
4	Georgia System Operations Corporation	Guy Andrews	Abstain	
4	Indiana Municipal Power Agency	Jack Alvey	Abstain	
4	LaGen	Richard Comeaux	Abstain	
4	Madison Gas and Electric Co.	Joseph DePoorter	Abstain	
4	Modesto Irrigation District	Spencer Tacke		
4	Ohio Edison Company	Douglas Hohlbach	Negative	
4	Old Dominion Electric Coop.	Mark Ringhausen	Negative	
4	Public Utility District No. 1 of Douglas County	Henry E. LuBean		
4	Public Utility District No. 1 of Snohomish County	John D Martinsen	Abstain	
4	Sacramento Municipal Utility District	Mike Ramirez	Abstain	
4	Seattle City Light	Hao Li	Affirmative	
4	Seminole Electric Cooperative, Inc.	Steven R Wallace	Affirmative	
4	Tacoma Public Utilities	Keith Morissette	Affirmative	
4	Wisconsin Energy Corp.	Anthony Jankowski	Negative	
5	AEP Service Corp.	Brock Ondayko		
5	Amerenue	Sam Dwyer	Negative	
5	Arizona Public Service Co.	Edward Cambridge	Affirmative	
5	Associated Electric Cooperative, Inc.	Matthew Pacobit		
5	BC Hydro and Power Authority	Clement Ma	Abstain	
5	Boise-Kuna Irrigation District/dba Lucky peak power plant project	Mike D Kukla	Abstain	
5	Bonneville Power Administration	Francis J. Halpin	Negative	
5	Brazos Electric Power Cooperative, Inc.	Shari Heino	Negative	
5	City and County of San Francisco	Daniel Mason	Negative	
5	City of Austin dba Austin Energy	Jeanie Doty	Affirmative	
5	City of Redding	Paul A. Cummings	Affirmative	
5	City Water, Light & Power of Springfield	Steve Rose	Affirmative	
5	Cleco Power	Stephanie Huffman	Negative	
5	Colorado Springs Utilities	Jennifer Eckels	Affirmative	
5	Consolidated Edison Co. of New York	Wilket (Jack) Ng	Affirmative	
5	Constellation Power Source Generation, Inc.	Amir Y Hammad	Negative	

5	Consumers Energy Company	David C Greyerbiehl	Affirmative	
5	Cowlitz County PUD	Bob Essex		
5	Detroit Edison Company	Christy Wicke		
5	Dominion Resources, Inc.	Mike Garton		
5	Duke Energy	Dale Q Goodwine	Negative	
5	Dynegy Inc.	Dan Roethemeyer		
5	Edison Mission Marketing & Trading Inc.	Brenda J Frazer	Affirmative	
5	Electric Power Supply Association	John R Cashin		
5	Energy Services, Inc.	Tracey Stubbs	Affirmative	
5	Essential Power, LLC	Patrick Brown	Affirmative	
5	Exelon Nuclear	Michael Korchynsky		
5	ExxonMobil Research and Engineering	Martin Kaufman		
5	FirstEnergy Solutions	Kenneth Dresner	Negative	
5	Florida Municipal Power Agency	David Schumann	Negative	
5	Great River Energy	Preston L Walsh	Negative	
5	ICF International	Brent B Hebert	Affirmative	
5	Imperial Irrigation District	Marcela Y Caballero		
5	JEA	John J Babik	Affirmative	
5	Kansas City Power & Light Co.	Brett Holland	Affirmative	
5	Kissimmee Utility Authority	Mike Blough	Negative	
5	Lakeland Electric	James M Howard	Abstain	
5	Liberty Electric Power LLC	Daniel Duff	Negative	
5	Lincoln Electric System	Dennis Florom	Affirmative	
5	Los Angeles Department of Water & Power	Kenneth Silver	Abstain	
5	Lower Colorado River Authority	Tom Foreman	Abstain	
5	Luminant Generation Company LLC	Mike Laney	Negative	
5	Manitoba Hydro	S N Fernando		
5	Massachusetts Municipal Wholesale Electric Company	David Gordon	Abstain	
5	MEAG Power	Steven Grego	Affirmative	
5	MidAmerican Energy Co.	Christopher Schneider	Affirmative	
5	Muscatine Power & Water	Mike Avesing	Affirmative	
5	Nebraska Public Power District	Don Schmit	Negative	
5	New York Power Authority	Wayne Sipperly	Affirmative	
5	NextEra Energy	Allen D Schriver	Negative	
5	North Carolina Electric Membership Corp.	Jeffrey S Brame	Negative	
5	Northern Indiana Public Service Co.	William O. Thompson		
5	Occidental Chemical	Michelle R DAntuono	Negative	
5	Omaha Public Power District	Mahmood Z. Safi	Affirmative	
5	PacifiCorp	Sandra L. Shaffer	Abstain	
5	Platte River Power Authority	Roland Thiel	Affirmative	
5	Portland General Electric Co.	Gary L Tingley		
5	PPL Generation LLC	Annette M Bannon	Negative	
5	Progress Energy Carolinas	Wayne Lewis	Abstain	
5	PSEG Fossil LLC	Tim Kucey	Abstain	

