

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Reliability Standard for Transmission)	
System Planned Performance for)	Docket No. RM15-11-000
Geomagnetic Disturbance Events)	

**JOINT COMMENTS OF ISO NEW ENGLAND INC., MIDCONTINENT
INDEPENDENT SYSTEM OPERATOR,
INDEPENDENT ELECTRICITY SYSTEM OPERATOR,
NEW YORK INDEPENDENT SYSTEM OPERATOR, INC., AND
PJM INTERCONNECTION, L.L.C.**

Pursuant to Rule 213 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission¹ (the “Commission”), ISO New England Inc., Midcontinent System Operator, Independent Electricity Operator², the New York Independent System Operator, Inc., and PJM Interconnection, L.L.C., (together, the “ISOs/RTOs”) respectfully submit these joint comments in response to the Notice of Proposed Rulemaking issued by the Commission in the above-referenced docket on May 14, 2015, proposing approval of Reliability Standard TPL-007-1 – Transmission System Planned Performance for Geomagnetic Disturbance Events (the “NOPR”).³

The proposed Reliability Standard establishes requirements for certain entities, including Planning Coordinators and Transmission Planners, to assess the vulnerability of their transmission systems to geomagnetic disturbance events (“GMDs”). GMDs occur when the sun ejects charged particles that interact and cause changes in the earth’s magnetic fields which, in

¹ 18 C.F.R. § 385.213 (2013).

² Independent Electricity System Operator joins the comments in Section II.A but does not join the comment in Section II.B.

³ See *Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events*, 151 FERC ¶ 61,134 (2015), 80 Fed. Reg. 29990 (May 26, 2015).

turn, can induce currents that threaten Bulk Power System reliability. Entities that do not meet certain performance requirements, based on the results of their vulnerability assessments, must develop a plan to meet the requirements. The North American Electric Reliability Corporation (“NERC”) submitted proposed Reliability Standard TPL-007-1 for Commission approval in response to a Commission directive in Order No. 779.⁴ In addition to proposing approval of the Reliability Standard, the Commission proposes to direct that NERC develop modifications to the benchmark GMD event definition set forth in Attachment 1 of the proposed Reliability Standard so that the definition is not based solely on spatially-averaged data, and to further define the geographic areas over which spatial averaging occurs. The Commission also proposes to direct NERC to submit a work plan, and subsequently one or more informational filings, that address specific GMD-related research areas.⁵

I. IDENTIFICATION OF FILING PARTIES

ISO New England is the private, non-profit entity that serves as the regional transmission organization (“RTO”) for the six New England states. Midcontinent Independent System Operator is the RTO for fifteen states in the United States and the Canadian province of Manitoba. Independent Electricity System Operator is the RTO for Ontario, Canada. The New York Independent System Operator is the ISO for the New York Control Area. PJM Interconnection, L.L.C. serves as the RTO in all or part of thirteen states and the District of Columbia. Among other functions, the ISOs/RTOs are registered with NERC as Planning Coordinators and Transmission Planners.

⁴ *Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standard TLP-007-1 Transmission System Planned Performance for Geomagnetic Disturbance Events*, Docket No. RM15-11-000 (filed January 21, 2014) (“NERC Petition”).

⁵ *Id.*

II. COMMENTS

ISOs/RTOs provide these comments in response to two topics addressed by the Commission in the NOPR.

A. **The ISOs/RTOs Request that FERC Accept NERC's Benchmark GMD Event Definition as Filed.**

In its petition, NERC explained that the purpose of the benchmark GMD event is to “provide a defined event for assessing system performance during a low probability, high magnitude GMD event.”⁶ NERC further explained that the benchmark GMD event represents the most severe GMD event expected in a 100-year period as determined by a statistical analysis of recorded geomagnetic data. The benchmark GMD event definition is used in the GMD Vulnerability Assessments that must be conducted by Planning Coordinators and Transmission Planners under Requirement R4 of proposed Reliability Standard TPL-007-1.

One of the four elements of the GMD event definition is the reference peak geoelectric field amplitude, which NERC determined, based on spatially-average data, to be 8 V/km.⁷ In the NOPR, the Commission proposes to direct NERC to modify the benchmark GMD event so that the reference peak geoelectric field amplitude element of the benchmark GMD event definition is not based solely on spatially-averaged data. The Commission explained that NERC could satisfy this proposal by revising Reliability Standard TPL-007-1 to require applicable entities to conduct GMD Vulnerability Assessments and thermal impact assessments using two different benchmark GMD events: the first benchmark GMD event using the spatially-averaged reference

⁶ NOPR at P 25 (citing NERC Petition at 15).

