

**Reliability Standard Audit Worksheet**

**VAR-001-5 — Voltage and Reactive Control**

Note: This RSAW incorporates the WECC Regional Variance to VAR-001-5

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

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| **Registered Entity:** | Registered name of entity being audited |
| **NCR Number:** | NCRnnnnn |
| **Compliance Enforcement Authority:** | Region or NERC performing audit |
| **Compliance Assessment Date(s)[[1]](#footnote-1):** | 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 |  |  |
| [**EA13.**](#EA13_Summary) |  |  |  |  |  |  |  |  |  | X |  |  |
| [**EA14**](#EA14_Summary)**.** |  |  |  |  |  |  |  |  |  | X |  |  |
| [**EA15**](#EA15_Summary)**.** |  |  |  | X |  |  |  |  |  |  |  |  |
| [**EA16**](#EA16_Summary)**.** |  |  |  |  |  |  |  |  |  | X |  |  |
| [**EA17**](#EA17_Summary)**.** |  |  |  | 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** |
| [**R****1**](#R1Summary) |  |  | TOP |
| [**R****2**](#R2Summary) |  |  | TOP |
| **[R3](#R3Summary)** |  |  | TOP |
| [**EA****13.**](#EA13Summary) |  |  | TOP |
| [**EA1****4**](#EA14Summary)**.** |  |  | TOP |
| [**EA****15**](#EA15Summary)**.** |  |  | GOP |
| [**EA****16**](#EA16Summary)**.** |  |  | TOP |
| [**EA****17**](#EA17Summary)**.** |  |  | GOP |
| [**R****6**](#R6Summary) |  |  | TOP |

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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** | **Reqs.** |
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R1 Supporting Evidence and Documentation

1. Each Transmission Operator shall specify a system voltage schedule (which is either a range or a target value with an associated tolerance band) as part of its plan to operate within System Operating Limits and Interconnection Reliability Operating Limits.
   1. Each Transmission Operator shall provide a copy of the voltage schedules and associated tolerance bands to its Reliability Coordinator and adjacent Transmission Operators within 30 calendar days of a request.
2. The Transmission Operator shall have evidence that it specified system voltage schedules using either a range or a target value with an associated tolerance band.

For Part 1.1, the Transmission Operator shall have evidence that the voltage schedules (which is either a range or a target value with an associated tolerance band) were provided to its Reliability Coordinator and adjacent Transmission Operators within 30 calendar days of a request. Evidence may include, but is not limited to, emails, website postings, and meeting minutes.

**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:

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| **Provide the following evidence, or other evidence to demonstrate compliance.** |
| Evidence as outlined in R1 and documentation of request made per Part 1.1 from Reliability Coordinator and/or adjacent Transmission Operators, if applicable and requested by 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-001-5, R1

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

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|  | (R1) Review evidence provided and ensure it meets the requirements outlined in Requirement R1. |
|  | (Part 1.1) Examine evidence to verify that voltage schedules were provided within 30 calendar days of request per Part 1.1. |
| **Note to Auditor:** Auditors, at their discretion and based on the risk of the entity’s compliance with this requirement to the BES, may communicate with Reliability Coordinators and other Transmission Operators to determine if data requests were made of the entity. Auditors may also accept entity assertions regarding whether data requests made. | |

[**Compliance S****ummary:**](#R1Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

R2 Supporting Evidence and Documentation

1. Each Transmission Operator shall schedule sufficient reactive resources to regulate voltage levels under normal and Contingency conditions. Transmission Operators can provide sufficient reactive resources through various means including, but not limited to, reactive generation scheduling, transmission line and reactive resource switching, and using controllable load.
2. Each Transmission Operator shall have evidence of scheduling sufficient reactive resources based on their assessments of the system. For the operations planning time horizon, Transmission Operators shall provide copies of assessments used as the basis for how resources were scheduled.

