Unofficial Comment Form
Project 2013-03 Geomagnetic Disturbance Mitigation

Please DO NOT use this form for submitting comments. Please use the electronic form to submit comments on the draft stage 1 EOP-010-1 Standard. The electronic comment form must be completed by 8:00 p.m. ET by Monday, August 12, 2013.

If you have questions please contact Mark Olson via email or by telephone at 404-446-9760.

The project page may be accessed by clicking here.

Background Information
On May 16, 2013 FERC issued Order No. 779, directing NERC to develop Standards that address risks to reliability caused by geomagnetic disturbances in two stages:

- Stage 1 Standard(s) that require applicable entities to develop and implement Operating Procedures. Stage 1 Standard(s) must be filed by January 2014. An implementation period of six-months was recommended in the FERC Order.

- Stage 2 Standard(s) that require applicable entities to conduct assessments of the potential impact of benchmark GMD events on their systems. If the assessments identify potential impacts, the Standard(s) will require the applicable entity to develop and implement a plan to mitigate the risk of instability, uncontrolled separation, or Cascading. Stage 2 Standards must be filed by January 2015. A specific implementation period for Stage 2 was not addressed in Order No. 779.

This posting is soliciting comment on a draft stage 1 Standard and a Standard Authorization Request (SAR) addressing stages 1 and 2. The draft Standard is a new EOP Standard to specifically address the stage 1 directives in Order No. 779. Including GMD requirements in an existing EOP Standard is not feasible within the prescribed filing deadline due to the other relevant directives and 5-year review requirements that must be considered by the drafting team to revise the existing Standards. This effort to revise older EOP Standards is being carried out by a 5-year review team.

Question 1 asks for stakeholder comment on applicability of the stage 1 Standards. The draft stage 1 Standard applies to Reliability Coordinators, Balancing Authorities with a Balancing Authority Area that includes any transformer with high side terminal voltage greater than 200 kV, and Transmission Operators with a Transmission Operator Area that includes any transformer with high side terminal voltage greater than 200 kV. While some Generator Operators also have Operating Procedures to mitigate the effects of GMD, the standards drafting team (SDT) did not support including them in mandatory stage 1 standards because the actions that would be included in a Generator Operator's procedures would require studies and monitoring equipment that will not be addressed until stage 2. Applicability was also limited by the minimum voltage threshold of 200 kV. Experience with modeling geomagnetically-induced currents (GIC)
has shown that because the resistances of conductors are much higher in systems below 200 kV, the affects of GMD on these systems are significantly reduced. Historical evidence of transmission systems affected by severe solar storms supports this conclusion. The [2012 GMD Report](#) contains additional information.

Question 2 asks for stakeholder comment on Requirement R1, which requires Reliability Coordinators to develop, maintain, and implement a GMD Operating Plan. This coordinating role for the RC is based on the functional model and addresses Order No. 779 directives to consider the coordination of Operating Procedures across regions by a functional entity with a wide-area view. The defined term "Operating Plan" provides the RC with latitude to determine specific activities necessary to achieve this goal.

Question 3 asks for stakeholder comment on Requirement R3, which requires Transmission Operators and Balancing Authorities to develop, maintain, and implement GMD Operating Procedures. The draft standard is intended to allow entities to develop their own procedures based on entity-specific factors. Recently the GMD Task Force developed Operating Procedure templates that provide a technical resource for entities to use in developing procedures. Included in the templates are a number of actions that could be employed to mitigate the effects of GMD, such as reduction of equipment loading, increasing reactive reserves, reconfiguration of the system, recalling outages, and Load shedding. The templates also describe indicators of GMD conditions that could be used as trigger conditions for steps or tasks in an entity's Operating Procedures.

Question 4 asks for stakeholder comment on Requirements R2, R4, and R5. R2 and R4 require applicable entities to review their GMD Plans/Operating Procedures every 36-months. This periodicity would ensure improvements in the scientific understanding of GMDs can be incorporated into Operating Procedures in a timely manner as directed in Order No. 779. Requirement R5 requires each Transmission Operator and Balancing Authority to have a copy of its GMD Operating Procedures in its Primary and Back-up Control Rooms, which is consistent with other EOP Reliability Standards.