⁷ The other three elements of the GMD benchmark event definition are: a scaling factor to account for local geomagnetic latitude; a scaling factor to account for local Earth conductivity; and a reference geomagnetic field time series or wave shape to facilitate time-domain analysis of GMD impact on equipment. NOPR at P 26 (citing NERC Petition, Ex. D (White Paper on GMD Benchmark Event Description)).

peak geoelectric field value (8 V/km), and the second using the non-spatially averaged peak geoelectric field value found in the GMD Interim Report (20 V/km). The revised Reliability Standard could then require applicable entities to take corrective actions, using engineering judgment based on the results of both assessments.⁸ Additionally, the Commission seeks comment regarding the scaling factor used to account for geomagnetic latitude in the benchmark GMD definition.⁹

The ISOs/RTOs respectfully request that the Commission accept the benchmark event to be used in GMD Vulnerability Assessments and thermal assessments as submitted by NERC. First, the benchmark GMD event using the spatially-averaged reference peak geoelectric field value of 8 V/km should be clearly established in the standard. The determination of which value should be used to determine whether corrective actions are needed should not be left up to the discretion of the applicable entities under the standard. Second, because of the nature of the benchmark GMD event definition and the manner in which it was developed, the Commission should afford due weight to NERC's technical expertise. The GMD Task Force,¹⁰ which worked on the development of the standard for over four years and included ISO New England, Midcontinent Independent System Operator and PJM representatives, concurred with the use of the 8 V/km for the peak geomagnetic field because it found the value to be sufficiently supported by science and specific data obtained from Europe and Canada. Notably, the data was evaluated after the GMD Interim Report was issued and, for that reason, the 20 V/km value did not take into account all of the data currently available. In addition to availability of additional data, the

⁸ NOPR at 36.

⁹ NOPR at P 37.

¹⁰ The NERC Petition explains the NERC-sponsored GMD Task Force was formed in early 2011 and used an open process involving leading experts from industry, government and private researchers, as well as equipment and software vendors. *See* NERC Petition at 8.

20 V/km value does not consider latitude or the resistivity of the earth's crust for areas that may be less susceptible to GMD and the resultant geomagnetically-induced currents ("GIC"). As such, the standard drafting team found that the 20 V/km was an overly conservative number that did not account for wide range effects caused by a severe GMD event. Similarly, currently available data supports the scaling factor used to account for geomagnetic latitude in the benchmark GMD definition submitted by NERC.

For these reasons, the ISOs/RTOs support using the 8 V/km benchmark GMD event as proposed by NERC, and do not support using two different values for the determination of the benchmark event. The ISOs/RTOs also support the use of the scaling factor as proposed by NERC.

B. The Commission Should Accept NERC's Proposed Implementation Plan Without Modification.

NERC proposed a phased, five-year implementation period for proposed Reliability Standard TPL-007-1. NERC stated that this implementation period is necessary, among other things, to give time for development of viable Corrective Action Plans, which may require applicable entities to develop, perform, and/or validate new or modified studies, assessments, procedures and because some mitigation measures may be significant budget, siting, or construction planning requirements.¹¹

The proposed implementation plan states that Requirement R1 shall become effective on the first day of the first calendar quarter that is six months after Commission approval. For Requirement R2, NERC proposes that the requirement shall become effective on the first day of the first calendar quarter that is 18 months after Commission approval. NERC proposes that

¹¹ NOPR at P 61 (citing NERC Petition Ex. B (Implementation Plan for TPLC-007-1) at 2).

