147 FERC ¶ 61,209
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Part 40

[Docket No. RM14-1-000 Order No. 797]

Reliability Standard for Geomagnetic Disturbance Operations

(Issued June 19, 2014)

AGENCY: Federal Energy Regulatory Commission.

ACTION: Final rule.

SUMMARY: Pursuant to section 215 of the Federal Power Act, the Federal Energy Regulatory Commission (Commission) approves Reliability Standard EOP-010-1 (Geomagnetic Disturbance Operations). The North American Electric Reliability Corporation, the Commission-certified Electric Reliability Organization, submitted the Reliability Standard for Commission approval in response to a Commission directive in Order No. 779. Reliability Standard EOP-010-1 is designed to mitigate the effects of geomagnetic disturbances on the Bulk-Power System by requiring responsible entities to implement Operating Plans and Operating Procedures or Processes.

EFFECTIVE DATE: This rule will become effective **[INSERT DATE 60 days after publication in the FEDERAL REGISTER].**

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SUPPLEMENTARY INFORMATION:

147 FERC ¶ 61,209
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Cheryl A. LaFleur, Acting Chairman;
Philip D. Moeller, John R. Norris,
and Tony Clark.

Reliability Standard for Geomagnetic Disturbance Operations — Docket No. RM14-1-000

ORDER NO. 797

FINAL RULE

(Issued June 19, 2014)

1. Pursuant to section 215 of the Federal Power Act (FPA),[1] the Commission approves Reliability Standard EOP-010-1 (Geomagnetic Disturbance Operations). The North American Electric Reliability Corporation (NERC), the Commission-certified Electric Reliability Organization (ERO), submitted the Reliability Standard for Commission approval in response to a Commission directive in Order No. 779.[2] The Reliability Standard is designed to mitigate the effects of geomagnetic disturbances (GMD) on the Bulk-Power System by requiring responsible entities to implement Operating Plans and Operating Procedures or Processes. The Commission also approves the associated violation risk factors and violation severity levels, implementation plan, and effective dates proposed by NERC.

[1] 16 U.S.C. 824o.

[2] *Reliability Standards for Geomagnetic Disturbances*, Order No. 779, 78 FR 30,747 (May 23, 2013), 143 FERC ¶ 61,147, *reh'g denied*, 144 FERC ¶ 61,113 (2013).

I. Background

A. Section 215 and Mandatory Reliability Standards

2. Section 215 of the FPA requires the Commission to certify an ERO to develop mandatory and enforceable Reliability Standards, subject to Commission review and approval.[3] Once approved, the Reliability Standards may be enforced in the United States by the ERO, subject to Commission oversight, or by the Commission independently.[4]

B. Order No. 779

3. In Order No. 779, the Commission directed NERC, pursuant to FPA section 215(d)(5), to develop and submit for approval proposed Reliability Standards that address the impact of GMDs on the reliable operation of the Bulk-Power System. The Commission based its directive on the potentially severe, wide-spread impact on the reliable operation of the Bulk-Power System that can be caused by GMD events and the absence of existing Reliability Standards to address GMD events.[5]

4. The Commission directed NERC to implement the directive in two stages. In the first stage, the Commission directed NERC to submit, within six months of the effective date of Order No. 779, one or more Reliability Standards (First Stage GMD Reliability Standards) that require owners and operators of the Bulk-Power System to develop and

[3] 16 U.S.C. 824o.

[4] *Id.* 824o(e).

[5] Order No. 779, 143 FERC ¶ 61,147 at P 3.

implement operational procedures to mitigate the effects of GMDs consistent with the reliable operation of the Bulk-Power System.[6]

5. In the second stage, the Commission directed NERC to submit, within 18 months of the effective date of Order No. 779, one or more Reliability Standards (Second Stage GMD Reliability Standards) that require owners and operators of the Bulk-Power System to conduct initial and on-going assessments of the potential impact of benchmark GMD events on Bulk-Power System equipment and the Bulk-Power System as a whole. Order No. 779 directed that the Second Stage GMD Reliability Standards must identify benchmark GMD events that specify what severity GMD events a responsible entity must assess for potential impacts on the Bulk-Power System.[7] Order No. 779 explained that, if the assessments identify potential impacts from benchmark GMD events, the Reliability Standards should require owners and operators to develop and implement a plan to protect against instability, uncontrolled separation, or cascading failures of the Bulk-Power System, caused by damage to critical or vulnerable Bulk-Power System equipment, or otherwise, as a result of a benchmark GMD event. The Commission directed that the development of this plan could not be limited to considering operational procedures or enhanced training alone, but should, subject to the potential impacts of the benchmark GMD events identified in the assessments, contain strategies for protecting

[6] *Id.* P 2.

[7] *Id.*

against the potential impact of GMDs based on factors such as the age, condition, technical specifications, system configuration, or location of specific equipment.[8] Order No. 779 observed that these strategies could, for example, include automatically blocking geomagnetically-induced currents (GIC) from entering the Bulk-Power System, instituting specification requirements for new equipment, inventory management, isolating certain equipment that is not cost effective to retrofit, or a combination thereof.

C. NERC Petition

6. On November 13, 2013, NERC petitioned the Commission to approve Reliability Standard EOP-010-1 and its associated violation risk factors and violation severity levels, implementation plan, and effective dates. In the petition, NERC states that the Reliability Standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest. NERC maintains that the Reliability Standard satisfies the Commission's directive in Order No. 779 corresponding to the development and submission of the First Stage GMD Reliability Standards.

7. NERC states that, consistent with Order No. 779 and the NERC Functional Model, Reliability Standard EOP-010-1 applies to reliability coordinators and transmission operators with a "Transmission Operator Area that includes a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV."[9] NERC

[8] *Id.*

[9] NERC Petition at 8 ("A power transformer with a 'high side wye-grounded winding' refers to a power transformer with windings on the high voltage side that are

(continued…)

explains that the Reliability Standard has three requirements: (1) Requirement R1 addresses coordination by reliability coordinators within their areas; (2) Requirement R2 addresses the dissemination of space weather information by reliability coordinators to ensure that entities within a reliability coordinator area have the appropriate information necessary to take action and that the same information is available to all entities; and (3) Requirement R3 requires transmission operators to develop GMD Operating Procedures or Processes.

