

158 FERC ¶ 61,041  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Norman C. Bay, Chairman;  
Cheryl A. LaFleur, and Colette D. Honorable.

Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events      Docket No. RM15-11-001

ORDER NO. 830-A

ORDER DENYING REHEARING

(Issued January 19, 2017)

1. In Order No. 830, the Commission approved Reliability Standard TPL-007-1 (Transmission System Planned Performance for Geomagnetic Disturbance Events) submitted by the North American Electric Reliability Corporation (NERC).<sup>1</sup> In addition, the Commission directed NERC to develop certain modifications to Reliability Standard TPL-007-1 and submit a work plan and, subsequently, one or more informational filings that address specific geomagnetic disturbance (GMD)-related research areas. Foundation for Resilient Societies (Resilient Societies), Edison Electric Institute (EEI), Center for Security Policy (CSP) and Jewish Institute for National Security Affairs (JINSA) filed requests for rehearing of Order No. 830. For the reasons discussed in the body of this order, we deny rehearing.

**I. Background**

**A. Order No. 779**

2. In Order No. 779, the Commission directed NERC, pursuant to section 215(d)(5) of the Federal Power Act (FPA),<sup>2</sup> to develop and submit for approval proposed Reliability Standards that address the impact of GMDs on the reliable operation of the

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<sup>1</sup> *Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events*, Order No. 830, 81 Fed. Reg. 67,120 (Sept. 30, 2016), 156 FERC ¶ 61,215 (2016).

<sup>2</sup> 16 U.S.C. § 824o(d)(5) (2012).

Bulk-Power System.<sup>3</sup> The Commission determined that the potentially severe, widespread impact on the reliable operation of the Bulk-Power System that can be caused by GMD events, and the then absence of Reliability Standards to address GMD events, justified the development of Reliability Standards.

3. The Commission ordered NERC to implement the Commission's 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 implement operational procedures to mitigate the effects of GMDs consistent with the reliable operation of the Bulk-Power System.<sup>4</sup> The Commission directed that NERC, in the Second Stage GMD Reliability Standards, provide more comprehensive protections by requiring applicable entities to protect their facilities against a "benchmark GMD event."

#### **B. NERC Petition**

4. On January 21, 2015, NERC petitioned the Commission to approve Reliability Standard TPL-007-1 and its associated violation risk factors and violation severity levels, implementation plan, and effective dates. NERC also proposed a definition for the term "Geomagnetic Disturbance Vulnerability Assessment or GMD Vulnerability Assessment" for inclusion in the NERC Glossary of Terms. NERC maintained that Reliability Standard TPL-007-1 is just, reasonable, not unduly discriminatory or preferential and in the public interest. NERC also asserted that Reliability Standard TPL-007-1 satisfied the directive in Order No. 779 corresponding to the Second Stage GMD Reliability Standards.

#### **C. Order No. 830**

5. In Order No. 830, the Commission approved Reliability Standard TPL-007-1. The Commission determined that Reliability Standard TPL-007-1 addressed the directives in Order No. 779 corresponding to the development of the Second Stage GMD Reliability Standards. Order No. 830 explained that Reliability Standard TPL-007-1 addressed the

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<sup>3</sup> *Reliability Standards for Geomagnetic Disturbances*, Order No. 779, 78 Fed. Reg. 30,747 (May 23, 2013), 143 FERC ¶ 61,147, *reh'g denied*, 144 FERC ¶ 61,113 (2013).

<sup>4</sup> The Commission approved the First Stage GMD Reliability Standard, EOP-010-1, in Order No. 797. *Reliability Standard for Geomagnetic Disturbance Operations*, Order No. 797, 79 Fed. Reg. 35,911 (June 25, 2014), 147 FERC ¶ 61,209, *reh'g denied*, Order No. 797-A, 149 FERC ¶ 61,027 (2014).