You do not have to answer all questions. Enter comments in simple text format. Bullets, numbers, and special formatting will not be retained.
Questions (1-5) on Draft 1 of EOP-010-1

1. The SDT is proposing that the draft stage 1 Standard should apply to Reliability Coordinators, Balancing Authorities with a Balancing Authority Area that includes any transformer with high side terminal voltage greater than 200 kV, and Transmission Operator with a Transmission Operator Area that includes any transformer with high side terminal voltage greater than 200 kV. Do you agree that the SDT has correctly identified the applicable functional entities in the initial draft stage 1 Standard? If you do not agree, or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

☐ Yes
☐ No
Comments: The Applicability and Purpose conflict however. The Purpose says “To mitigate the effects of geomagnetic disturbances (GMD) events by implementing operating procedures.” But the Standard’s Purpose is not consistent with the Standard. The Standard goes into detail about the mitigation plans. Recommend the Purpose be “To establish and implement GMD mitigation operating procedures”. The effectiveness of these procedures to mitigate the effects of GMD is unknown.

2. In Requirement R1, the SDT is proposing to require Reliability Coordinators to develop, maintain, and implement a GMD Operating Plan. This coordinating role for the RC is based on the functional model and addresses the Order No. 779 directive to consider the coordination of Operating Procedures across regions by a functional entity with a wide-area view. The defined term "Operating Plan" provides the RC with latitude to determine specific activities necessary to achieve this goal. Do you agree that the SDT has correctly addressed this directive? If you do not agree that this requirement addresses the directive, or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

☐ Yes
☐ No
Comments:
3. In Requirement R3, the SDT is proposing to require each applicable Transmission Operator and Balancing Authority to develop, maintain, and implement GMD Operating Procedures. The draft Standard is intended to allow each entity to develop its own procedures based on entity-specific factors as directed in Order No. 779. Do you agree that the SDT has correctly addressed the stage 1 directives in Order No. 779? If you do not agree that this requirement addresses the directive, or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

☐ Yes  ☐ No
Comments:

4. In Requirements R2 and R4 the SDT is proposing to require applicable entities to review their GMD Plans/Operating Procedures every 36-months. This periodicity would ensure improvements in the scientific understanding of GMDs can be incorporated into Operating Procedures in a timely manner as directed in Order No. 779. In Requirement R5, the SDT is proposing to require each applicable Transmission Operator and Balancing Authority to have a copy of its GMD Operating Procedures in its Primary and Back-up Control Rooms, which is consistent with other EOP reliability standards. Do you agree that the SDT has correctly addressed the directives in Order No. 779 in a manner that is good for reliability with these requirements? If you do not agree, or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

☐ Yes  ☐ No
Comments: The review interval specified in R2 and R4 is 36 months. A five year review would be more appropriate given the length of the solar cycle.

As R2 and R4 are currently written, they are purely administrative and do nothing to improve or ensure reliability. R1 requires the GMD Operating Plan be maintained which infers the need to review on a periodic basis.

Requirement R5 also is administrative, does not contribute to reliability, and can be eliminated. Suggest to eliminate the wording “All procedures should be at the primary and backup control center as part of normal business”. Emphasis and focus should be on operating personnel training and awareness.

If it is decided to keep R5 in the Standard, request clarification of the meaning of “prior to its implementation date.” It should be “prior to actions to implement the plan.” As written it could be misinterpreted as prior to the Standard’s effective date.
5. If you have any other comments on this draft Standard that you haven’t already mentioned above, please provide them here:

Comments: There is a GMD related pre-existing requirement in IRO-005-3.1a R3. The implementation plan is not clear regarding the retirement of the requirement. It would seem, given the extensive Operating Plans proposed in EOP-010-1, that R3 in IRO-005-3.1a can be retired. This should be considered by the GMDTF.

