

**Reliability Standard Audit Worksheet[[1]](#footnote-1)**

VAR-002-4.1 – Generator Operation for Maintaining Network Voltage

***This section to be completed by the Compliance Enforcement Authority.***

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| **Audit ID:** | Audit ID if available; or REG-NCRnnnnn-YYYYMMDD |
| **Registered Entity:**  | Registered name of entity being audited |
| **NCR Number:**  | NCRnnnnn |
|  **Compliance Enforcement Authority:** | Region or NERC performing audit |
| **Compliance Assessment Date(s)[[2]](#footnote-2):** | Month DD, YYYY, to Month DD, YYYY |
| **Compliance Monitoring Method:**  | [On-site Audit | Off-site Audit | Spot Check] |
| **Names of Auditors:**  | Supplied by CEA |

# **Applicability of Requirements**

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|  | **BA** | **DP** | **GO** | **GOP** | **PA** | **RC** | **RP** | **RSG** | **TO** | **TOP** | **TP** | **TSP** |
| **R1** |  |  |  | X |  |  |  |  |  |  |  |  |
| **R2** |  |  |  | X |  |  |  |  |  |  |  |  |
| **R3** |  |  |  | X |  |  |  |  |  |  |  |  |
| **R4** |  |  |  | X |  |  |  |  |  |  |  |  |
| **R5** |  |  | X |  |  |  |  |  |  |  |  |  |
| **R6** |  |  | X |  |  |  |  |  |  |  |  |  |

**Legend:**

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| Text with blue background: | Fixed text – do not edit |
| Text entry area with Green background: | Entity-supplied information |
| Text entry area with white background: | Auditor-supplied information |

Findings

**(This section to be completed by the Compliance Enforcement Authority)**

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| **Req.** | **Finding** | **Summary and Documentation** | **Functions Monitored** |
| **R1** |  |  |  |
| **R2** |  |  |  |
| **R3** |  |  |  |
| **R4** |  |  |  |
| **R5** |  |  |  |
| **R6** |  |  |  |

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| **Req.** | **Areas of Concern** |
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| **Req.** | **Recommendations** |
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| **Req.** | **Positive Observations** |
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Subject Matter Experts

Identify the Subject Matter Expert(s) responsible for this Reliability Standard.

**Registered Entity Response (Required; Insert additional rows if needed):**

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| **SME Name** | **Title** | **Organization** | **Requirement(s)** |
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R1 Supporting Evidence and Documentation

1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (with its automatic voltage regulator (AVR) in service and controlling voltage) or in a different control mode, as instructed by the Transmission Operator unless: 1) the generator is exempted by the Transmission Operator, or 2) the Generator Operator has notified the Transmission Operator of one of the following:
* That the generator is being operated in start-up,[[3]](#footnote-3) shutdown,[[4]](#footnote-4) or testing mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or
* That the generator is not being operated in automatic voltage control mode or in the control mode that was instructed by the Transmission Operator for a reason other than start-up, shutdown, or testing.
1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode or a different control mode as specified in Requirement R1. If a generator is being started up or shut down with the automatic voltage control off, or is being tested, and no notification of the AVR status is made to the Transmission Operator, the Generator Operator will have evidence that it notified the Transmission Operator of its procedure for placing the unit into automatic voltage control mode as required in Requirement R1. Such evidence may include, but is not limited to, dated evidence of transmittal of the procedure such as an electronic message or a transmittal letter with the procedure included or attached. If a generator is exempted, the Generator Operator shall also have evidence that the generator is exempted from being in automatic voltage control mode (with its AVR in service and controlling voltage).

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** |
| **File Name** | **Document Title** | **Revision or Version** | **Document Date** | **Relevant Page(s) or Section(s)** | **Description of Applicability of Document** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to VAR-002-4.1, R1

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R1) For instances where entity did not operate a generator in automatic voltage control mode or in a different control mode, as instructed by the Transmission Operator, ensure notification was given to the Transmission Operator in accordance with Requirement R1. |
| **Note to Auditor:** Auditors can identify instances where entities did not operate generators in automatic voltage control mode, or in a different control mode, as instructed by the Transmission Operator, through their general knowledge of the interconnected transmission system in the entity’s area. Auditor knowledge is obtained through activities such as conversations with the entity under audit or the Transmission Operator, and an awareness of events occurring on the interconnected transmission system. In situations where the entity’s compliance with this requirement poses little risk to the BES, conversations with other entities, such as Transmission Operators, is most likely not necessary.  |