Commission's directives by requiring applicable Bulk-Power System owners and operators to conduct, on a recurring five-year cycle, initial and ongoing vulnerability assessments regarding the potential impact of a benchmark GMD event on the Bulk-Power System as a whole and on Bulk-Power System components. In addition, the Commission determined that Reliability Standard TPL-007-1 requires applicable entities to develop and implement corrective action plans to mitigate vulnerabilities identified through those recurring vulnerability assessments and that potential mitigation strategies identified in Reliability Standard TPL-007-1 include, but are not limited to, the installation, modification or removal of transmission and generation facilities and associated equipment. Order No. 830 concluded that Reliability Standard TPL-007-1 constitutes an important step in addressing the risks posed by GMD events to the Bulk-Power System.

6. In addition to approving Reliability Standard TPL-007-1, in Order No. 830, the Commission determined that Reliability Standard TPL-007-1 should be modified to reflect new information and analyses. Specifically, Order No. 830 directed NERC to develop and submit modifications to Reliability Standard TPL-007-1 concerning: (1) the calculation of the reference peak geoelectric field amplitude component of the benchmark GMD event definition; (2) the collection and public availability of necessary geomagnetically-induced current (GIC) monitoring and magnetometer data; and (3) deadlines for completing corrective action plans and the mitigation measures called for in corrective action plans. Order No. 830 directed NERC to develop and submit these revisions for Commission approval within 18 months of the effective date of Order No. 830.

7. Further, to improve the understanding of GMD events, in Order No. 830, the Commission directed NERC to submit within six months from the effective date of Order No. 830 a GMD research work plan. Regarding the work plan, Order No. 830 directed NERC to: (1) further analyze the area over which spatial averaging should be calculated for stability studies, including performing sensitivity analyses on squares less than 500 km per side (e.g., 100 km, 200 km); (2) further analyze earth conductivity models by, for example, using metered GIC and magnetometer readings to calculate earth conductivity and using 3-D readings; (3) determine whether new analyses and observations support modifying the use of single station readings around the earth to adjust the spatially averaged benchmark for latitude; (4) research aspects of the required thermal impact assessments; and (5) in NERC's discretion, conduct any GMD-related research areas generally that may impact the development of new or modified GMD Reliability Standards.

## **II. Discussion**

8. The Commission denies the requests for rehearing, for the reasons discussed below.

**A. Implementation Plan****Order No. 830**

9. In Order No. 830, the Commission approved the phased, five-year implementation plan proposed by NERC. Under the approved implementation plan, Requirement R1 of Reliability Standard TPL-007-1 will become effective on the first day of the first calendar quarter that is six months after Commission approval. Requirement R2 will become effective on the first day of the first calendar quarter that is 18 months after Commission approval. Requirement R5 will become effective on the first day of the first calendar quarter that is 24 months after Commission approval. Requirement R6 will become effective on the first day of the first calendar quarter that is 48 months after Commission approval. And Requirement R3, Requirement R4, and Requirement R7 will become effective on the first day of the first calendar quarter that is 60 months after Commission approval.

**Request**

10. EEI contends that the Commission erred by approving NERC's implementation plan without accounting for the impacts of the directives contained in Order No. 830 concerning modifications to Reliability Standard TPL-007-1. Specifically, EEI disagrees with the Commission's statement that the approved implementation plan should afford enough time to apply the revised benchmark GMD event definition in the first GMD Vulnerability Assessment. EEI maintains that the "impacts [of revising the benchmark GMD event definition in Reliability Standard TPL-007-1] are not nearly so inconsequential because the benchmark GMD event definition serves as an input upon which several Requirements build, including requirements whose effective dates arrive earlier than the vulnerability assessments required by Requirement R4, and which are effective January 1, 2022."<sup>5</sup>

11. EEI also states that the Commission "should reiterate that prudent expenditures by all Responsible Entities in compliance with TPL-007-1, even if analyses need to be performed again, will be recoverable, whether through formula transmission rates, single issue ratemaking for those who have stated rates or a rider for generators in competitive markets."<sup>6</sup>

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<sup>5</sup> EEI Request at 6.