8. NERC states that Requirement R1 requires each reliability coordinator to develop, maintain, and implement a GMD Operating Plan that coordinates the GMD Operating Procedures or Operating Processes within its reliability coordinator area.[10] NERC explains that each reliability coordinator is required to ensure that GMD Operating Procedures and Operating Processes in its reliability coordinator area are not in conflict, but a reliability coordinator will not review the technical aspects of the GMD Operating Procedures and Operating Processes.[11] Instead, according to NERC, each transmission

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connected in a wye configuration and have a grounded neutral connection.").

[10] Operating Plan, Operating Procedure, and Operating Process are existing terms defined in the Glossary of Terms Used in NERC Reliability Standards. *See* Glossary of Terms Used in NERC Reliability Standards (effective November 21, 2013) at 49-50.

[11] NERC explains that "if Company A submitted an Operating Procedure proposing to take Line X out of service under specified GMD conditions, and Company B submitted an Operating Procedure that relies on Line X remaining in service in the event of a GMD – it is the responsibility of the Reliability Coordinator to *identify* this conflict." NERC Petition at 11-12 (emphasis in original). Beyond identifying a conflict and requiring its resolution by Company A and Company B, NERC states that the review

(continued…)

operator will be responsible for the technical aspects of its Operating Procedures and Operating Processes. NERC further states that Requirement R1 requires each reliability coordinator to describe the activities that must be undertaken in order to mitigate the effects of a GMD event. NERC explains that, pursuant to Reliability Standard IRO-001-1.1, each reliability coordinator has decision-making authority to act and to direct actions to be taken by transmission operators, balancing authorities, generator operators, transmission service providers, load-serving entities, and purchasing-selling entities within its reliability coordinator area to preserve the reliability of the bulk electric system.

9. NERC states that Requirement R2 requires each reliability coordinator to disseminate space weather information to ensure coordination and consistent awareness in its reliability coordinator area. NERC maintains that entrusting this responsibility to reliability coordinators is appropriate given the reliability coordinator's wide-area view. NERC also explains that Requirement R2 replaces existing Requirement R3 of Reliability Standard IRO-005-3.1a, which currently addresses dissemination of information regarding GMD forecasts.[12]

10. NERC states that Requirement R3 requires each transmission operator to develop GMD Operating Procedures or Operating Processes to address GMD events. NERC

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is "not intended to be a review by the Reliability Coordinator of the technical aspects of the GMD Operating Procedures or Processes." *Id*. at 11.

[12] According to NERC, Reliability Standard IRO-005-3.1a will be retired once the Commission approves proposed Reliability Standard IRO-005-4, which is currently pending before the Commission. NERC Petition at 13.

explains that Requirement R3 is not prescriptive and allows each transmission operator to tailor its Operating Procedures or Operating Processes based on the transmission operator's assessment of entity-specific factors, such as geography, geology, and system topology. According to NERC, Requirement R3 requires each transmission operator to specify: (1) steps or tasks that must be conducted to receive space weather information; (2) what actions must be taken under what conditions, and such conditions must be predetermined; and (3) when and under what conditions the Operating Procedure or Operating Process is exited. NERC maintains that Reliability Standard EOP-010-1 does not prescribe specific actions that must be taken by responsible entities because "a 'one-size fits all' approach to crafting GMD Reliability Standards would fail to recognize the important role of locational differences."[13]

11. NERC proposes that Reliability Standard EOP-010-1 become effective the "first day of the first calendar quarter that is six months after the date that this standard is approved by an applicable governmental authority."[14] However, NERC states that Requirement R2 of Reliability Standard EOP-010-1, pertaining to reliability coordinator dissemination of space weather information, is meant to replace existing Requirement R3 of Reliability Standard IRO-005-3.1a, which includes similar language. Therefore, to avoid duplicative requirements being enforced at the same time, NERC proposes that, if

[13] NERC Petition at 14.

[14] NERC Petition, Exhibit B (Implementation Plan) at 2.

Reliability Standard EOP-010-1 becomes effective prior to the retirement of Reliability Standard IRO-005-3.1a, then Requirement R2 of Reliability Standard EOP-010-1 will not become effective until the first day following retirement of Reliability Standard IRO-005-3.1a.

D. Notice of Proposed Rulemaking

12. On January 16, 2014, the Commission issued a Notice of Proposed Rulemaking that proposed to approve Reliability Standard EOP-010-1 as just, reasonable, not unduly discriminatory or preferential, and in the public interest based on the Commission's review of NERC's petition and supporting exhibits.[15] The NOPR stated that the Reliability Standard satisfies the directive in Order No. 779 that NERC submit one or more Reliability Standards that require owners and operators of the Bulk-Power System to develop and implement operational procedures to mitigate the effects of GMDs consistent with the reliable operation of the Bulk-Power System. The NOPR also stated that the Reliability Standard is consistent with the guidance in Order No. 779 that NERC develop Reliability Standards that, rather than require specific operational procedures, require responsible entities to develop and implement entity-specific operational procedures because owners and operators of the Bulk-Power System are most familiar with their own equipment and system configurations.[16] The NOPR further stated that the

[15] *Reliability Standard for Geomagnetic Disturbance Operations*, Notice of Proposed Rulemaking, 79 FR 3547 (Jan. 22, 2014), 146 FERC ¶ 61,015 (2014) (NOPR).

[16] *Id.* P 38.

Reliability Standard requires coordination of operational procedures and processes, overseen by a functional entity with a wide-area perspective (i.e., reliability coordinators), which is consistent with the guidance in Order No. 779.[17]

13. In response to the NOPR, the Commission received 20 sets of comments. We address below the issues raised in the comments. The Appendix to this Final Rule lists the entities that filed comments in response to the NOPR.

II. Discussion

14. Pursuant to FPA section 215(d)(2), we approve Reliability Standard EOP-010-1 as just, reasonable, not unduly discriminatory or preferential, and in the public interest. As the Commission stated in Order No. 779, "operational procedures, while not a complete solution, constitute an important first step to addressing the GMD reliability gap because they can be implemented relatively quickly … [and] [o]perational procedures may help alleviate abnormal system conditions due to transformer absorption of reactive power during GMD events, helping to stabilize system voltage swings, and may potentially isolate some equipment from being damaged or misoperated."[18] We determine that Reliability Standard EOP-010-1 addresses the directive in Order No. 779 that NERC submit one or more Reliability Standards that require owners and operators of the Bulk-Power System to develop and implement operational procedures to mitigate the effects of

[17] *Id.*

[18] Order No. 779, 143 FERC ¶ 61,147 at P 36.