Requirement R5 shall become effective on the first day of the first calendar quarter that is 24 months after Commission approval. NERC proposes that Requirement R6 shall become effective on the first day of the first calendar quarter that is 48 months after Commission approval. And for Requirement R3, Requirement R4, and Requirement R7, NERC proposes that the requirements shall become effective on the first day of the first calendar quarter that is 60 months after Commission approval.¹²

In the NOPR, the Commission proposes to approve the implementation plan and effective dates submitted by NERC. However, the Commission also states that, given the serial nature of the requirements in the proposed Reliability Standard, it is concerned about the duration of the timeline associated with any mitigation stemming from a Corrective Action Plan. For that reason, the Commission seeks comment as to whether the length of the implementation plan, particularly with respect to Requirements R4, R5, R6, and R7 could be reasonably shortened.¹³

Under Requirement R7 of proposed Reliability Standard TPL-007-1, Planning Coordinators and Transmission Planners concluding, through the GMD Vulnerability Assessment conducted under Requirement R4, that their system does not meet the performance requirements specified in the Reliability Standard, must develop a Corrective Action Plan addressing how the performance requirements will be met. As NERC explained in its Petition, ample time is needed for the development of viable Corrective Action Plans, which may require applicable entities to obtain necessary data, and to develop, perform, and/or validate new or modified studies, assessments, and procedures. During the standard development process, while ISO New England supported the 60 month implementation timeline, it requested that the

¹² *Id.* at P 62.

¹³ *Id.* at P 63.

allocation of time for Requirement R6 be modified so that an additional six months, for a total of 18 months, would be allocated for implementation of Requirement R7. Specifically, ISO New England explained that, once a Corrective Action Plan for one transformer is developed, the entity responsible for developing the Corrective Action Plan will have to run the model again to determine whether another Corrective Action Plan for other transformers is needed as a result of the first Corrective Action Plan. This step may have to be completed iteratively. Thus, the 12 month period proposed for entities responsible for developing Corrective Action Plans to have from the time they receive the results of the thermal impact assessments under Requirement R6 is insufficient. ISO New England suggested that the time for implementation of Requirement R6 be changed from 48 months to 42 months. By making that change, the time for implementation for Requirement R7 would remain at 60 months, but responsible entities would have 18 months to develop the Corrective Action Plans.

Although the standard drafting team recognized the challenge of transformer modeling and supported ISO New England's position, it did not modify the implementation timeline as requested by ISO New England because it concluded that stakeholder feedback strongly indicated the need for 48 months to complete Requirement R6. As a result, under NERC's proposal, Planning Coordinators and Transmission Planners will only have 12 months to develop Corrective Action Plans under Requirement R7, which is not sufficient time in the ISOs/RTOs' view. If the timeline for implementation of Requirement R7 is shortened to less than 12 months as suggested by the Commission, it would be very difficult, if not infeasible, for Planning Coordinators and Transmission Planners to develop Corrective Action Plans and evaluate their impacts. For that reason, the ISOs/RTOs urge the Commission to accept NERC's proposed implementation timeline without modification.

III. CONCLUSION

ISOs/RTOs respectfully requests that the Commission consider their comments on proposed Reliability Standard TPL-007-1.

Respectfully submitted,

/s/ Margo R. Caley

Raymond W. Hepper
Vice President, General Counsel and Corporate
Secretary
Theodore J. Paradise
Assistant General Counsel – Operations and
Planning
Margo R. Caley
Regulatory Counsel
ISO New England Inc.
One Sullivan Road
Holyoke, MA 01040-2841
rhepper@iso-ne.com
tparadise@iso-ne.com
mcaley@iso-ne.com

/s/ Carl F. Patka

Robert E. Fernandez, General Counsel
Raymond Stalter, Director of Regulatory Affairs
Carl F. Patka, Assistant General Counsel
Christopher R. Sharp, Compliance Attorney
New York Independent System Operator, Inc.
10 Krey Boulevard
Rensselaer, NY 12144
Tel: (518) 356-6000
Fax: (518) 356-4702
rfernandez@nyiso.com
rstalter@nyiso.com
cpatka@nyiso.com
csharp@nyiso.com

/s/ Stephen G. Kozey

Stephen G. Kozey
Senior Vice-President, Legal and Compliance
Services, General Counsel and Secretary
**Midcontinent Independent System
Operator, Inc.**
P.O. Box 4202
Carmel, Indiana 46082-4202
stevekozey@misoenergy.org

/s/ Craig Glazer

Craig Glazer
Vice President – Federal Government Policy
Robert Eckenrod
Senior Counsel
PJM Interconnection, L.L.C.
Craig.Glazer@pjm.com
Robert.Eckenrod@pjm.com

/s/ Nancy Marconi

Nancy Marconi, Manager, Regulatory Affairs
Maia Chase
Senior Analyst – Regulatory Affairs
Independent Electricity System Operator
1600-120 Adelaide St. West
Toronto, ON M5H 1T1
nancy.marconi@ieso.ca
maia.chase@ieso.ca