

132 FERC ¶ 61,220  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;  
Marc Spitzer, Philip D. Moeller,  
John R. Norris, and Cheryl A. LaFleur.

North American Electric Reliability Corporation

Docket No. RD09-5-000

ORDER ON RELIABILITY STANDARD INTERPRETATION

(Issued September 16, 2010)

1. Pursuant to section 215 of the Federal Power Act (FPA), the Commission approves the North American Electric Reliability Corporation's (NERC) interpretation of certain requirements of the Commission-approved Voltage and Reactive (VAR) Reliability Standard, designated VAR-002-1.1b – Generator Operation for Maintaining Network Voltage Schedules, as discussed below. Specifically, the interpretation clarifies which Requirements apply to generators that lack automatic voltage regulation (AVR) capability or equipment.

**I. Background**

**A. FPA Section 215 and Mandatory Reliability Standards**

2. Section 215 of the FPA requires a Commission-certified Electric Reliability Organization (ERO) to develop mandatory and enforceable Reliability Standards, which are subject to Commission review and approval.<sup>1</sup> Under section 215(d)(2) of the FPA, the Commission may approve, by rule or order, a proposed Reliability Standard or modification to a Reliability Standard if it determines that the Standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest.<sup>2</sup> Once approved, the Reliability Standards may be enforced by the ERO, subject to Commission oversight, or by the Commission independently.<sup>3</sup>

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<sup>1</sup> 16 U.S.C. § 824o (2006).

<sup>2</sup> 16 U.S.C. § 824o(d)(2).

<sup>3</sup> See 16 U.S.C. § 824o(e)(3).

3. Pursuant to section 215 of the FPA, the Commission established a process to select and certify an ERO<sup>4</sup> and, subsequently, certified NERC as the ERO.<sup>5</sup> On April 4, 2006, as modified on August 28, 2006, NERC submitted to the Commission a petition seeking approval of 107 proposed Reliability Standards. On March 16, 2007, the Commission issued a Final Rule, Order No. 693, approving 83 of the 107 Reliability Standards, including VAR-002-1.<sup>6</sup> In addition, pursuant to section 215(d)(5) of the FPA,<sup>7</sup> the Commission directed NERC to develop modifications to 56 of the 83 approved Reliability Standards. NERC subsequently modified VAR-002-1 to append a prior interpretation and correct errata.<sup>8</sup>

4. NERC's Rules of Procedure provide that a person that is directly and materially affected by Bulk-Power System reliability may request an interpretation of a Reliability Standard.<sup>9</sup> In response, the ERO assembles a team with relevant expertise to address the requested interpretation and forms a ballot pool. NERC's Rules provide that, within 45 days, the team will draft an interpretation of the Reliability Standard and submit it to the

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<sup>4</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>5</sup> *North American Electric Reliability Corp.*, 116 FERC ¶ 61,062, *order on reh'g & compliance*, 117 FERC ¶ 61,126 (2006), *aff'd Alcoa, Inc. v. FERC*, 564 F.3d 1342 (D.C. Cir. 2009).

<sup>6</sup> *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, FERC Stats. & Regs. ¶ 31,242, at P 1599-1608, *order on reh'g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007).

<sup>7</sup> 16 U.S.C. § 824o(d)(5).

<sup>8</sup> Thus, the current version, VAR-002-1.1b, appends the prior interpretation approved in *Modification of Interchange and Transmission Loading Relief Reliability Standards; and Electric Reliability Organization Interpretation of Specific Requirements of Four Reliability Standards*, Order No. 713, 73 Fed. Reg. 43,613 (Jul. 28, 2008), 124 FERC ¶ 61,071 (2008), and also reflects the Feb. 6, 2009 errata corrections accepted by May 13, 2009 letter order in Docket No. RD09-2-000.

<sup>9</sup> NERC Rules of Procedure, Appendix 3A, Reliability Standards Development Procedure, Version 6.1, at 26-27 (2007).

ballot pool. If approved, the interpretation is appended to the Reliability Standard and filed with the Commission for approval.