GMDs consistent with the reliable operation of the Bulk-Power System.[19] We also determine that the Reliability Standard is consistent with the guidance in Order No. 779 that NERC develop Reliability Standards that, rather than require specific operational procedures, require responsible entities to develop and implement entity-specific operational procedures because owners and operators of the Bulk-Power System are most familiar with their own equipment and system configurations.[20] Further, we determine that the Reliability Standard requires coordination of operational procedures and processes, overseen by a functional entity with a wide-area perspective (i.e., reliability coordinators), which is also consistent with the guidance in Order No. 779.[21]

15. Several commenters support approval of Reliability Standard EOP-010-1 without modification.[22] We address below the following issues raised by other commenters: (A) the applicability section of Reliability Standard EOP-010-1; (B) effectiveness of GMD operational procedures; (C) implementation plan; and (D) other issues. We also address below the violation risk factors and violation severity levels associated with Reliability Standard EOP-010-1.

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[19] Reliability Standard EOP-010-1 only addresses the First Stage GMD Reliability Standards directed in Order No. 779. The Reliability Standard does not address the Second Stage GMD Reliability Standards, which NERC indicates are under development. NERC Petition at 3.

[20] Order No. 779, 143 FERC ¶ 61,147 at P 38.

[21] *Id.*

[22] *See* comments submitted by NERC, IRC, EEI, Chamber of Commerce, Dominion, AEP, ITC, and ASO.

A. Applicability Section of Reliability Standard EOP-010-1

NERC Petition

16. NERC submitted a white paper as part of its petition explaining the technical justification for applying Reliability Standard EOP-010-1 only to transmission operators that operate a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV in their transmission operator areas.[23] In another white paper, NERC explains its proposal regarding the applicability of the Reliability Standard to reliability coordinators and transmission operators only.[24] The White Paper Supporting Functional Entity Applicability explains that the reliability coordinator has "responsibility and authority for reliable operation within the Reliability Coordinator Area (RCA) … and includes a wide-area view with situational awareness of neighboring RCAs."[25] NERC states that including reliability coordinators as applicable entities "provides the necessary coordination for planning and real-time actions."[26] With respect to transmission operators, NERC explains that "[l]ike the [reliability coordinator], the [transmission operator] has responsibility and authority for the reliable operation of the

[23] NERC Petition, Exhibit D (White Paper Supporting Network Applicability) at 1.

[24] NERC Petition, Exhibit E (White Paper Supporting Functional Entity Applicability).

[25] *Id.* at 2.

[26] *Id.*

transmission system within a specified area."[27] In addition, NERC justifies omitting balancing authorities and generator operators from the scope of the Reliability Standard. NERC explains that balancing authorities "can be expected to address GMD impacts through use of generation … [but] the [balancing authority] would not initiate actions unilaterally during a GMD event and would instead respond to the direction of the [transmission operator] and [reliability coordinator]."[28] As for generator operators, NERC states that some generator operators "would not have the technical basis for taking steps [to mitigate GMDs] on [their] own and would instead take steps based on the [reliability coordinator's] or [transmission operator's] Operating Plans, Processes, or Procedures."[29] NERC also notes that generator owners and generator operators will be considered for inclusion in the Second Stage GMD Reliability Standards, "which will require applicable entities to conduct vulnerability assessment and develop appropriate mitigation strategies . . . [and that] [s]uch mitigation strategies could include the development of Operating Procedures for applicable [generator owners] and [generator operators]."[30]

[27] *Id.*

[28] *Id.* at 3-4.

[29] *Id.* at 4.

[30] *Id.*

NOPR

17. The NOPR stated that the applicability designations in Reliability Standard EOP-010-1 are appropriate, based on the justifications set forth in the white papers in Exhibits D and E of NERC's petition.

Comments

18. Foundation, SmartSense, AFS, and Baker maintain that Reliability Standard EOP-010-1 should be applicable to more entities than transmission operators having a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV in the transmission operator area.

19. Foundation states that during the March 1989 solar storm discussed in Order No. 779, electric utilities reported effects on static VAR compensators and other reactive power equipment operating between 100 kV and 200 kV. Foundation notes that such equipment is "designed to provide reactive power and to stabilize transmission networks during GMD."[31] Foundation states that Reliability Standard EOP-010-1 "would exempt Transmission Operators with equipment operating between 100 kV and 200 kV."[32] Foundation requests that the Commission remand Reliability Standard EOP-010-1 to

[31] Foundation Comments at 10.

[32] *Id.*

include "owners and operators of all stabilizing and reactive power equipment operating between 100 kV and 200 kV."[33]

20. Foundation and SmartSense assert that the 200 kV threshold for transmission operators is inconsistent with the Commission-approved definition of bulk electric system, which generally includes assets operating at voltages of 100 kV and higher. SmartSense asserts that there is evidence that elements of the Bulk-Power System operating between 100 kV and 200kV would be substantially affected by a GMD event. In support, SmartSense cites to an Oak Ridge National Laboratory GMD Study and an article from the Idaho National Laboratory, which SmartSense states tested sub-200 kV transformers.[34] SmartSense further claims that NERC improperly relied on a cost-benefit analysis to exclude networks operating at 200 kV and below.

21. Foundation, AFS, EMP Coalition, Kappenman, and Baker maintain that Reliability Standard EOP-010-1 should be applicable to generator operators and/or balancing authorities.

[33] *Id.* at 13.

[34] SmartSense Comments at 10-11 (citing Oak Ridge National Laboratory, Electromagnetic Pulse: Effects on the U.S. Power Grid: Meta-R-319 at page 4-14 (January 2010), *available at* http://www.ornl.gov/sci/ees/etsd/pes/pubs/ferc_Meta-R-319.pdf; Idaho National Laboratory, *INL Broadens Understanding of Solar Storms* (December 16, 2013), *available at* https://inlportal.inl.gov/portal/server.pt/community/newsroom/257/feature_story_details/1269?featurestory=DA_615269).

22. Foundation states that balancing authorities have real-time responsibilities that would be essential during a GMD event. Foundation asserts that excluding balancing authorities from the applicability section of Reliability Standard EOP-010-1 is "operationally unworkable" because it "assumes that the real time responsibilities of Balancing Authorities under fast-moving GMD conditions could be assumed by Reliability Coordinators."[35] Foundation states that the NOAA Space Weather Prediction Center would only provide 15-60 minutes warning of a severe solar storm. Foundation asserts that, given the 15-60 minute limitation, there would be insufficient time for reliability coordinators to communicate with balancing authorities, transmission operators, and generator operators following a solar storm warning because the NERC Reliability Standards require three-part communications when engaging in oral, two-party communications.