5	Public Utility District No. 1 of Lewis County	Steven Grega	Affirmative	
5	Puget Sound Energy, Inc.	Tom Flynn	Affirmative	
5	Sacramento Municipal Utility District	Bethany Hunter	Abstain	
5	Salt River Project	William Alkema	Affirmative	
5	Santee Cooper	Lewis P Pierce	Negative	
5	Seminole Electric Cooperative, Inc.	Brenda K. Atkins	Affirmative	
5	Snohomish County PUD No. 1	Sam Nietfeld	Abstain	
5	South Carolina Electric & Gas Co.	Edward Magic	Affirmative	
5	Southern California Edison Co.	Denise Yaffe	Affirmative	
5	Southern Company Generation	William D Shultz	Negative	
5	Tacoma Power	Claire Lloyd	Affirmative	
5	Tampa Electric Co.	RJames Rocha	Affirmative	
5	Tenaska, Inc.	Scott M. Helyer	Abstain	
5	Tennessee Valley Authority	David Thompson	Negative	
5	U.S. Army Corps of Engineers	Melissa Kurtz		
5	U.S. Bureau of Reclamation	Martin Bauer	Abstain	
5	Westar Energy	Bryan Taggart		
5	Wisconsin Electric Power Co.	Linda Horn	Abstain	
6	AEP Marketing	Edward P. Cox		
6	APS	Randy A. Young		
6	Bonneville Power Administration	Brenda S. Anderson	Negative	
6	City of Austin dba Austin Energy	Lisa L Martin	Affirmative	
6	City of Redding	Marvin Briggs	Affirmative	
6	Cleco Power LLC	Robert Hirchak	Negative	
6	Consolidated Edison Co. of New York	Nickesha P Carrol	Affirmative	
6	Constellation Energy Commodities Group	Brenda L Powell	Negative	
6	Dominion Resources, Inc.	Louis S. Slade	Abstain	
6	Entergy Services, Inc.	Terri F Benoit	Negative	
6	Exelon Power Team	Pulin Shah		
6	FirstEnergy Solutions	Kevin Querry	Negative	
6	Florida Municipal Power Agency	Richard L. Montgomery	Negative	
6	Florida Municipal Power Pool	Thomas Washburn	Affirmative	
6	Florida Power & Light Co.	Silvia P. Mitchell	Negative	
6	Great River Energy	Donna Stephenson		
6	Imperial Irrigation District	Cathy Bretz	Abstain	
6	Kansas City Power & Light Co.	Jessica L Klinghoffer	Affirmative	
6	Lincoln Electric System	Eric Ruskamp	Affirmative	
6	Los Angeles Department of Water & Power	Brad Packer	Abstain	
6	Luminant Energy	Brad Jones	Abstain	
6	Manitoba Hydro	Daniel Prowse		
6	MidAmerican Energy Co.	Dennis Kimm	Affirmative	
6	New York Power Authority	Saul Rojas	Affirmative	
6	Northern Indiana Public Service Co.	Joseph O'Brien	Affirmative	
6	NRG Energy, Inc.	Alan Johnson	Abstain	