Auditor Notes:

R2 Supporting Evidence and Documentation

1. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power schedule[[5]](#footnote-5) (within each generating Facility’s capabilities[[6]](#footnote-6)) provided by the Transmission Operator, or otherwise shall meet the conditions of notification for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator.
	1. When a generator’s AVR is out of service or the generator does not have an AVR, the Generator Operator shall use an alternative method to control the generator reactive output to meet the voltage or Reactive Power schedule provided by the Transmission Operator.
	2. When instructed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
	3. Generator Operators that do not monitor the voltage at the location specified in their voltage schedule shall have a methodology for converting the scheduled voltage specified by the Transmission Operator to the voltage point being monitored by the Generator Operator.
2. In order to identify when a generator is deviating from its schedule, the Generator Operator will monitor voltage based on existing equipment at its Facility. The Generator Operator shall have evidence to show that the generator maintained the voltage or Reactive Power schedule provided by the Transmission Operator, or shall have evidence of meeting the conditions of notification for deviations from the voltage or Reactive Power schedule provided by the Transmission Operator. Evidence may include, but is not limited to, operator logs, SCADA data, phone logs, and any other notifications that would alert the Transmission Operator or otherwise demonstrate that the Generator Operator complied with the Transmission Operator’s instructions for addressing deviations from the voltage or Reactive Power schedule.

For Part 2.1, when a generator’s AVR is out of service or the generator does not have an AVR, a Generator Operator shall have evidence to show an alternative method was used to control the generator reactive output to meet the voltage or Reactive Power schedule provided by the Transmission Operator.

For Part 2.2, the Generator Operator shall have evidence that it complied with the Transmission Operator’s instructions to modify its voltage or provided an explanation to the Transmission Operator of why the Generator Operator was unable to comply with the instruction. Evidence may include, but is not limited to, operator logs, SCADA data, and phone logs.

For Part 2.3, for Generator Operators that do not monitor the voltage at the location specified on the voltage schedule, the Generator Operator shall demonstrate the methodology for converting the scheduled voltage specified by the Transmission Operator to the voltage point being monitored by the Generator Operator.

**Registered Entity Response (Required):**

 **Question:** Did entity operate any of its generating Facility without AVR during the compliance monitoring period? ☐ Yes ☐ No

If yes, provide evidence that Generator Operator used an alternative method to control the generator reactive output to meet the voltage or Reactive Power schedule provided by the Transmission Operator.

If No, Requirement R2.1 is not applicable.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested[[7]](#endnote-1):

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence as outlined in R2 and any written policies, procedures or protocols describing how the entity maintains the generator voltage or Reactive Power schedule provided by Transmission Operator, if the entity has such documents. |
| Generator voltage or Reactive Power schedule provided to entity by Transmission Operator, or entity’s record thereof, for timeframes selected by the auditor. |

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** |
| **File Name** | **Document Title** | **Revision or Version** | **Document Date** | **Relevant Page(s) or Section(s)** | **Description of Applicability of Document** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to VAR-002-4.1, R2

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R2) Interview entity staff and/or review documentation provided by the entity to understand how they maintain the generator voltage or Reactive Power schedule or authorized exemption per Requirement R2. |
|  | (R2) Read entity’s response to compliance Question above and understand how entity complies with Requirement R2.1, when they operate a generator without AVR.  |
|  | (R2) Select a sample of timeframes during the audit period and have entity walkthrough how they complied with Requirement R2 for those timeframes. |
| **Note to Auditor:** For Part 2.3, the entity should be able to provide documentation that identifies the voltage number being monitored and the calculation demonstrating how it equates to the schedule provided by the Transmission Operator. The measure for VAR-002-4.1 Requirement R2, Part 2.3 is clear on what evidence should be able to demonstrate this during an audit. The entity can only be responsible for maintaining the schedule provided by the Transmission Operator based on existing facility equipment. In the event that an entity does not have the equipment to have visibility of high-side system voltage, the entity will not have the ability to adjust VARs to maintain system voltage. An auditor is not to determine that, where the entity does not have the high side monitoring equipment and where the AVR is set appropriately based on existing facility equipment, the entity is non-compliant. However, if the Transmission Operator provides a new directive or schedule, the entity is required to follow the new directive. This directive can include modifying an AVR setting or providing more voltage support, and the entity is expected to comply pursuant to VAR-002-4.1.  |