23. Foundation and Kappenman also maintain that Reliability Standard EOP-010-1 does not address generator step up (GSU) transformers, which they assert are vulnerable to GMDs. Foundation contends that generator operators have been installing GIC monitors for their GSU transformers and have taken actions to downrate their GSU transformers during solar storms. Foundation also notes that the NERC GMD Task Force developed an Operating Procedure Template for generator operators.

[35] Foundation Comments at 14.

Commission Determination

24. We determine that the applicability section of Reliability Standard EOP-010-1 is technically justified and consistent with Order No. 779, both in terms of using a 200 kV threshold for determining applicable transmission operators and not including balancing authorities and generator operators as applicable entities.

25. We reject the argument that the applicability threshold in Reliability Standard EOP-010-1 is inconsistent with the definition of bulk electric system because it excludes transmission operators with only 200 kV transformers and below. Instead, we determine that the applicability section of Reliability Standard EOP-010-1 complies with the directive in Order No. 779 that the First Stage GMD Reliability Standards should mitigate the effects of GMDs consistent with the reliable operation of the Bulk-Power System.[36] The NERC petition and White Paper Supporting Network Applicability provide an adequate technical basis to conclude that transformers operating at 200 kV and below are likely to have a limited impact on the Bulk-Power System during a GMD event. We are not persuaded by the Foundation comments, discussed above, which do

[36] Order No. 779, 143 FERC ¶ 61,147 at P 29; *see also* 16 U.S.C. 824o(a)(3) ("The term 'reliability standard' means a requirement … to provide for the reliable operation of the bulk-power system."); *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, FERC Stats. & Regs. ¶ 31,242, at PP 97-98, *order on reh'g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007) (explaining that each Reliability Standard will identify the set of users, owners and operators that must comply with that standard and "NERC has indicated that in the future it may add to a Reliability Standard limitations on applicability based on electric facility characteristics such as generator nameplate ratings").

not refute this conclusion, or the materials cited by SmartSense. SmartSense cites a table in the Oak Ridge Laboratory GMD Study identifying at-risk transformers operating at 345 kV, which fall within the applicability criteria.[37] Moreover, the Oak Ridge Laboratory GMD Study found that significantly higher GIC flows occur at higher operating voltages.[38]

26. The applicability criteria for Reliability Standard EOP-010-1 determine which transmission operators must comply with the Reliability Standard (i.e., those with a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV in the transmission operator area). While this criterion excludes transmission operators operating transformers 200 kV and below, the 200 kV threshold does not mean that applicable transmission operators will ignore reactive power supplies operating at 200 kV or below on their systems when developing the required GMD Operating Procedures or Operating Processes. Reliability Standard EOP-010-1, Requirement R3 supports this conclusion because it directs each applicable transmission operator to "develop, maintain, and implement a GMD Operating Procedure or Operating

[37] SmartSense Comments at 10 n.31 (citing Oak Ridge National Laboratory, Electromagnetic Pulse: Effects on the U.S. Power Grid: Meta-R-319 at page 4-14).

[38] *Id.* at page 1-15 ("The operating voltage of the transmission network is an important factor in determining the level of GIC flow that will occur on each part of the U.S. power grid. At the higher operating voltages, there are pronounced trends that: the average length of each line increases and the average circuit resistance decreases. These trends result in larger GIC flows in the higher voltage portions of the network, given the same geo-electric field conditions.").

Process to mitigate the effects of GMD events on the reliable operation of its respective system." Accordingly, because Requirement R3 addresses an applicable transmission operator's entire system, the requirement is not limited to transformers operating above 200 kV for the purposes of developing GMD Operating Procedures or Operating Processes by applicable transmission operators.[39]

27. The Idaho National Laboratory article cited by SmartSense stated that a simulated solar event affected "a pair of 138kV core form, 2 winding substation transformers, which had been in-service at [Idaho National Laboratory] since the 1950s," through increased losses and generation of harmonics that resulted in loss of excitation.[40] The Idaho National Laboratory article does not contradict NERC's technical analysis, however. NERC does not contend that GMD events will have no effect on networks operating at 200 kV and below. Rather, the standard drafting team found that geomagnetically-induced currents generated on networks operated at 200 kV and below would be significantly less than those operated at higher voltages, a finding that is

[39] *See* NERC Petition at 14 ("An Operating Procedure or Operating Process is maintained when it is kept relevant by taking into consideration system configuration, conditions or operating experiences, as needed to accomplish its purpose. Requirement R3 … allows entities to tailor their Operational Procedures or Processes based on the responsible entity's assessment of entity-specific factors, such as geography, geology, and system topology.").

[40] Idaho National Laboratory, *INL Broadens Understanding of Solar Storms* (December 16, 2013), *available at* https://inlportal.inl.gov/portal/server.pt/community/newsroom/257/feature_story_details/1269?featurestory=DA_615269).

consistent with the Oak Ridge Laboratory GMD Study. Specifically, NERC's modeling of a portion of the Eastern Interconnection showed only a small change in system impact from a GMD event when 115 kV and 161 kV circuits were excluded from the model.[41] The materials cited in the comments do not rebut NERC's technical analysis. In sum, we determine that there is adequate technical justification for the 200 kV threshold for transmission operators.[42]

28. We also determine that NERC provided adequate justification not to include balancing authorities and generator operators in the applicability section of Reliability Standard EOP-010-1. We disagree with Foundation's assertion that balancing authorities should be included in the applicability section because reliability coordinators are incapable of communicating quickly with transmission operators, generator operators, and balancing authorities due to the three-part communications requirement in Reliability Standard COM-002-2. We are not persuaded that GMD events pose unique communication problems for reliability coordinators because a reliability coordinator may only have 15-60 minutes warning of a severe solar storm. Reliability coordinators are responsible for real-time system reliability and often must respond quickly or even

[41] NERC Petition, Exhibit D (White Paper Supporting Network Applicability) at 8 (Table A2).