6	PacifiCorp	Scott L Smith	Abstain	
6	Platte River Power Authority	Carol Ballantine	Abstain	
6	Powerex Corp.	Daniel W. O'Hearn	Abstain	
6	PPL EnergyPlus LLC	Mark A Heimbach		
6	Progress Energy	John T Sturgeon	Negative	
6	PSEG Energy Resources & Trade LLC	Peter Dolan	Abstain	
6	Public Utility District No. 1 of Chelan County	Hugh A. Owen		
6	Sacramento Municipal Utility District	Diane Enderby	Abstain	
6	Salt River Project	Steven J Hulet		
6	Santee Cooper	Michael Brown	Negative	
6	Seattle City Light	Dennis Sismaet	Affirmative	
6	Seminole Electric Cooperative, Inc.	Trudy S. Novak	Affirmative	
6	Snohomish County PUD No. 1	William T Moojen	Abstain	
6	South California Edison Company	Lujuanna Medina	Affirmative	
6	Southern Company Generation and Energy Marketing	John J. Ciza	Negative	
6	Tacoma Public Utilities	Michael C Hill	Affirmative	
6	Tampa Electric Co.	Benjamin F Smith II		
6	Tennessee Valley Authority	Marjorie S. Parsons	Negative	
6	Westar Energy	Grant L Wilkerson	Affirmative	
8		Roger C Zaklukiewicz	Affirmative	
8		James A Maenner	Affirmative	
8		Edward C Stein		
8	JDRJC Associates	Jim Cyrulewski	Negative	
8	Massachusetts Attorney General	Frederick R Plett	Affirmative	
8	Volkman Consulting, Inc.	Terry Volkman	Negative	
9	Commonwealth of Massachusetts Department of Public Utilities	Donald Nelson	Affirmative	
10	New York State Reliability Council	Alan Adamson	Affirmative	
10	Northeast Power Coordinating Council	Guy V. Zito	Affirmative	
10	ReliabilityFirst Corporation	Anthony E Jablonski	Abstain	
10	SERC Reliability Corporation	Carter B. Edge	Abstain	
10	Southwest Power Pool RE	Emily Pennel	Affirmative	
10	Texas Reliability Entity, Inc.	Donald G Jones	Abstain	
10	Western Electricity Coordinating Council	Steven L. Rueckert	Abstain	



**Exhibit G**

Standard Drafting Team Roster for NERC Standards Development  
Project 2011-INT

## Project 2011-INT-02 Rapid Revision of VAR-002

### Drafting Team

Name and Title	Company and Address	Contact Info	Bio
John Simpson, PE	John L. Simpson Transmission Consulting	(281) 954-1853 john.l.simpson @att.net	<p>John L. Simpson is a Transmission Consultant who provides independent transmission consulting services to IPPs and Merchant Electricity Generators in wholesale electric power markets. He helps improve transmission access for existing generating plants, secures highest value interconnection service for new generation additions, and provides consulting services on NERC Reliability Standards requirements for utilities and merchant generators.</p> <p>Formerly Manager of Transmission Policy at RRI Energy, Simpson has extensive experience in securing transmission access for new generating plants and improving transmission access capabilities for existing generating plants by upgrading transmission interconnection rights through new generator interconnection requests. Simpson has provided expert testimony and negotiated settlement agreements for generator reactive power tariffs filed at FERC; negotiated the Standard Large Generator Interconnection Procedures and Agreement with Transmission Providers and other Independent Generators as part of FERC's ANOPR process; and led the efforts to secure approval of the first significant modification to the FERC pro forma open access transmission tariff for an individual utility, i.e., the addition of Network Contract Demand Transmission Service.</p> <p>Simpson has a Bachelor of Science in Electrical Engineering from the University of Colorado.</p>
Bill Harm, PE	PJM Interconnection, L.L.C. 955 Jefferson Ave Valley Forge Corporate Center Norristown, Pennsylvania 19403- 2497	610-666-8868 Harm@pjm.com	<p>Bill Harm is a Senior Consultant at PJM in the NERC and Regional Coordination Department. Bill has over 38 years of experience in various aspects of the planning and operation of the PJM network. Before joining the NERC and Regional Coordination Department Bill worked in operations, operations planning, system planning and operations support. Bill's background also includes technical support of operations and markets during the integration of new members into the PJM market as well as developing various joint operating agreements.</p> <p>Bill received his BSEE and MSEE from Drexel University and is a Registered Engineer in the Commonwealth of Pa.</p>
Hari Singh, PE, PhD	Xcel Energy Principal Engineer,	(303)571.7095 hari.singh@xcelene	Hari Singh is a Principal Engineer in the Transmission Asset Management department of