Auditor Notes:

R3 Supporting Evidence and Documentation

1. Each Generator Operator shall notify its associated Transmission Operator of a status change on the AVR, power system stabilizer, or alternative voltage controlling device within 30 minutes of the change. If the status has been restored within 30 minutes of such change, then the Generator Operator is not required to notify the Transmission Operator of the status change.
2. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any status change identified in Requirement R3. If the status has been restored within the first 30 minutes, no notification is necessary.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requestedi:

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence as outlined in R3 and any written policies, procedures or protocols describing how the entity responds to a status change on AVR, if the entity has such documents. An example of entity’s response to a status change on AVR provided by entity, if applicable. |
| Auditor may select certain instances where entity had a status change on AVR. In such instances, provide associated evidence of awareness and resolution/notification.  |

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** |
| **File Name** | **Document Title** | **Revision or Version** | **Document Date** | **Relevant Page(s) or Section(s)** | **Description of Applicability of Document** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to VAR-002-4.1, R3

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R3) Interview entity staff and/or review documentation provided by the entity to understand how they respond to status changes on AVR. |
|  | (R3) Review evidence provided to determine if entity responded to status change on AVR in accordance with Requirement R3. |
| **Note to Auditor:**  |

Auditor Notes:

R4 Supporting Evidence and Documentation

1. Each Generator Operator shall notify its associated Transmission Operator within 30 minutes after becoming aware of a change in reactive capability due to factors other than a status change described in Requirement R3. If the capability has been restored within 30 minutes of the Generator Operator becoming aware of such change, then the Generator Operator is not required to notify the Transmission Operator of the change in reactive capability.
* Reporting of status or capability changes as stated in Requirement R4 is not applicable to the individual generating units of dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition.
1. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of becoming aware of a change in reactive capability in accordance with Requirement R4. If the capability has been restored within the first 30 minutes, no notification is necessary.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requestedi:

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence as outlined in R4 and any written policies, procedures or protocols describing how the entity responds to a change in reactive capability, if the entity has such documents. An example of entity’s response to a change in reactive capability provided by entity, if applicable. |
| Auditor may select certain instances where entity may have been aware of a status change in reactive capability. In such instances, provide associated evidence of awareness and resolution/notification. See Note to Auditor for additional details. |

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** |
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Compliance Assessment Approach Specific to VAR-002-4.1, R4

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R4) Interview entity staff and/or review documentation provided by the entity to understand how they respond to change in reactive capability. |
|  | (R4) Review evidence provided to determine if entity responded to change in reactive capability in accordance with Requirement R4. |
| **Note to Auditor:** It is clear that VAR-002-4.1, Requirement R4 will only be a violation if the change is not reported after 30 minutes of becoming aware of the status change in reactive capability. An auditor will ask an entity for evidence to demonstrate when it became aware of the change. This will not be purely subjective; there are technical instances (e.g. unit trips, ramping, and equipment/AVR failures) where it is likely that an entity was made aware of the change in reactive capability.Also, the bulleted part of the requirement stating “ Reporting of status or capability changes as stated in Requirement R4 is not applicable to the individual generating units of dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition” only applies to Requirement R4, not Requirement R3. |

Auditor Notes:

R5 Supporting Evidence and Documentation

1. The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request.
	1. For generator step-up and auxiliary transformers[[8]](#footnote-7) with primary voltages equal to or greater than the generator terminal voltage:
		1. Tap settings.
		2. Available fixed tap ranges.
		3. Impedance data.
2. 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 R5 Part 5.1.1 through Part 5.1.3 within 30 calendar days.

Evidence Requestedi:

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence as outlined in R5. Evidence of transmittal of the data could include, but is not limited to, items such as an electronic message or a transmittal letter with the information included or attached.  |

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to VAR-002-4.1, R5

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R5) Review evidence (documented date of request and reply) to determine if entity responded to information request(s) as required in Requirement R5 within 30 days of receiving a request from associated Transmission Operator. |
| **Note to Auditor:** Based on the auditors professional judgment, they may confirm with Transmission Operators to determine if requests for data were made or simply confirm the existence of such requests with the entity under audit.  |

Auditor Notes:

R6 Supporting Evidence and Documentation

1. 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.
	1. If the Generator Owner cannot comply with the Transmission Operator’s specifications, the Generator Owner shall notify the Transmission Operator and shall provide the technical justification.
2. The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator’s documentation as identified in Requirement R6. The Generator Owner shall have evidence that it notified its associated Transmission Operator when it could not comply with the Transmission Operator’s step-up transformer tap specifications as identified in Requirement R6, Part 6.1.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** |
| **File Name** | **Document Title** | **Revision or Version** | **Document Date** | **Relevant Page(s) or Section(s)** | **Description of Applicability of Document** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to VAR-002-4.1, R6

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|  | (R6) Review evidence (documented date of request and response) to determine if entity responded to change(s) as required in Requirement R6. |
| **Note to Auditor:** Based on the auditors professional judgment, they may confirm with Transmission Operators to determine if requests for changes to transformer tap positions were made or simply confirm the existence of such requests with the entity under audit.  |

Auditor Notes:

Additional Information:



Reliability Standard

Regulatory Background

VAR-002-1 was approved in [Order No. 693](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/ORDER%20693.pdf) on March 16, 2007. VAR-002-1 was a revision of the previous voluntary standard VAR-002-0.

Two interpertations were subsequently approved for VAR-002-1. The first interpretation, approved in [Order No. 713](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Order_713_Modified-INT_and_TLR-Stds-07212008.pdf) on July 21, 2008, added clarity to Requirements R1 and R2. The second interpretation, approved in a [September 16, 2010 order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Order_RS_Interp_91610.pdf), clarified the applicability of the Standard based on different scenarios.

VAR-002-2b was approved in a [April 16, 2013 order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Order%20Approving%20Reliability%20Standard%20VAR-002-2b.pdf). This Standard clarified startup and shutdown conditions for generators as well as clarified the language of Requirement R2.

VAR-002-3 requires generator operators to operate in automatic voltage control unless certain specific conditions are met and also requires generator operators to follow transmission operator’s voltage schedules.

VAR-002-4 clarified the applicability of Requirement 4 and Requirement 5 to dispersed generation resources.

In the [letter order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Delegated%20Order%20Approving%20Errata%20to%20Voltage%20and%20Reactive%20Control%20Rel%20Stds%20RD17-7.pdf) issued September 26, 2017, FERC approved an errata to VAR-002-4.

FERC Orders

Letter Order

North American Electric Reliability Corp., Docket No. RD17-7-000 (Sept. 26, 2017).

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Delegated%20Order%20Approving%20Errata%20to%20Voltage%20and%20Reactive%20Control%20Rel%20Stds%20RD17-7.pdf>

Page 1 FERC approved VAR-002-4.1 which “corrects capitalization of the defined term ‘Reactive Power’ in Requirement R4, footnote 4.”

*North American Electric Reliability Corp.,* 151 FERC ¶ 61,186 (2015).

[May 29, 2015 Letter Order in Docket No. RD15-3-000](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Letter%20Order%20Approving%20DGR%20Reliability%20Standards.pdf)

P 2. The Commission-approved definition of “bulk electric system,” inclusion I4, provides:

Dispersed power producing resources that aggregate to a total capacity greater than 75 MVA (gross nameplate rating), and that are connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage of 100 kV or above.

Thus, under inclusion I4, the elements designated as bulk electric system are: (i) the individual resources; and (ii) the system designed primarily for delivering capacity from the point where those resources aggregate to greater than 75 MVA to a common point of connection at a voltage of 100 kV or above.

P 4. NERC explains that the design and operational characteristics of dispersed power producing resources are different than traditional generation. In particular, dispersed power producing resources are typically comprised of many individual generating units and, in most instances the units are similar in design and produced by the same manufacturer. The aggregated capability of the facility may contribute significantly to the reliability of the Bulk-Power System, and therefore, the equipment utilized to aggregate the individual units to a common point of interconnection with the transmission system should be operated and maintained as required by the NERC Reliability Standards subject to these petitions. Thus, NERC proposes to modify each of the identified Reliability Standards to include applicability language in provisions pertaining to generator owners and generator operators of resources identified through inclusion I4 of the bulk electric system definition.

P 16. The revisions to eight Reliability Standards, approved in this order, are designed to clarify the applicability to owners of dispersed power producing resources. These entities comprise a subset of the generator owners in the NERC Compliance Registry.

North American Electric Reliability Corp., Docket No. RD14-11-000 (2014).