**B. Reliability Standard VAR-002-1.1b**

5. The purpose of VAR-002-1 is “to ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained with applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.”<sup>10</sup> Requirements R1 and R2 of the Reliability Standard provide:

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.

R2. Unless Exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power (within applicable Facility Ratings) as directed by the Transmission Operator [footnote omitted].

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 Power schedule directed by the Transmission Operator.

**II. NERC Petition**

6. On March 5, 2009, NERC submitted a petition seeking approval of its interpretation of VAR-002-1, Requirements R1, R2, R3, R4, and R5 (Petition).

7. In the Petition, NERC explains that ICF Consulting (ICF) requested NERC to identify which requirements in VAR-002-1.1a apply to generator operators that operate generators that do not have AVR capability.<sup>11</sup> ICF claimed that many generators do not

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<sup>10</sup> Reliability Standard VAR-002-1.1b, § A(3) (Purpose).

<sup>11</sup> NERC provides ICF’s request in the Petition, Exhibit C (interpretation development record).

have AVR devices<sup>12</sup> and may not receive voltage schedules. ICF also asked whether the standard requires a generator owner to acquire AVR devices to comply with the requirements in VAR-002-1.1a. ICF requested clarification to alleviate confusion as to how to comply with the requirements that do not explicitly address generators that lack AVR and to avoid unnecessary compliance efforts and enforcement risks.

8. Consistent with the NERC Rules of Procedure, NERC assembled a team to respond to the request for interpretation and presented the proposed interpretation to industry ballot, similar to the Reliability Standards development process. NERC states that stakeholders developed and approved the interpretation and the NERC Board of Trustees approved the resulting interpretation in February 2009. The interpretation does not modify the language contained in the requirements under review.

9. 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.<sup>13</sup> 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.

10. NERC's interpretation specifies how each Requirement of VAR-002-1.1a is applicable to generator operators with generators not equipped with AVR. Requirement R1 of VAR-002-1.1a states that a generator operator "shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode ... unless the Generator Operator has notified the Transmission Operator." The

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<sup>12</sup> An "automatic voltage regulator" is a device that continuously monitors the generator terminal voltage and changes the reactive power output as required to maintain (or regulate) the voltage within a pre-determined voltage range. For example, if a load increase causes a decline in system voltages and thereby the terminal voltage of a generator, the automatic voltage regulator will increase the generator's reactive output to raise the terminal voltage. See *North Am. Elec. Reliability Corp.*, 119 FERC ¶ 61,260, at P 111 n.96 (2007) (approving regional VAR Reliability Standards for the Western Interconnection).

<sup>13</sup> See NERC Petition at 7-8.

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 capable of AVR.

11. Requirement R2 states that unless exempted by the transmission operator, a generator operator must maintain the generator voltage or reactive power output, within applicable facility ratings, as directed. Requirement R2.1 states that, when a generator's AVR is out of service, the generator should use an alternative method of voltage control to meet the voltage or reactive power schedule directed by the transmission operator. Requirement R2.2 provides that a generator operator shall comply with transmission operator directives to modify voltage or provide an explanation why the schedule cannot be met. NERC's interpretation states that these Requirements apply whether a generator has AVR or not.<sup>14</sup>

12. Pursuant to Requirement R3, a generator operator must notify its transmission operator of status changes to generator and other reactive power resources, including the AVR status, and also provide the expected duration of changes in status or capability. In the interpretation, NERC clarifies that Requirement R3 requires a generator operator without AVR installed to inform the transmission operator "if and when such capability is installed." Finally, the interpretation states that AVR is not relevant to Requirements R4 and R5, which require all generators to provide transformer specifications and consult with the transmission operator concerning tap changes.

### **III. Notices of Filings and Responsive Pleadings**

13. Notice of the NERC petition was published in the *Federal Register*, with interventions and protests due on or before May 8, 2009.<sup>15</sup> Modesto Irrigation District (Modesto) and ISO New England Inc. (ISO New England) filed timely motions to intervene. International Transmission Company (ITC), Exelon Corporation (Exelon), and the Edison Electric Institute (EEI) filed timely motions to intervene and comments.