**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-001-5, R2

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

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|  | (R2) Review the studies/assessments that entity used to schedule resources to determine that the studies show whether new resources should be brought online, or if the resources online are sufficient to regulate voltage levels. Auditors should verify that actual scheduling reflected the results of the studies/assessments. |

[**Compliance** **Summary:**](#R2Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

R3 Supporting Evidence and Documentation

1. Each Transmission Operator shall operate or direct the Real-time operation of devices to regulate transmission voltage and reactive flow as necessary.
2. Each Transmission Operator shall have evidence that actions were taken to operate capacitive and inductive resources as needed in Real-time. This may include, but is not limited to, directions to Generator Operators to: 1) provide additional voltage support; 2) bring resources on-line; or 3) make manual adjustments.

**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:

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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 operates or directs devices to regulate transmission voltage and reactive flow as necessary, if the entity has such documents. |

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-001-5, R3

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

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|  | (R3) Review evidence to understand how entity operates or directs devices to regulate transmission voltage and reactive flow as necessary. Auditors may sample system events or other instances of voltage irregularities to verify that operations or directions occurred as required per Requirement R3. |

[**Complianc****e Summary:**](#R3Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

R4 Supporting Evidence and Documentation

As of January 1, 2014, R4 does not apply in WECC per Regional Variance.

R5 Supporting Evidence and Documentation

As of January 1, 2014, R5 does not apply in WECC per Regional Variance.

**Requirement E.A.13 Supporting Evidence and Documentation**

**E.A.13.** Each **Transmission Operator** shall issue any one of the following types of voltage schedules to the Generator Operators for each of their generation resources that are on-line and part of the Bulk Electric System within the Transmission Operator Area:

* A voltage set point with a voltage tolerance band and a specified period.
* An initial volt-ampere reactive output or initial power factor output with a voltage tolerance band for a specified period that the Generator Operator uses to establish a generator bus voltage set point.
* A voltage band for a specified period.

**M.E.A.13** Each Transmission Operator will have evidence that it provided the voltage schedules to the Generator Operator, as required in E.A.13. Evidence may include, but is not limited to, dated spreadsheets, reports, voice recordings, or other documentation containing the voltage schedule including set points, tolerance bands, and specified periods as required in Requirement E.A.13.

**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-001-5 Requirement E.A.13**

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

Review the evidence to verify the Registered Entity:

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|  | Review a list of all generation resources that are part of the BES and within the TOP’s area. |
|  | Determine if the TOP assigned one of the following types of voltage schedules to all applicable generation resources:   * A voltage set point with a voltage tolerance band and a specified period. * An initial volt-ampere reactive output or initial power factor output with a voltage tolerance band for a specified period that the Generator Operator uses to establish a generator bus voltage set point. * A voltage band for a specified period. |
|  | Ensure the assigned voltage schedule was provided to all generation resources. |

[**Compliance** **Summary:**](#EA13_Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

**E.A.14 Supporting Evidence and Documentation**

**E.A.14.** Each **Transmission Operator** shall provide one of the following voltage schedule reference points for each generation resource in its area to the Generator Operator:

* The generator terminals
* The high side of the generator step-up transformer
* The point of interconnection
* A location designated by mutual agreement between the Transmission Operator and Generator Operator.

**M.E.A.14** The Transmission Operator will have evidence that it provided one of the voltage schedule reference points for each generation resource in its area to the Generator Operator, as required in E.A.14. Evidence may include, but is not limited to dated letters, e-mail, or other documentation that contains notification to the Generator Operator of the voltage schedule reference point for each generation resource.

**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-001-5 Requirement E.A.14**

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

Review the evidence to verify the Registered Entity has:

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|  | Review a list of all generation resources that are part of the BES and within the TOP’s area. |
|  | Determine if the TOP assigned one of the following voltage schedule reference points to all applicable generation resources:   * The generator terminals * The high side of the generator step-up transformer * The point of interconnection * A location designated by mutual agreement between the Transmission Operator and Generator Operator |
|  | Ensure the assigned voltage schedule reference point was provided to all generation resources. |

[**Complian****ce Summary:**](#EA14Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

**Requirement E.A.15 Supporting Evidence and Documentation**

**E.A.15.** Each **Generator Operator** shall provide its voltage set point conversion methodology from the point in Requirement E.A.14 to the generator terminals within 30 calendars days of request by its Transmission Operator.

**M.E.A.15** The Generator Operator will have evidence that within 30 calendar days of request by its Transmission Operator it provided its voltage set point conversion methodology from the point in Requirement E.A.14 to the generator terminals, as required in E.A.15. Evidence may include, but is not limited to, dated reports, spreadsheets, or other documentation.