	<p>Transmission Planning 1800 Larimer, Suite 600 Denver, CO 80202</p>	<p>rgy.com</p>	<p>Public Service Company of Colorado (dba Xcel Energy) since 2009. His responsibilities include providing subject matter expertise to Transmission Planning activities for near-term and long-term reliability assessment of the Company's transmission system as well as resolve operations planning issues. As such, his competencies include a comprehensive and in-depth knowledge of WECC Regional Reliability Criteria, WECC Voltage Stability Study Methodology, as well as NERC Reliability Standards pertaining to Transmission Planning and Operations, System Modeling, Voltage &amp; Reactive Power, and Protective Relaying &amp; Control.</p> <p>Previously, as Senior Planning Engineer in American Transmission Company, Hari was responsible for planning the reactive compensation for the 220 mile, Arrowhead-Weston 345-kV Line and determining the resulting increase in SOL for the Minnesota Wisconsin Stability Interface. During his 20+ years of work experience, Hari has conducted several engineering studies involving a variety of power system analyses and simulations in order to assess system performance and provide cost-effective recommendations for enhancing the reliability of electric power delivery systems. During his career, Hari has contributed to and/or actively participates in the following industry efforts:</p> <ul style="list-style-type: none"> <li>• Root Cause Analysis for the DoE/NERC Investigation of the August 14, 2003 Blackout</li> <li>• Member of NERC's Phase III-IV Planning Standards Drafting Team (2005-06)</li> <li>• Vice-Chair of MRO Wind Generating Plant Modeling Task Force (2007-08)</li> <li>• Member of WECC Modeling &amp; Validation Working Group (since 2009)</li> <li>• WECC Representative on NERC's System Analysis &amp; Modeling Subcommittee (since 2010)</li> </ul> <p>Hari Singh earned his Ph.D. in Electrical Engineering with emphasis in Power Systems from Texas A&amp;M University in 1994. Hari is a Senior Member of IEEE since 1997 and a Professional Engineer registered in Wisconsin since 2000.</p>
<p>Edwin Thompson, PE</p>	<p>Consolidated Edison Co. of New York 4 Irving Place New York, New York 10003</p>	<p>(212) 460-8199 thompsonedwin@coned.com</p>	<p>Edwin Thompson is Professional Engineer in the state of New York with 30 years of experience in the electric power industry. Ed's experience includes over 20 years of experience in the engineering and operation of control equipment for turbine-generators, both with General Electric and the Consolidated Edison Company of New York (CECONY). From 2000 to 2005, Ed worked in CECONY's Energy Market Policy Group. During this time I worked on the NYISO (New York Independent System Operator) voltage support service tariff. In 2005, Ed joined CECONY's Transmission Planning Department. One of his primary duties was the development and enhancement of the CECONY System Restoration Plan. Much of my restoration work involved static and dynamic load flow modeling (PSS/E). Ed also</p>

			<p>was responsible for training System Operators and Generation Operators on the challenges of controlling voltages during a system restoration. Ed has been the CECONY representative on the NPCC Regional Standards Committee and the NPCC Restoration Working Group.</p>
<p>Stephen Crutchfield Standards Development Coordinator</p>	<p>North American Electric Reliability Corporation 3343 Peachtree Road, NE 4th Floor East Tower – Suite 400 Atlanta, GA 30326</p>	<p>609-651-9455 Stephen.crutchfield@nerc.net</p>	<p>Stephen Crutchfield is the NERC Staff Coordinator for Project 2011-INT-02, Rapid Revision of VAR-002. Stephen began his career with NERC in May 2007. Prior to joining NERC, Stephen was a Project Manager with Shaw Energy Delivery Services, managing engineering and construction projects in the substation and transmission line fields. Stephen's background also includes experience with PJM as Manager of RTO Integration, working on the operations and markets integration of new members (AEP, ComEd, Dayton, Dominion and Duquesne) into PJM and southern seams operations issues with Progress Energy, Duke and TVA. Stephen also helped lead the team that was developing GridSouth in the dual roles of Organization Architect and Manager of Customer Support. Prior to GridSouth, Stephen was the Manager of Power System Operations Training at Progress Energy where he spent over 10 years training System Operators and Engineers. Overall, Stephen was with Progress Energy for 16 years.</p> <p>Stephen received his Bachelor of Arts in Physics from the University of Virginia and Masters of Science in Electrical Engineering from North Carolina State University. Stephen also holds a Master of Science in Management degree, also from North Carolina State University.</p>