14. EEI, Exelon, and ITC filed comments regarding NERC's proposed interpretation. Both EEI and Exelon agree with NERC's interpretation. EEI states that the interpretation fully responds to the request for interpretation and provides clear guidance to users, owners, and operators of the bulk power system. Exelon supports NERC's interpretation that a generator not installed with AVR is functionally equivalent to a generator with

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<sup>14</sup> See NERC Petition at 8-9.

<sup>15</sup> 74 Fed. Reg. 17,475 (Apr. 15, 2009).

AVR that is out of service. Exelon notes that under this reasoning, a generator operator without AVR would need to utilize an alternative method of generator voltage and reactive output control in the same way as for a generator with AVR that is out of service due to maintenance.

15. ITC objects to NERC's interpretation. ITC asserts that the interpretation dilutes the desired impact of the Reliability Standard, relaxes the grid adherence to voltage schedules, and potentially creates a situation for insufficient dynamic response during voltage excursions.<sup>16</sup> Specifically, ITC objects to NERC's positions that VAR-002-1.1a does not require AVR to be installed or added to a generator and that a generator with no AVR is the functional equivalent of a generator with AVR out of service. ITC asserts that these positions permit relaxed adherence to voltage schedules and allow deviation outside of the AVR bandwidth. ITC also states that NERC's interpretation that VAR-002-1.1a does not require AVR is negated by NERC's comments in its Petition that other NERC Reliability Standards are sufficient to provide the motivation for AVRs or other types of dynamic reactive capability to be installed.

16. ITC further argues that NERC's interpretation generates questions regarding the intent of the Reliability Standard such as why a generator operator would return the generator to AVR service after an AVR is removed from service for maintenance or due to failure, why a generator operator would place an AVR into service to be held to zero tolerance performance penalties for non-compliance, and why there is a possibility of an exemption from compliance with an AVR in service and controlling voltage.

17. ITC also argues that NERC's position that VAR-002-1.1a does not require AVR contradicts the intent of the preceding voluntary NERC Planning Standards such as NERC Planning Standard III.C.S1, which required all synchronous generators connected to interconnected transmission systems to operate their excitation system in the automatic voltage control mode unless approved otherwise by the transmission operator. ITC further argues that not requiring the addition of AVR desensitizes the generator operator from understanding its responsibility to maintain voltage level output and dynamic reactive support and encourages generators operators to seek an exemption from providing voltage and reactive support.

18. ITC also argues that NERC's interpretation puts the transmission planners and transmission operators in the untenable position to determine, assign, and justify which generator operator should be required to obtain AVR and constitutes an impermissible delegation of enforcement authority by NERC. ITC notes that, despite NERC's

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<sup>16</sup> ITC Comments at 3.

interpretation that the Reliability Standard has no requirement to have generators equipped with AVR, NERC continues by highlighting the need for transmission planners and transmission operators to determine, assign, and justify which generator operators should obtain AVR or operate in automatic mode. ITC believes that the interpretation takes the VAR-002-1.1a compliance obligation of generator operators and places the enforcement obligation on the transmission planners and transmission operators. ITC believes the interpretation compromises the purpose of the Reliability Standard and weakens the generator's obligation to provide voltage support for the grid.

#### **IV. Discussion**

##### **A. Procedural Matters**

19. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2010), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.

##### **B. Commission Determination**

20. The Commission approves NERC's interpretation in VAR-002-1.1b. NERC's interpretation is just, reasonable, not unduly discriminatory or preferential, and in the public interest. As discussed below, we find that the interpretation is consistent with and adds clarity to the VAR-002-1.1a Reliability Standard.

21. NERC's response to ICF's first request to "identify which requirements apply to generators that do not operate generators equipped with AVRs" states that all the Requirements in VAR-002-1.1a apply to generator owners and generator operators that own or operate generators whether equipped with an AVR or not.<sup>17</sup> NERC also states that the Reliability Standard is predicated on the assumption that the generator has the physical equipment, i.e., AVR, that is capable of operation; and 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.

22. ICF also stated that "[g]enerator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard."<sup>18</sup> NERC responded that there are no requirements in the Reliability Standard that require a

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<sup>17</sup> NERC Petition, Ex. A at 1.