[42] As we conclude that NERC provided adequate technical justification for the 200 kV applicability threshold, there is no reason to address SmartSense's assertion that NERC improperly based the 200 kV threshold on a cost-benefit analysis.

immediately to Bulk-Power System events with little or no warning.[43] Reliability Standard COM-002-2, Requirement R1 recognizes this responsibility by stating that "[e]ach Transmission Operator, Balancing Authority, and Generator Operator shall have communications (voice and data links) with appropriate Reliability Coordinators, Balancing Authorities, and Transmission Operators … [and] [s]uch communications shall be staffed and available for addressing a real-time emergency condition."

29. With respect to generator operators, there is no dispute that GSU transformers are susceptible to geomagnetically-induced currents. While generator operators are not listed as applicable entities in Reliability Standard EOP-010-1, NERC explains that generator operators will have to act during a GMD event when directed by a reliability coordinator, in accordance with its reliability coordiantor's GMD Operating Plan, or by a transmission operator, in accordance with its transmission operator's GMD Operating Procedures or Operating Processes.[44] We are not persuaded that generator operators should be required to act independently under Reliability Standard EOP-010-1. While generator operators might be, as Foundation asserts, increasingly installing GIC monitoring equipment, there is no evidence in the record regarding the proportion of generator operators with GIC

[43] NERC, Reliability Functional Model Technical Document, Version 5, at 7 (Approved May 2010), *available at* http://www.nerc.com/pa/Stand/Functional%20Model%20Archive%201/FM_Technical_Document_V5_2009Dec1.pdf.

[44] NERC Petition, Exhibit E (White Paper Supporting Functional Entity Applicability) at 2-4.

monitoring capabilities. Accordingly, we agree with NERC that at least some generator operators would not have the technical basis to address a GMD event and would instead need to rely on reliability coordinators and transmission operators for direction.[45] We also note that the Geomagnetic Disturbance Operating Procedure Template for generator operators developed by the NERC GMD Task Force, which the Foundation's comments reference, conditions some of its suggested actions on the generator operator having adequate monitoring systems.[46] In sum, we are not persuaded by Foundation's comments and, rather, determine that there is adequate justification in the record for not including balancing authorities and generator operators in the applicability section of Reliability Standard EOP-010-1.[47]

[45] *Id.* at 4.

[46] NERC, Geomagnetic Disturbance Operating Procedure Template Generator Operator, at 1, *available at* http://www.nerc.com/docs/pc/gmdtf/Template_GOP.pdf ("Some actions listed below should only be undertaken if supported by an adequate GIC impact study and/or if adequate monitoring systems are available. Otherwise they can make matters worse.").

[47] While not basing our determination on NERC's representation or pre-judging what NERC ultimately submits in the Second Stage GMD Reliability Standards, we note NERC's statement that the standard drafting team for the Second Stage GMD Reliability Standards is considering including generator owners and generator operators in the applicability section of that proposed Reliability Standard. NERC Petition, Exhibit E at 4.

B. Effectiveness of GMD Operational Procedures

NERC Petition

30. NERC states, quoting Order No. 779, that "[o]perational procedures may help alleviate abnormal system conditions due to transformer absorption of reactive power during GMD events, helping to stabilize system voltage swings, and may potentially isolate some equipment from being damaged or misoperated."[48] NERC explains that Reliability Standard EOP-010-1 "is an important first step in addressing the issue of GMDs and can be implemented relatively quickly. While responsible entities will develop and implement Operational Procedures or Operational Processes, NERC will continue to support those efforts through the GMD Task Force, for example, by identifying and sharing Operating Plans, Processes, and Procedures found to be the most effective."[49]

NOPR

31. The NOPR stated that Reliability Standard EOP-010-1 satisfies the directive in Order No. 779 that NERC submit one or more Reliability Standards that require owners and operators of the Bulk-Power System to develop and implement operational procedures to mitigate the effects of GMDs consistent with the reliable operation of the Bulk-Power System. The NOPR also stated that operational procedures, while not a

[48] NERC Petition at 3 (quoting Order No. 779, 143 FERC ¶ 61,147 at P 36).

[49] *Id.* at 3-4.

complete solution, constitute an important first step to addressing the GMD reliability gap.

Comments

32. SmartSense and Orquin state that GMD operational procedures depend on the limited ability to predict GMD events. SmartSense states that space weather information is the "default trigger" for implementing operating procedures under Reliability Standard EOP-010-1 but that space weather forecasts have a high error rate. SmartSense contends that relying on space weather forecasts alone will result in false alarms or missed GMD event forecasts. SmartSense maintains that real-time or near real-time monitoring data should be used in conjunction with space weather forecasts to trigger GMD operational procedures.

33. Baker states that operational procedures will be ineffective because: (1) grid operators will be reluctant to take action during a GMD event (e.g., shed load); (2) the warning period for solar storms does not allow enough time for grid operators to take action; (3) grid operators will not have enough situational awareness to know how to take action during a GMD event; (4) there is no capacity to address GMD events on a national scale; (5) operational procedures have been shown to be inadequate in other contexts; (6) equipment failure may undermine the grid operators' ability to respond; (7) GMD events will disrupt communication networks used by grid operators; (8) the potential effects of a GMD event on the Bulk-Power System are too complex to anticipate; and (9) Regional Transmission Organizations and Independent System Operators do not have the authority to shut down the grid in neighboring Regions. Foundation states that grid operators will

have to act blindly during a GMD event because Reliability Standard EOP-010-1 does not require GIC monitoring or mandatory sharing of GIC monitoring data. Foundation also states that Reliability Standard EOP-010-1 is ineffective because it does not require "quantified contingency planning." Orquin maintains that operational procedures are of limited value and recommends using monitoring equipment and blocking devices at least as a back-up measure.