<sup>6</sup> *Id.* at 10.

### **Commission Determination**

12. We deny EEI's request for rehearing regarding the approved implementation plan. In Order No. 830, the Commission recognized the possibility that the modifications to Reliability Standard TPL-007-1 directed by the Commission might require Reliability Standard TPL-007-1 and the revised Reliability Standard to be implemented on a longer schedule than the schedule approved in Order No. 830.<sup>7</sup> Specifically, the Commission stated in Order No. 830 that, "[i]f circumstances, such as the complexity of the revised benchmark GMD event, require it, NERC may propose and justify a revised implementation plan."<sup>8</sup> At this time, the Commission has no way of knowing what impacts the modified benchmark GMD event definition may have on the approved implementation plan because NERC has not yet developed or proposed a revised Reliability Standard.<sup>9</sup> Accordingly, EEI's concern is premature. At an appropriate time, as the Commission indicated in Order No. 830, NERC may propose and justify a revised implementation plan if a longer schedule is warranted by the modifications to Reliability Standard TPL-007-1.

13. The Commission affirms the statement in Order No. 830 that "cost recovery for prudent costs associated with or incurred to comply with Reliability Standard TPL-007-1 and future revisions to the Reliability Standard will be available to registered entities."<sup>10</sup>

#### **B. GMD Vulnerability and Thermal Impact Assessments**

##### **Order No. 830**

14. In Order No. 830, the Commission approved the benchmark GMD event definition, including the reference peak geoelectric field amplitude figure, proposed by NERC. In addition, the Commission directed NERC to develop revisions to the benchmark GMD event definition so that the reference peak geoelectric field amplitude component is not based solely on spatially-averaged data. Similarly, the Commission directed NERC to modify Reliability Standard TPL-007-1 to require registered entities to

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<sup>7</sup> EEI's request acknowledges the language in Order No. 830 regarding the possibility of modifications to the implementation plan. *See id.* at 7 n.15.

<sup>8</sup> Order No. 830, 156 FERC ¶ 61,215 at P 50.

<sup>9</sup> EEI states that Requirements R1 and R2 of Reliability Standard TPL-007-1 could be completed without being impacted by the directed modifications to the Reliability Standard. EEI Request at 10.

<sup>10</sup> Order No. 830, 156 FERC ¶ 61,215 at P 24.

apply spatially averaged and non-spatially averaged peak geoelectric field values, or some equally efficient and effective alternative, when conducting thermal impact assessments.

### **Request**

15. Resilient Societies contends that the Commission erred by not addressing several features of Reliability Standard TPL-007-1. First, Resilient Societies maintains that the Commission did not consider “prudent design factors” to account for the uncertainties surrounding GMDs. In particular, Resilient Societies contends that the Commission erred by failing to apply a “safety factor,” such as a “multiplier in the range from two to four ... to the anticipated geo-electric field for an extreme [GMD] impact.”<sup>11</sup> Second, Resilient Societies argues that the Commission did not address Resilient Societies’ comments on: (1) the need to consider GMD hazards from “vibration impacts on transformers” and (2) the “arbitrary” exemption of networks operating between 100 kV and 200kV from the applicability section of Reliability Standard TPL-007-1.

### **Commission Determination**

16. We deny Resilient Societies’ request for rehearing on these issues.

17. With respect to the consideration of “prudent design factors,” the Commission, in Order No. 830, acknowledged the uncertainties regarding GMDs in terms of each of the components of the benchmark GMD event (i.e., the reference peak geoelectric field amplitude, local geomagnetic latitude scaling factor and local earth conductivity scaling factor). The Commission concluded that Reliability Standard TPL-007-1 provided an adequate technical basis from which to approve the Reliability Standard pursuant to FPA section 215(d)(2). To address the uncertainties regarding the reference peak geoelectric field amplitude and local geomagnetic latitude and earth conductivity scaling factors, the Commission directed NERC to study those issues as part of the GMD research work plan.<sup>12</sup> For example, the Commission specifically directed NERC to study “coastal effects” on ground conductivity models.<sup>13</sup> Having determined that NERC provided an adequate technical basis from which to approve Reliability Standard TPL-007-1, we do not believe it would be appropriate to require an additional, arbitrary “design factor for uncertainty.” Instead, the Commission determined in Order No. 830, and affirms here,

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<sup>11</sup> Resilient Societies’ Request at 6.