<sup>18</sup> *Id.*

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.

23. We find that NERC's interpretation is consistent with the language of the Reliability Standard. Requirement R1 of VAR-002-1.1b provides "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." We agree that neither this provision nor any other language of the Reliability Standard includes an obligation that all generators have or install AVR. We agree with NERC that other reliability standards provide motivation for generators to have or install AVR capability.<sup>19</sup>

24. The Commission notes that ITC raises several issues in its comments on the interpretation as it relates to the intent, i.e., reliability objective, of the predecessor Version 0 Standard. ITC is concerned that NERC's interpretation contradicts the "original intent of the predecessor Standard," a concern shared by several other entities in comments during the initial ballot within the interpretation development process.<sup>20</sup> We are not persuaded by ITC's argument. The provisions of the currently effective Reliability Standard do not include an affirmative obligation that all generators have or install AVR. Because there is no ambiguity on this point, there is no need to look to a predecessor, voluntary version to glean the intent of the current Reliability Standard.

25. The premise of ICF's request, and NERC's interpretation, is that not all generators are equipped with AVR. Nonetheless, like ITC, we are concerned that a generator operator could take an overly-broad view of NERC's interpretation and apply it to a generator with installed AVR. We believe that would be a misapplication of NERC's interpretation. In particular, the NERC interpretation is not intended to facilitate the removal of installed AVR for economic reasons or a failure to timely return a generator to AVR mode after AVR is removed from service for maintenance or due to failure. The NERC interpretation does not address such matters and such an overly-broad application of the NERC interpretation could diminish Bulk-Power System reliability.

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<sup>19</sup> *Id.* at 9-15.

<sup>20</sup> NERC Petition at 61, 66.



26. Since we find that NERC's interpretation is consistent with the provisions of the Reliability Standard, any possible adverse behavior would be a result of a potential gap in the Standard, and not a consequence of the interpretation. Nevertheless, other reliability standards, as NERC indicates, provide motivation for generator operators to have AVR capability and continue to operate in AVR mode.

27. For example, NERC notes that the FAC standards contain generator performance capabilities (FAC-002) and establish generator interconnection expectations, including addressing reactive power (FAC-001).<sup>21</sup> Further, there is a reasonable inference from Requirement R4 of Reliability Standard VAR-001-1 that generator operators with installed AVR are expected to operate in AVR mode. Specifically, Requirement R4 requires the transmission operator to "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).*" (Emphasis added.) In addition, consistent with Requirement R2.1 and the NERC interpretation, generator operators that are not operated with AVR must "use an alternative method to control the generator voltage and Reactive Power schedule directed by the Transmission Operator."

28. Moreover, NERC indicates that the Transmission Planning Reliability Standards require that Transmission Planners identify where reactive support is required to maintain system voltages. Currently to comply with the Transmission Planning Reliability Standards, Transmission Planners coordinate with Generator Operators through contracts and agreements to install AVR to ensure adequate system response. We disagree with ITC that NERC's interpretation has changed the compliance obligations from Generator Operators and impermissibly placed them on Transmission Planners. Because we find the interpretation to be consistent with the provisions of the Reliability Standard, there is no change in responsibilities between Generator Owners and Transmission Planners with respect to maintaining system voltages.

29. As an ongoing part of its responsibilities as the Electric Reliability Organization, NERC should consider actual practices with regard to installed AVR to ensure that adequate voltage control and reactive power support is deployed to protect system reliability. The Commission expects that NERC will use system events and operational reports as well as any additional comments that its stakeholders submit when employing its standards development process to modify existing standards or create new standards to address any gaps, inconsistencies, or ambiguities that it may discover.

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<sup>21</sup> NERC Petition at 9-14.

The Commission orders:

NERC's interpretation of Requirements R1, R2, R3, R4, and R5 of Reliability Standard VAR-002-1.1a is hereby approved, effective as of the date of this order, as discussed in the body of this order.

By the Commission.

( S E A L )

Kimberly D. Bose,  
Secretary.

Document Content(s)

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