Commission Determination

34. As the Commission stated in Order No. 779, operational procedures are not a complete solution to the risks posed by a GMD event to the Bulk-Power System. Order No. 779 directed NERC to develop Reliability Standards that require operational procedures because such Reliability Standards could be developed and implemented relatively quickly. While we recognize the concerns in the comments of Baker and others regarding the efficacy of operational procedures, Order No. 779 weighed those concerns in ultimately directing NERC to develop operational procedures in the First Stage GMD Reliability Standards and more comprehensive protections in the Second Stage GMD Reliability Standards.[50] We affirm the determination in Order No. 779 that operational procedures constitute "an important first step to addressing the GMD reliability gap because they can be implemented relatively quickly … [and] may help

[50] In Order No. 779, the Commission noted that some entities have already implemented operational procedures that address GMD events. Order No. 779, 143 FERC ¶ 61,147 at P 37.

alleviate abnormal system conditions due to transformer absorption of reactive power during GMD events, helping to stabilize system voltage swings, and may potentially isolate some equipment from being damaged or misoperated."[51]

35. With respect to the concerns raised by SmartSense regarding overreliance on space weather forecasts to trigger GMD operational procedures, Reliability Standard EOP-010-1 does not mandate the use of space weather to trigger the GMD operational procedures. While Requirement R2 requires reliability coordinators to disseminate current and forecasted space weather conditions to the appropriate functional entities, Requirement R3 requires transmission operators to develop Operating Procedures or Operating Processes that, at a minimum, include "System Operator actions to be initiated based on predetermined conditions." Those "predetermined conditions" might include space weather information or other data, including GIC monitoring data, if available. Requirement R3 ultimately leaves it to the transmission operator to define the predetermined conditions in its Operating Procedure or Operating Process. Accordingly, we disagree that Reliability Standard EOP-010-1 requires that initiation of GMD operating procedures be based upon space weather only.

36. We are not persuaded that the First Stage GMD Reliability Standards should require all responsible entities to monitor GICs or mandate sharing GIC monitoring data with reliability coordinators, as Foundation contends. As explained above, we directed

[51] Order No. 779, 143 FERC ¶ 61,147 at P 36.

NERC to develop only operational procedures in the First Stage GMD Reliability Standards, and to develop more comprehensive protections in the Second Stage GMD Reliability Standards. The issue of monitoring requirements properly belongs in the Second Stage GMD Reliability Standards.[52]

37. In terms of real-time sharing of GIC information with reliability coordinators, we note that Reliability Standard COM-002-2, Requirement R1.1 states that "[e]ach Balancing Authority and Transmission Operator shall notify its Reliability Coordinator, and all other potentially affected Balancing Authorities and Transmission Operators through predetermined communication paths of any condition that could threaten the reliability of its area or when firm load shedding is anticipated." Accordingly, if a transmission operator monitors GIC levels that could threaten the reliability of its area of the Bulk-Power System, the transmission operator would have to communicate that information to its reliability coordinator.[53] With respect to Foundation's comment that Reliability Standard EOP-010-1 should include "quantified contingency planning," Foundation does not explain the meaning of this term. In any case, we note that Reliability Standard EOP-010-1, Requirement R3 requires applicable transmission

[52] We will also consider then the need for the Second Stage GMD Reliability Standard's planning requirements to integrate appropriately with the First Stage GMD Reliability Standard's operating requirements.

[53] We do not address here the issue of access to GMD monitoring data for other purposes, such as reassessing the benchmark GMD event, since this issue too belongs properly in the Second Stage GMD Reliability Standards.

operators to "develop, maintain, and implement a GMD Operating Procedure or Operating Process to mitigate the effects of GMD events on the reliable operation of its respective system."

C. Implementation Plan and Effective Dates

NERC Petition

38. The NERC petition proposes that Reliability Standard EOP-010-1 become effective the "first day of the first calendar quarter that is six months after the date that this standard is approved by an applicable governmental authority."[54] However, NERC states that Requirement R2 of Reliability Standard EOP-010-1, pertaining to reliability coordinator dissemination of space weather information, is meant to replace existing Requirement R3 of Reliability Standard IRO-005-3.1a, which includes similar language. Therefore, to avoid duplicative requirements being enforced at the same time, NERC proposes that, if Reliability Standard EOP-010-1 becomes effective prior to the retirement of Reliability Standard IRO-005-3.1a, then Requirement R2 of Reliability Standard EOP-010-1 will not become effective until the first day following retirement of Reliability Standard IRO-005-3.1a.[55] According to NERC's petition, Requirements R1

[54] NERC Petition, Exhibit B (Implementation Plan) at 2.

[55] We agree with NERC that Reliability Standard IRO-005-3.1a, Requirement R3, which requires that "[e]ach Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans," and Requirement R2 of Reliability Standard EOP-010-1, which requires that "[e]ach Reliability Coordinator shall disseminate forecasted and current space weather

(continued…)

and R3 of Reliability Standard EOP-010-1 are not affected by the possible retirement of IRO-05-3.1a and, thus, will be effective the first day of the first calendar quarter that is six months after the date that the Reliability Standard is approved by an applicable governmental authority.[56]

NOPR

39. The NOPR proposed to approve NERC's implementation plan and effective dates for Reliability Standard EOP-010-1.

Comments

40. APS states that a six-month implementation period is not a sufficient amount of time to create a new Operating Process or Operating Procedure. APS explains that it will

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information to functional entities identified as recipients in the Reliability Coordinator's GMD Operating Plan," are largely duplicative in that both requirements require the dissemination of GMD forecast information, at a minimum, to applicable transmission operators.

[56]NERC Petition, Exhibit B (Implementation Plan) at 2. On April 16, 2013, NERC submitted a petition requesting approval of three revised IRO Reliability Standards and the retirement or revision of six currently-effective Reliability Standards, including IRO-005-3.1a (Docket No. RM13-15-000). On November 21, 2013, the Commission issued a Notice of Proposed Rulemaking that, *inter alia*, proposes to remand the proposed IRO Reliability Standards and related retirements and revisions. *See Monitoring System Conditions – Transmission Operations Reliability Standard, Transmission Operation Reliability Standards, Interconnection Reliability Operations and Coordination Reliability Standards*, Notice of Proposed Rulemaking, 78 FR 73,112 (Dec. 5, 2013), 145 FERC ¶ 61,158 (2013). On January 14, 2014, the Commission granted NERC's motion to defer action, until January 31, 2015, on the rulemaking in Docket No. RM13-15-000. *Monitoring System Conditions – Transmission Operations Reliability Standard, Transmission Operation Reliability Standards, Interconnection Reliability Operations and Coordination Reliability Standards*, 146 FERC ¶ 61,023 (2014).

develop an Operation Process or Operating Procedure after its reliability coordinator develops an Operating Plan that identifies the activities designed to mitigate the effects of GMD events on the Bulk-Power System. APS states that its Operating Process or Operating Procedure will then be reviewed by the reliability coordinator, and that it is unrealistic to expect all this to be done in six months. APS proposes allowing the reliability coordinator six months to develop its Operating Plan and then allowing transmission operators a further six months to develop their Operating Processes or Operating Procedures.