<sup>12</sup> Order No. 830, 156 FERC ¶ 61,215 at PP 76-81.

<sup>13</sup> *Id.* P 78.

that improving our understanding of GMDs through the GMD research work plan will provide a scientific foundation for improvements to Reliability Standard TPL-007-1.<sup>14</sup>

18. Regarding Resilient Societies' concerns about vibration impacts on transformers, in Order No. 830, the Commission recognized that transformers could be damaged or otherwise affected by a GMD event other than through transformer heating. The Commission noted that NERC's comments indicated that NERC was "collaborating with researchers to examine more complex GMD vulnerability issues, such as harmonics and mitigation assessment techniques, to enhance the modeling capabilities of the industry."<sup>15</sup> In response, the Commission directed NERC to study the broader issue of transformer impacts as part of the GMD research work plan.<sup>16</sup> We also note that Reliability Standard TPL-007-1, in addition to requiring thermal impact assessments of qualifying transformers, also requires, in Requirement R4, System studies as part of the GMD Vulnerability Assessments.<sup>17</sup>

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<sup>14</sup> The NERC standard drafting team's selection of 8 V/km for the reference peak geoelectric field amplitude was based on a possible range of between 3 and 8 V/km with "the upper limit of the 95% confidence interval for a 100-year return level ... [being] more precisely 5.77 V/km." NERC Petition, Ex. D (White Paper on GMD Benchmark Event Description) at 10.

<sup>15</sup> Order No. 830, 156 FERC ¶ 61,215 at P 68 n.101. Dr. Horton, a member of the standard drafting team, discussed the potential negative impacts of harmonics generated by GMDs on protection systems, reactive power resources and generators. *Id.* P 68 n.100 (citing Slide Presentation of Randy Horton, March 1, 2016 Technical Conference at 2-6). In prepared remarks at the March 1, 2016 Technical Conference, Dr. Horton explained that, "Transformer noise and vibration is created by a phenomenon called magnetorestriction ... [and] [h]armonic currents created by half-cycle saturation cause magnetorestriction in the core." Statement of Randy Horton, March 1, 2016 Technical Conference at 11-12.

<sup>16</sup> Order No. 830, 156 FERC ¶ 61,215 at P 68 ("we direct NERC to address the effects of harmonics, including tertiary winding harmonic heating and any other effects on transformers, as part of the GMD research work plan").

<sup>17</sup> Reliability Standard TPL-007-1, Requirement 4.2 ("The study or studies shall be conducted based on the benchmark GMD event described in Attachment 1 to determine whether the System meets the performance requirements in Table 1."). The NERC Glossary of Terms defines System as a "combination of generation, transmission, and distribution components."

19. With respect to the applicability criteria for Reliability Standard TPL-007-1, the Commission addressed this issue in Order No. 797 when approving the First Stage GMD Reliability Standard EOP-010-1. As the Commission observed in Order No. 830, NERC explained that Reliability Standards EOP-010-1 and TPL-007-1 purposefully use the same applicability criteria to determine the types of transformers that are subject to the Reliability Standards (i.e., power transformer(s) with a high side, wye grounded winding with terminal voltage greater than 200 kV).<sup>18</sup> Resilient Societies' comments offer no basis for revisiting that determination, particularly since the information contained in Resilient Societies' comments is directed to reactive power facilities operating below 200 kV rather than to transformers.<sup>19</sup>