**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.

**Question:** Did the GOP receive a request from the TOP, to provide its voltage set point conversion methodology during the audit period? If no, state so and explain the process used to know if such a request had not been received. If yes, provide descriptions and documents demonstrating compliance.

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-001-5 Requirement E.A.15**

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

Review the evidence to verify the Registered Entity has:

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|  | Determine if the GOP received a request to provide a voltage set point conversion methodology by consulting the Question/Response in this RSAW. If no request was received, review the GOP’s explanation of how it knows such a request had not been received. |
|  | If yes:  Review the date the request was made against the date the response was provided to ensure each response was sent within 30 calendar days of the request. |
| **Note to Auditor:** If the GOP was able to implement the voltage schedule and associated point of reference provided by the TOP without using a set point conversion methodology, the GOP is not required to have a set point conversion methodology. | |

[**Compliance** **Summary:**](#EA16Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

**Requirement E.A.16 Supporting Evidence and Documentation**

**E.A.16.** Each **Transmission Operator** shall provide to the Generator Operator, within 30 calendar days of a request for data by the Generator Operator, its transmission equipment data and operating data that supports development of the voltage set point conversion methodology.

**M.E.A.16** The Transmission Operator will have evidence that within 30 calendar days of request by its Generator Operator it provided data to support development of the voltage set point conversion methodology, as required in E.A.16. Evidence may include, but is not limited to, dated reports, spreadsheets, or other documentation.

**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.

**Question:** Did the TOP receive a request to provide its transmission equipment data and operating data that supports development of the voltage set point conversion methodology during the audit period? If no, state so and explain the process used to know if such a request had been received. If yes, provide documents showing the date of the request and the date the data was provided.

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-001-5, Requirement E.A.16**

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

Review the evidence to verify the Registered Entity has:

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|  | Determine if the TOP received a request to provide its transmission equipment data and operating data that supports development of the voltage set point conversion methodology by consulting the Question/Response in this RSAW. If no request was received, review the TOP’s explanation of how it knows such a request had not been received. |
|  | If yes:  Review the date the request was made against the date the response was provided to ensure each response was sent within 30 calendar days of the request. |

[**Complianc****e Summary:**](#EA17Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

**Requirement E.A.17 Supporting Evidence and Documentation**

**E.A.17.** Each **Generator Operator** shall meet the following control loop specifications if the Generator Operator uses control loops external to the automatic voltage regulator (AVR) to manage Mvar loading:

**E.A.17.1.** Each control loop’s design incorporates the AVR’s automatic voltage controlled response to voltage deviations during System Disturbances.

**E.A.17.2.** Each control loop is only used by mutual agreement between the Generator Operator and the Transmission Operator affected by the control loop.

**M.E.A.17** If the Generator Operator uses outside control loops to manage Mvar loading, the Generator Operator will have evidence that it met the control loop specifications in sub-parts E.A.17.1 through E.A.17.2, as required in E.A.17 and its sub-parts. Evidence may include, but is not limited to, design specifications with identified agreed-upon control loops, system reports, or other dated documentation.

**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.

**Question:** Did the GOP use control loops external to the AVR to manage Mvar loading on any of its generation resources applicable to E.A.17 during the audit period? If no, state so and explain the process used to know that such control loops were not used. If yes, answer the question below and provide description and documentation demonstrating compliance.

**Question:** Did the GOP that used control loops as described in E.A.17, do so only with mutual agreement with the Transmission Operator affected by the control loop? If yes, provide description and documentation of the mutual agreement. If no, explain why control loops were used without the mutual agreement of the affected Transmission Operator.