Commission Determination

41. We determine that a six-month implementation period, as proposed by NERC, allows enough time for reliability coordinators and transmission operators to implement the requirements of Reliability Standard EOP-010-1. Only APS indicates that a six-month period does not afford applicable entities enough time to implement the Reliability Standard. No other commenter expresses similar concerns. Further, we see no reason why, as APS contends, a transmission operator must wait until its reliability coordinator has completed its Operating Plan before the transmission operator begins work on its Operating Process or Operating Procedure. Reliability coordinators and transmission operators should be able to work largely in parallel and coordinate their efforts to implement the requirements of the Reliability Standard. Accordingly, we approve the implementation plan and effective dates proposed by NERC.

D. Other Issues

42. Commenters express concern that Reliability Standard EOP-010-1 does not address electromagnetic pulses (EMPs).[57] However, Order No. 779 explicitly stated that EMPs were not within the scope of that rulemaking, which led to NERC's petition here.[58] Likewise, Reliability Standard EOP-010-1 is responsive to the Commission directive, and comments critiquing the Reliability Standard for not addressing EMPs are outside the scope of the immediate proceeding.

43. Other commenters criticize the NERC Board of Trustees' approval of Reliability Standard EOP-010-1 because "no substantive discussion occurred at the November 7 meeting [at which the NERC Board of Trustees approved the Reliability Standard] and, as a result, the public was deprived of its right for due process under Section 215 of the Federal Power Act."[59] We find no basis to conclude that the NERC Board of Trustees either violated the NERC Rules of Procedure or otherwise acted improperly in approving Reliability Standard EOP-010-1. Foundation does not identify any rule or other provision that, it claims, the NERC Board of Trustees violated in allegedly failing to conduct a "substantive discussion" at the November 7 meeting. Moreover, in considering whether to approve Reliability Standard EOP-010-1, the Commission established this rulemaking docket to provide the public with an opportunity to comment; thus the public

[57] *See* comments submitted by Orquin, EMP, Stolov, and Baker.

[58] Order No. 779, 143 FERC ¶ 61,147 at P 14 n.20.

[59] Foundation Comments at 45; *see also* CSP Comments at 1.

has been afforded adequate due process under FPA section 215. This is in addition to opportunities to participate in NERC's standard development process, by submitting comments or otherwise.

44. In response to a comment that Reliability Standard EOP-010-1 could interfere with the development of state-level efforts to address GMD events,[60] we note that FPA section 215(j)(3) provides in relevant part that section 215 does not "preempt any authority of any State to take action to ensure the safety, adequacy, and reliability of electric service within that State, as long as such action is not inconsistent with any reliability standard." We also observe that Reliability Standard EOP-010-1 does not preclude users, owners and operators of the Bulk-Power System from taking additional steps that are designed to mitigate the effects of GMD events, provided those additional steps are not inconsistent with the Commission-approved Reliability Standards.

E. Violation Risk Factors and Violation Severity Levels

45. Each requirement of proposed Reliability Standard EOP-010-1 includes one violation risk factor and has an associated set of at least one violation severity level. The ranges of ERO penalties for violations will be based on the sanctions table and supporting penalty determination process described in the Commission-approved NERC Sanction Guidelines, according to the NERC petition. The NOPR proposed to approve the proposed violation risk factors and violation severity levels for the requirements proposed

[60] Maine Representative Boland Comments at 3.

in Reliability Standard EOP-010-1as consistent with the Commission's established guidelines.[61] The Commission did not receive any comments regarding this aspect of the NOPR. Accordingly, the Commission approves the violation risk factors and violation severity levels for the requirements in Reliability Standard EOP-010-1.

III. Information Collection Statement

46. The Office of Management and Budget (OMB) regulations require approval of certain information collection requirements imposed by agency rules. Upon approval of a collection(s) of information, OMB will assign an OMB control number and an expiration date. Respondents subject to the filing requirements of an agency rule will not be penalized for failing to respond to these collections of information unless the collections of information display a valid OMB control number. The Paperwork Reduction Act (PRA) requires each federal agency to seek and obtain OMB approval before undertaking a collection of information directed to ten or more persons, or contained in a rule of general applicability.

47. The Commission is submitting these reporting requirements to OMB for its review and approval under section 3507(d) of the PRA. The Commission solicited comments on the need for and the purpose of the information contained in Reliability Standard EOP-010-1 and the corresponding burden to implement the Reliability Standard. The Commission received comments on specific requirements in the Reliability Standard,

[61] *See North American Electric Reliability Corp.*, 135 FERC ¶ 61,166 (2011).

which we address in this Final Rule. However, the Commission did not receive any comments on our reporting burden estimates or on the need for and the purpose of the information collection requirements.

48. The Commission based its paperwork burden estimates on the NERC compliance registry as of November 27, 2013. According to the registry, there are 16 reliability coordinators and 183 transmission operators.

49. The Commission estimates an increased burden for each requirement, as explained in the chart below, for a total estimated burden of $238,800. The Commission based the burden estimates on staff experience, knowledge, and expertise:

Burden Estimate for Implementation of Reliability Standard EOP-010-1						
Reliability Standard Number	**Type of Respondents**	**Number of Respondents (1)**	**Number of Responses per Respondent (2)**	**Average Burden Hours Per Response (3)**	**Total Annual Burden Hours (1)x(2)x(3)**	**Total Annual Cost[62]**
EOP-010-1 (R1)	Reliability Coordinator	16	1	20	320	$19,200 ($60/hr)
EOP-010-1 (R3)	Transmission Operator	183	1	20	3660	$219,600 ($60/hr)
TOTAL					3980	$238,800

[62] The estimated hourly loaded cost (salary plus benefits) for an engineer is assumed to be $60/hour, based on salaries as reported by the Bureau of Labor Statistics (BLS) (http://bls.gov/oes/current/naics2_22.htm). Loaded costs are BLS rates divided by 0.703 and rounded to the nearest dollar (http://www.bls.gov/news.release/ecec.nr0.htm). While the BLS figures have been updated since the issuance of the NOPR, the new BLS figures are not significantly different. For consistency, the Commission continues with the same loaded cost figure used in the NOPR.