### **C. GMD-Related Data**

#### **Order No. 830**

20. In Order No. 830, the Commission determined that additional collection and disclosure of GIC monitoring and magnetometer data is necessary to improve our collective understanding of the threats posed by GMD events. The Commission directed NERC to develop revisions to Reliability Standard TPL-007-1 to require applicable entities to collect GIC monitoring and magnetometer data as necessary to enable model validation and situational awareness, including from any devices that must be added to meet this need. The Commission also directed NERC, pursuant to Section 1600 of the NERC Rules of Procedure, to collect GIC monitoring and magnetometer data from registered entities for the period beginning May 2013, including both data existing as of the date of Order No. 830 and new data going forward, and to make that information available. The Commission further explained that, as a general matter, the Commission does not believe that GIC monitoring and magnetometer data should be treated as Confidential Information pursuant to the NERC Rules of Procedure.

#### **Requests**

21. JINSA maintains that Reliability Standard TPL-007-1 should be modified to require "collection and public disclosure of relevant data on grid impacts during GMD events and incorporation of these data into any future revisions of GMD standards."<sup>20</sup>

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<sup>18</sup> Order No. 830, 156 FERC ¶ 61,215 at P 10; *see also* NERC Petition at 14.

<sup>19</sup> Resilient Societies' Comments at 47-52.

<sup>20</sup> JINSA Request at 3.

22. CSP contends that the standard drafting team “failed to collect relevant data, contrary to Section 6.0 of the NERC Standards Processes Manual ... NERC did not collect available data on [GIC] and transformer failures, making effective quality control impossible.”<sup>21</sup>

23. Resilient Societies contends that the Commission erred by not requiring the collection and disclosure of “impacts of solar storms” and, thus, “the impacts of solar storms on electric grids ... [will] remain hidden from public view.”<sup>22</sup> Resilient Societies also asserts that the Commission erred by not requiring the collection and disclosure of GIC monitoring and magnetometer data in existence prior to May 2013. Lastly, Resilient Societies contends that the Commission should have required that “utilities annually disclose mitigative measures” for transformers.<sup>23</sup>

### **Commission Determination**

24. We deny the requests for rehearing on these issues.

25. In Order No. 830, the Commission addressed the issues raised by JINSA and Resilient Societies regarding the collection and public availability of GMD-related data by directing NERC: (1) to modify Reliability Standard TPL-007-1 to require the collection of necessary GIC monitoring data and magnetometer data and to make such data publicly available; and (2) pursuant to Section 1600 of the NERC Rules of Procedure, to collect GIC monitoring and magnetometer data from registered entities for the period beginning May 2013 forward. The Commission explained that additional collection and disclosure of GIC monitoring and magnetometer data is “necessary to improve our collective understanding of the threats posed by GMD events” and “will facilitate a greater understanding of GMD events that, over time, will improve Reliability Standard TPL-007-1.”<sup>24</sup>

26. The Commission required NERC to collect GMD data pursuant to Section 1600 of the NERC Rules of Procedure from May 2013 forward because Order No. 779, which directed NERC to develop the GMD Reliability Standards, issued on May 16, 2013. Given the burdens associated with collecting data under the NERC Rules of Procedure, we believe it is reasonable to limit the temporal scope of the directive to the date of

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<sup>21</sup> CSP Request at 3.

<sup>22</sup> Resilient Societies’ Request at 4.

<sup>23</sup> *Id.*

<sup>24</sup> Order No. 830, 156 FERC ¶ 61,215 at PP 88, 93.

issuance of Order No. 779. However, nothing in Order No. 830 precludes NERC from collecting data from before May 2013 and, indeed, we encourage NERC to collect and make available as much relevant data as it can.<sup>25</sup>

27. To the extent that JINSA and Resilient Societies contend that the Commission should require the collection of “GMD impact” data beyond collecting GIC monitoring data and magnetometer data, we disagree. As the Commission explained in Order No. 830, the intent in collecting GIC monitoring and magnetometer data is to enable model validation and situational awareness. Reliability Standard TPL-007-1, which is a planning Reliability Standard, is intended to maintain system planned performance during GMD events by assessing the vulnerability of Bulk-Power System components to a benchmark GMD event and mitigating any assessed vulnerabilities.<sup>26</sup> Nonetheless, we expect utilities to consider any actual impacts in assessing and mitigating their vulnerabilities, and we may request such information in the future, if and when warranted.