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-001-5, Requirement E.A.17**

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

Review the evidence to verify the Registered Entity has:

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|  | Determine if the GOP used control loops external to the AVR to manage Mvar loading on any of its generation resources applicable to E.A.17 during the audit period by consulting the Question/Response in this RSAW. If no, review the GOP’s explanation of how it knows such control loops were not used. |
|  | If yes:  Verify each generation resource control loop’s design incorporates the AVR’s automatic voltage controlled response to voltage deviations during System Disturbances by reviewing design specifications or other documentation. |
|  | Verify each generation resource control loop was only used by mutual agreement between the Generator Operator and the Transmission Operator affected by the control loop. |
| **Note to Auditor:** A control loop is a control system, external to the AVR, which automatically adjusts the AVR set-point of individual generators connected at a common generation facility, to share reactive power output. Use of control loops can impact the TOP determination of the voltage schedule and must be coordinated. | |

[**Complian****ce Summary:**](#EA18Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

R6 Supporting Evidence and Documentation

**R6.** After consultation with the Generator Owner regarding necessary step-up transformer tap changes and the implementation schedule, the Transmission Operator shall provide documentation to the Generator Owner specifying the required tap changes, a timeframe for making the changes, and technical justification for these changes.

**M6.** The Transmission Operator shall have evidence that it provided documentation to the Generator Owner when a change was needed to a generating unit’s step-up transformer tap in accordance with the requirement and that it consulted with the Generator Owner.

**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-001-5, R6

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

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|  | (R6) Understand entity’s procedures concerning coordinating tap settings with Generator Owners per Requirement R6. |
|  | (R6) For all, or a sample of, Generator Owners where entity consulted regarding step-up transformer tap changes, verify entity documentation provided to Generator Owner included: |
|  | * The required tap changes |
|  | * Timeframe for changes |
|  | * Technical justification for changes |

[**Compliance S****ummary:**](#R6Finding)

(Finding Summary):

Primary Documents Supporting Finding:

Auditor Notes:

**Supplemental Information**

**Other ‑** The list of questions above is not all inclusive of evidence required to show compliance with the Reliability Standard. Provide additional information here**, as necessary that** demonstrates compliance with this Reliability Standard.

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Regulatory Language

Regulatory Background

VAR-001-1 was approved by FERC in [Order No. 693](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/ORDER%20693.pdf)[[2]](#footnote-2) on March 16, 2007. In its approval, FERC directed NERC to address the reactive power requirements for LSEs on a comparable basis with purchasing-selling entities and include controllable load among the reactive resources to satisfy reactive requirements.

In a [letter order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/1102011_order_stds.pdf) issued January 10, 2011, FERC approved VAR-001-2, which addressed the two directives outlined in Order no. 693 discussed above.

In a [letter order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Petition%20for%20Approval%20of%20Proposed%20Reliability%20Standard%20VAR-001-3%20(WECC%20Variance).pdf) issued June 20, 2013, FERC approved VAR-001-3. This Standard addressed a WECC regional difference with voltage schedules in the Western Interconnection.

In a [letter order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/VAR%20Letter%20Order.pdf) issued August 1, 2014, FERC approved VAR-001-4, which addresses voltage scheduling and both SOLs and IROLs. This Standard also addresses scheduling reactive resources to address voltage issues.

In a [letter order](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Letter_Order_Errata_20151113_RD15-6.pdf) issued November 13, 2015, FERC approved an errata to VAR-001-4.

In a [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-001-4.1.

In a [letter order](https://www.nerc.com/FilingsOrders/us/FERCOrdersRules/RD18-8-000%20Order.pdf) issued October 15, 2018, FERC approved Reliability Standard VAR-001-5, which revises the Regional Variance for the Western Electricity Coordinating Council.

FERC Orders

FERC Letter Order, 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-001-4.2 which “included the use of the term ‘Operations Planning’ instead of ‘Operational Planning’ throughout; modifications to several Measures; and grammatical corrections in Requirement R4.”

FERC Letter Order, Docket No. RD15-6-000 (Nov. 13, 2015).

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Letter_Order_Errata_20151113_RD15-6.pdf>

Page 2 FERC approved VAR-001-4.1 which added the word “or” to R5, Part 5.3, between the words “schedules” and “Reactive.”

FERC Letter Order, Docket No. RD14-11-000 (Aug. 1, 2014).

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

Page 2 FERC approved “Reliability Standard VAR-001-4 [which] requires each transmission operator to specify a system-wide voltage schedule as part of its plan to operate within system operating limits (SOLs) and interconnection reliability limits (IROLs), and to provide the voltage schedule to its reliability coordinator and adjacent transmission operators upon request. In addition, Reliability Standard VAR-001-4 requires each transmission operator to schedule sufficient reactive resources to regulate voltage levels, and operate or direct the operation of devices to regulate transmission voltage and reactive flows.”