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/VAR%20Letter%20Order.pdf>

Page 2 FERC approved “Reliability Standards VAR-002-3 [which] requires each generator operator to operate each of its generators connected to the interconnected transmission system in automatic voltage control mode or in a different control mode as instructed by the transmission operator, unless the generator operator is exempted by the transmission operator pursuant to the criteria established under Relaibility Standard VAR-001-4, or make certain notifications to the transmission operator specifying the reasons it cannot so operate. Reliability Standard VAR-002-3 also requires each generator operator to maintain the transmission operator’s generator voltage or reactive power schedule, except in specified circumstances.”

*Order Approving Reliability Standard,* 143 FERC ¶61,045 (2013).

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Order%20Approving%20Reliability%20Standard%20VAR-002-2b.pdf>

P 21 In approving VAR-002-2b, FERC stated “We agree with NERC’s explanation that it is preferable for the generator operator to manually control the generating unit during startup and shutdown rather than utilize the automatic voltage regulator. In addition, we find that the inclusion of what constitutes a start-up and shutdown in the context of the Relaibility Standard provides additional clarity in the requirement and consistency across the regions.”

P 22 In discussing the VSL of the Standard, FERC states “The language of Requirement R2 provides that any deviation is a violation, and a VSL providing a 30-minute window would be inconsistent with the Commission guidelines that assignments should be consistent with the corresponding requirement.”

*Order on Reliability Standard Interpertation*, 132 FERC ¶61,220 (2010).

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Order_RS_Interp_91610.pdf>

P 9 In approving the interpretation of VAR-002-1, FERC stated **“**NERC’s interpretation clarifies that all of the requirements in VAR-002-1.1a apply to all generator owners and generator operators that own or operate generators whether equipped with an automatic voltage regulator or not. The interpretation also states that the Reliability Standard is predicated on an assumption that the generator has AVR equipment capable of automatic operation. The interpretation states that a generator not equipped with AVR is functionally equivalent to a generator equipped with AVR that is out of service. Finally, the interpretation notes that VAR-002-1.1a does not require a generator to be equipped with AVR or to add AVR capability. NERC comments in its Petition that other NERC Reliability Standards are sufficient to provide the motivation for AVR or other types of dynamic reactive capability to be installed.”

P 10 FERC continues by stating “The interpretation explains that, pursuant to Requirement R1, a generator operator must notify the transmission operator when automatic voltage control is not available, either because the AVR is not functioning or the generator is not capeable of AVR.”

P 11 FERC also notes that “NERC’s interpretation states that these Requirements [R2 and R2.1] apply whether a generator has AVR or not.”

Sampling Methodology

Sampling is essential for auditing compliance with NERC Reliability Standards since it is not always possible

or practical to test 100% of either the equipment, documentation, or both, associated with the full suite of enforceable standards. The Sampling Methodology Guidelines and Criteria (see NERC website), or sample guidelines, provided by the Electric Reliability Organization help to establish a minimum sample set for monitoring and enforcement uses in audits of NERC Reliability Standards.

Revision History for RSAW

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| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | 11/21/2017 | NERC Compliance Assurance, RSAW Task Force | New Document for consistency with the changes to newest version of approved Standard. |
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1. NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

The RSAW may provide a non exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserve the right to request additional evidence from the registered entity that is not included in this RSAW. This RSAW may include excerpts from FERC Orders and other regulatory references which are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail.

 [↑](#footnote-ref-1)
2. Compliance Assessment Date(s): The date(s) the actual compliance assessment (on-site audit, off-site spot check, etc.) occurs. [↑](#footnote-ref-2)
3. 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. [↑](#footnote-ref-3)
4. 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. [↑](#footnote-ref-4)
5. The voltage or Reactive Power schedule is a target value with a tolerance band or a voltage or Reactive Power range communicated by the Transmission Operator to the Generator Operator. [↑](#footnote-ref-5)
6. Generating Facility capability may be established by test or other means, and may not be sufficient at times to pull the system voltage within the schedule tolerance band. Also, when a generator is operating in manual control, Reactive Power capability may change based on stability considerations. [↑](#footnote-ref-6)
7. Items in the Evidence Requested section are suggested evidence that may, but will not necessarily, demonstrate compliance. These items are not mandatory and other forms and types of evidence may be submitted at the entity’s discretion. [↑](#endnote-ref-1)
8. For dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition, this requirement applies only to those transformers that have at least one winding at a voltage of 100 kV or above. [↑](#footnote-ref-7)