28. In addition, regarding Resilient Societies’ request that “utilities annually disclose mitigative measures” for transformers, we see no need for such a requirement. To the extent that an applicable entity determines that a qualifying transformer is vulnerable to a benchmark GMD event, Reliability Standard TPL-007-1, Requirement R7 requires the development of a corrective action plan to mitigate the vulnerability. As indicated in the corresponding Measure for Requirement R7, to demonstrate compliance, “[e]ach responsible entity ... shall have evidence such as electronic or hard copies of its Corrective Action Plan, as specified in Requirement R7.” Compliance enforcement entities (i.e., the Commission, NERC and Regional Entities) will therefore have the ability to assess the number of qualifying transformers undergoing corrective action plans.

29. We disagree with CSP that the NERC standard drafting team violated Section 6.0 of the NERC Standards Processes Manual in collecting data used to derive the benchmark GMD event definition. As the Commission indicated in Order No. 830, there is no evidence of procedural irregularities or of the standard drafting team’s failure to comply with the NERC Rules of Procedure.<sup>27</sup> Instead, we view the allegations contained

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<sup>25</sup> Resilient Societies states that the Commission should require “disclosure of all relevant GIC data in possession of the EPRI Sunburst program.” Resilient Societies Request at 15. However, EPRI, a non-profit research institution, is not a user, owner or operator of the Bulk-Power System and, therefore, is outside of the Commission’s jurisdiction under section 215 of the FPA.

<sup>26</sup> Reliability Standard TPL-007-1, Purpose, Requirements R4 and R7.

<sup>27</sup> Order No. 830, 156 FERC ¶ 61,215 at P 123.

in the NERC “Level 2” Appeal as an inappropriate vehicle to challenge the substantive provisions of Reliability Standard TPL-007-1, which the Commission addressed in Order No. 830.

**D. Other Requests**

30. JINSA and CSP maintain that Order No. 830 should have addressed the threats posed by electromagnetic pulses (EMPs) or otherwise raise the issue of EMPs. However, the Commission has indicated before, first in directing the development of GMD Reliability Standards in Order No. 779; then in approving the First Stage GMD Reliability Standards in Order No. 797; and most recently in Order No. 830, that EMPs are not within the scope of the GMD rulemaking proceedings.<sup>28</sup> While the risk from EMPs and any appropriate mitigation continues to be analyzed by EPRI and others, and we continue to monitor those important activities, this proceeding is not the proper forum for regulatory action on the issue.

31. CSP contends that two documents, a presentation by Dr. Adam Schultz of Oregon State University and a report by Los Alamos National Laboratory, were “withheld from public view and from the FERC docket.”<sup>29</sup> CSP’s contention is without merit. Dr. Schultz participated in the staff-led GMD technical conference held on March 1, 2016 and submitted for the record materials regarding his research, including a presentation entitled “Electric fields at ground level due to GMDs: Accounting for realworld 3-D ground conductivity effects.”<sup>30</sup> With respect to the Los Alamos National Laboratory report, the Commission issued a notice on October 2, 2015 seeking comment on the September 2015 technical paper prepared by the Los Alamos National Laboratory entitled “Review of the GMD Benchmark Event in TPL-007-1.”<sup>31</sup> In addition, Dr. Scott Backhaus, one of the two named authors of the Los Alamos National Laboratory report, participated in and submitted for the record materials as part of the staff-led GMD technical conference held on March 1, 2016.