**FERC Letter Order, Docket No. RD13-6-000 (June 20, 2013).**

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Petition%20for%20Approval%20of%20Proposed%20Reliability%20Standard%20VAR-001-3%20(WECC%20Variance).pdf>

Pages 1-2 In the approval of VAR-001-3, FERC stated: “Requirement R3 would remain applicable to registered entities outside of WECC. The proposed Regional Variance [for WECC] requires Transmission operators to: (1) issue a choice of voltage schedules for each of the generating resources that are on-line and part of the bulk electric system in its area; (2) provide to Generator Operators a voltage schedule reference point; and (3) provide transmission equipment data and operating data requested by Generator Operators to support their set point conversion methodology.”

Page 2 In the approval, FERC also stated: “The Regional Variance contained in Proposed VAR-001-3 would require Transmission Operators [in WECC] to provide a voltage schedule to Generator Operators rather than making it optional as the continent-wide standard presently allows. Such schedules could be conveyed through a reactive power level, provided it is converted to a voltage level for the automatic voltage regulator’s automatic voltage control setting. This approach will enhance the voltage control for the Western Interconnection by requiring Generator Operators to convert the voltage schedule specified in proposed requirement E.A.13 into the voltage set point for the generator excitation system.”

**FERC Letter Order, Docket No.RD10-15-000 (Jan. 10, 2011).**

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/1102011_order_stds.pdf>

P 4 FERC approved the revised Standard and found that NERC had “satisfied the Commission’s outstanding directives [regarding this Standard.]”

**Order No. 693.**

<http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/ORDER%20693.pdf>

P 1847 FERC approved “Reliability Standard VAR-001-1 [which] requires transmission operators to implement formal policies for monitoring and controlling voltage levels, acquire sufficient reactive resources, specify criteria for generator voltage schedules, know the status of all transmission reactive power resources, operate or direct the operation of devices that regulate voltage and correct IROL or SOL violations resulting from reactive resource deficiencies. VAR-001-1 also requires purchasing-selling entities to arrange for reactive resources to satisfy their reactive requirements.”

Revision History for RSAW

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| --- | --- | --- |
| **Date** | **Reviewers** | **Revision Description** |
| May 5, 2010 | Craig Struck | VAR-001-1 Added Revision History. |
| December 2010 | QRSAW WG | Revised Findings Table, modified Supporting Evidence tables. |
| September 2011 | QRSAW WG | Original Document for VAR-001-2 |
| October 2011 | NERC Legal | Updated Excerpts from FERC Orders from March 31, 2009 through and including October 11, 2011. |
| July 2013 | WECC Compliance Staff | WECC Revision to Update formatting for 2013 |
| August 2013 | RSAW Working Group  M. Wells | WECC Revision to incorporate new Standard Version VAR-001-3 and include WECC Regional Variances |
| January 2014 | Nickole B. Radabaugh | Reviewed for format consistency and content. |
| September 2014 | M. Wells  P. O’Donnell | WECC Revision to incorporate new Standard Version VAR-001-4 and change in RSAW format to new NERC Template. |
| December 2014 | WECC Compliance Staff | Updated formatting for 2015 |
| February 2015 | WECC Compliance | Removed Audit Id line from cover page |
| September 2017 | WECC Compliance | WECC Revision to incorporate new Standard Version VAR-001-4.1 |
| January 2018 | WECC Compliance | WECC Revision to incorporate new Standard Version VAR-001-4.2 |
| January 2019 | WECC Compliance | WECC Revision to incorporate new Standard version VAR-001-5. |
| July 2024 | WECC Compliance | WECC Revision to correct format, grammar, and add appropriate fields to R6 |

1. Compliance Assessment Date(s): The date(s) the actual compliance assessment (on-site audit, off-site spot check, etc.) occurs. [↑](#footnote-ref-1)
2. *Mandatory Reliability Standards for the Bulk‐Power System*, 118 FERC ¶ 61,218 (2007) (“Order 693”). [↑](#footnote-ref-2)