50. The above chart does not include Reliability Standard EOP-010-1, Requirement R2 because, as NERC states, that requirement replaces IRO-005-3.1a, Requirement R3 and has no change in overall burden. In addition, while our burden estimate with respect to Reliability Standard EOP-010-1, Requirement R3 assumes that all 183 transmission operators are subject to that requirement, we note that not all 183 transmission operators are likely to be subject to Requirement R3 because that requirement only applies to transmission operators with a Transmission Operator Area that includes a power transformer with a high side, wye-grounded winding with terminal voltage greater than 200 kV.

Title: FERC-725S, Mandatory Reliability Standards: Reliability Standard EOP-010-1.

Action: Proposed Collection of Information.

OMB Control No: 1902-0270.

Respondents: Business or other for profit, and not for profit institutions.

Frequency of Responses: One-time and ongoing.

Necessity of the Information: Reliability Standard EOP-010-1 implements the Congressional mandate of the Energy Policy Act of 2005 to develop mandatory and enforceable Reliability Standards to better ensure the reliability of the nation's Bulk-Power System. Specifically, the Reliability Standard ensures that responsible entities have Operating Plans and Operating Procedures or Processes in place to mitigate the effects of geomagnetic disturbances on the Bulk-Power System.

Internal review: The Commission has reviewed Reliability Standard EOP-010-1 and has determined that the Reliability Standard is necessary to ensure the reliability and integrity of the Nation's Bulk-Power System.

51. Interested persons may obtain information on the reporting requirements by contacting: Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426 [Attention: Ellen Brown, Office of the Executive Director, e-mail: DataClearance@ferc.gov, Phone: (202) 502-8663, fax: (202) 273-0873]. Comments on the requirements of this rule may also be sent to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503 [Attention: Desk Officer for the Federal Energy Regulatory Commission]. For security reasons, comments should be sent by e-mail to OMB at oira_submission@omb.eop.gov. Comments submitted to OMB should include Docket Number RM14-1-000.

IV. Environmental Analysis

52. The Commission is required to prepare an Environmental Assessment or an Environmental Impact Statement for any action that may have a significant adverse effect on the human environment.[63] The Commission has categorically excluded certain actions from this requirement as not having a significant effect on the human environment. Included in the exclusion are rules that are clarifying, corrective, or procedural or that do

[63] *Regulations Implementing the National Environmental Policy Act*, Order No. 486, 52 FR 47897 (Dec. 17, 1987), FERC Stats. & Regs., Regulations Preambles 1986-1990 ¶ 30,783 (1987).

not substantially change the effect of the regulations being amended.[64] The actions here fall within this categorical exclusion in the Commission's regulations.

V. Regulatory Flexibility Act

53. The Regulatory Flexibility Act of 1980 (RFA)[65] generally requires a description and analysis of proposed rules that will have significant economic impact on a substantial number of small entities.

54. The NOPR compared the NERC compliance registry with data submitted to the Energy Information Administration on Form EIA-861, which indicated that perhaps as many as 34 small entities were registered as transmission operators and no small entities were registered as reliability coordinators. However, the Commission estimated in the NOPR that there will be no material change in burden for the 34 transmission operators that qualified as small entities because they will likely not be subject to Reliability Standard EOP-010-1. Reliability Standard EOP-010-1 applies to transmission operators with a Transmission Operator Area that includes a power transformer with a high side, wye-grounded winding with terminal voltage greater than 200 kV. The NOPR stated that transmission operators with Transmission Operator Areas that include a power transformer with a high side, wye-grounded winding with terminal voltage greater than 200 kV are generally large entities serving substantial geographical areas with significant

[64] 18 CFR 380.4(a)(2)(ii).

[65] 5 U.S.C. 601-612.

energy output. The Commission did not receive any comments regarding this aspect of the NOPR.

55. Since the issuance of the NOPR, the Small Business Administration changed the small business size standard applicable to reliability coordinators and transmission operators. The Commission currently does not have an estimate of the number of small reliability coordinators and transmission operators using the new size standard. However, the Commission still estimates that the specific applicability of Reliability Standard EOP-010-1 means that generally only large entities will have to meet the new requirements.

56. Based on the above, the Commission certifies that Reliability Standard EOP-010-1 will not have a significant impact on a substantial number of small entities. Accordingly, no initial regulatory flexibility analysis is required.

VI. Document Availability

57. In addition to publishing the full text of this document in the Federal Register, the Commission provides all interested persons an opportunity to view and/or print the contents of this document via the Internet through the Commission's Home Page (http://www.ferc.gov) and in the Commission's Public Reference Room during normal business hours (8:30 a.m. to 5:00 p.m. Eastern time) at 888 First Street, NE, Room 2A, Washington, DC 20426.

58. From the Commission's Home Page on the Internet, this information is available on eLibrary. The full text of this document is available on eLibrary in PDF and Microsoft Word format for viewing, printing, and/or downloading. To access this

document in eLibrary, type the docket number excluding the last three digits of this document in the docket number field.

59. User assistance is available for eLibrary and the Commission's website during normal business hours from the Commission's Online Support at (202) 502-6652 (toll free at 1-866-208-3676) or email at ferconlinesupport@ferc.gov, or the Public Reference Room at (202) 502-8371, TTY (202) 502-8659. E-mail the Public Reference Room at public.referenceroom@ferc.gov.

VII. Effective Date and Congressional Notification

60. These regulations are effective **[INSERT DATE 60 days after publication in the FEDERAL REGISTER]**. The Commission has determined, with the concurrence of the Administrator of the Office of Information and Regulatory Affairs of OMB, that this rule is not a "major rule" as defined in section 351 of the Small Business Regulatory Enforcement Fairness Act of 1996.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Appendix
Commenters

Abbreviation	Commenter
AEP	American Electric Power Service Corporation
AFS	Advanced Fusion Systems
APS	Arizona Public Service Company
ASO	Atomic Safety Organization
Baker	George H. Baker
Maine Representative Boland	Hon. Andrea M. Boland, Maine State Representative
CSP	Center for Security Policy
Dominion	Dominion Resources Services, Inc.
EEI	Edison Electric Institute
EMP Coalition	EMP Coalition
Emprimus	Emprimus LLC
Chamber of Commerce	Institute for 21st Century Energy, U.S. Chamber of Commerce
Foundation	Foundation for Resilient Societies
IRC	ISO/RTO Council
ITC	International Transmission Company
Kappenman	John G. Kappenman
NERC	North American Electric Reliability Corporation
Orquin	Alberto Ramirez Orquin
SmartSenseCom	SmartSenseCom, Inc.
Stolov	Jerome J. Stolov