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<sup>28</sup> *Id.* P 119 (citing Order No. 779, 143 FERC ¶ 61,209 and 797, 147 FERC ¶ 61,209).

<sup>29</sup> CSP Request at 2.

<sup>30</sup> A link to the presentation referenced by CSP was filed in the Commission’s eLibrary document retrieval system in Docket No. RM15-11-000 on September 31, 2015, prior to the technical conference.

<sup>31</sup> The Los Alamos National Laboratory report was both publicly available and filed in the Commission’s eLibrary document retrieval system in Docket No. RM15-11-000 on September 30, 2015.

32. JINSA maintains that the Commission should grant rehearing to “incorporate determinations of the U.S. Department of Energy Pilot Program to demonstrate and assess grid-protective devices pursuant to Section 5(a) of Executive Order No. 13744 issued by the President on October 12, 2016.”<sup>32</sup> As explained in Order No. 830, Reliability Standard TPL-007-1 requires applicable entities to mitigate any assessed vulnerabilities to a benchmark GMD event. The Reliability Standard does not, however, mandate any specific form of mitigation provided the vulnerability is mitigated. Accordingly, to the extent JINSA requests that the Commission require the adoption of specific forms of mitigation stemming from Section 5(a) of Executive Order No. 13744, we decline to do so here. However, just as the Commission in Order No. 830 indicated that NERC’s GMD research should be informed by ongoing GMD-related research efforts by government agencies, laboratories and academia, we expect that the required mitigation of GMD vulnerabilities will be informed by efforts such as those set out in Section 5(a) of Executive Order No. 13744.

33. JINSA states that “modifications of Standard TPL-007-1 ... [should] include ... [a] cost-benefit analysis that includes the specific analysis of societal impacts of grid damage.”<sup>33</sup> We see no need for NERC to conduct the requested cost-benefit analysis. Reliability Standard TPL-007-1 was developed in response to the Commission’s directive in Order No. 779 regarding the Second Stage GMD Reliability Standards. The Commission based its directive on the potentially severe, widespread impact on the reliable operation of the Bulk-Power System that can be caused by GMD events and the then absence of existing Reliability Standards to address GMD events. In determining the benchmark GMD event used in Reliability Standard TPL-007-1, NERC provided an adequate technical basis for using a 1-in-100 year GMD event to define the benchmark GMD event. We do not believe that JINSA’s assertion “that an assessment of the value of societal losses caused by major GMD events ... will be important in order to justify protection costs” is relevant to the question of whether Reliability Standard TPL-007-1 satisfies the statutory criteria for approval of Reliability Standards set forth in FPA section 215(d)(2).<sup>34</sup>

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<sup>32</sup> JINSA Request at 3. Section 5(a) of Executive Order No. 13744 states in relevant part that, “Within 120 days of the date of this order, the Secretary of Energy, in consultation with the Secretary of Homeland Security, shall develop a plan to test and evaluate available devices that mitigate the effects of geomagnetic disturbances on the electrical power grid through the development of a pilot program that deploys such devices, in situ, in the electrical power grid. After the development of the plan, the Secretary shall implement the plan in collaboration with industry.”

<sup>33</sup> JINSA Request at 3.

<sup>34</sup> *Id.*

34. We reject Resilient Societies' request regarding the "Initial Actions" assessments discussed in Order No. 779 as untimely.<sup>35</sup>

The Commission orders:

The Commission denies the rehearing requests, for the reasons discussed in the body of this order.

By the Commission.

( S E A L )

Nathaniel J. Davis, Sr.,  
Deputy Secretary.

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<sup>35</sup> Order No. 779 did not require NERC to make any filings regarding the "Initial Actions" assessments. Instead, the Commission indicated that the "Initial Actions" assessments provide a head start for analyzing the most at-risk and critical facilities before the Second Stage GMD Reliability Standards become effective and could be used to assist in performing the GMD vulnerability assessments required in the Second Stage GMD Reliability Standards." Order No. 779, 143 FERC ¶ 61,147 at P 52.