Simpler wording would make the Standard easier to understand. Every plan will be different depending upon a wide range of factors affecting GMD mitigation; equipment types and inventory, location, system configuration and topography, latitude, ground characteristics, etc. Suggest the following simplifying wording changes to Requirement R3:

**R3.** Each Transmission Operator and Balancing Authority shall develop, maintain, and implement GMD Operating Procedures to mitigate the effects of GMD events on the reliable operation of its respective system. At a minimum, the Operating Procedures shall include: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning, Operations Planning]

3.1. The steps or tasks for the acquisition and dissemination of space weather information to its System Operators.
3.2. The steps or tasks to be employed by System Operators that are coordinated with its Reliability Coordinator’s GMD Operating Plan to mitigate the effects on the system from GMD events.
3.3. The predetermined trigger conditions for initiating and terminating steps or tasks in the Operating Procedure.

To be consistent with the terminology in other standards, suggest changing the wording the Applicability Section to:

4.1.2 Balancing Authority with a Balancing Authority Area that includes transformers with high voltage terminals connected at 200 kV and above.
4.1.3 Transmission Operator with a Transmission Operator Area that includes transformers with high voltage terminals connected at 200 kV and above.

The wording of the Purpose should be changed to "To mitigate the risk of instability, uncontrolled separation, and Cascading in the Bulk-Power System as a result of geomagnetic disturbance (GMD) events by developing, maintaining and implementing Operating Plans and Operating Procedures." The Purpose as written should state what GMD affects. It also only addresses the implementation of the Operating Procedures but does not address the development and maintenance aspect, nor does it address the Operating Plans.
Questions (6-10) on SAR for Project 2013-03

The scope of this project is intended to address FERC directives from Order No. 779, including:

- Within six months of the effective date of Final Rule, NERC submit for approval one or more Reliability Standards that require owners and operators to develop and implement operational procedures to mitigate the effects of GMDs.
- Within 18-months of the effective date of Final Rule, NERC submit one or more Reliability Standards that require owners and operators to conduct initial and on-going assessments of the potential impact of benchmark GMD events.
- The Second Stage GMD Reliability Standard must identify what severity GMD events (i.e., benchmark GMD events) that responsible entities will have to assess for potential impacts.
- If the assessments identify potential impacts from benchmark GMD events, owners and operators must develop and implement a plan to protect against instability, uncontrolled separation, and Cascading.
- The standards development process should consider tasking Planning Coordinators, or another functional entity with a wide-area perspective, to coordinate mitigation plans across Regions under the Second Stage GMD Reliability Standards to ensure consistency and regional effectiveness.
- The Second Stage GMD Reliability Standards should not impose “strict liability” on responsible entities for failure to ensure the reliable operation of the Bulk-Power System in the face of a GMD event of unforeseen severity.

6. Do you agree that the SAR, as drafted, provides a scope within which to address the directives in Order No. 779? If not, please explain.

☐ Yes
☒ No

Comments: Suggest adding PER-005-1, R3 in the Title of Proposed Standards(s) in this SAR. If not, how will the changes made to PER-005-1 be coordinated in conjunction with this new EOP-010-1 Standard?

The disposition of IRO-005-3.1a R3 needs to be addressed in the SAR as a retirement.
7. The SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. Do you agree with the list of proposed applicable functional entities? If no, please explain.

☑ Yes
☐ No
Comments:

8. The intent of the project is to develop continent-wide requirements that allow responsible entities to tailor operational procedures or strategies based on the responsible entity's assessment of entity-specific factors such as geography, geology, and system topology. However, the need for regional variances will be researched throughout the proposed project and may be supported by analysis required to develop stage 2 Standard(s). Are you aware of any regional variances that will be needed as a result of this project? If yes, please identify the regional variance in your comments:

☑ Yes
☐ No
Comments: The flexibility in the plan design takes into account locational differences, which are geographically and geologically based. There is no basis for differences due to regional entity boundaries.

9. Are you aware of any business practice that will be needed or that will need to be modified as a result of this project? If yes, please identify the business practice in your comments:

☑ Yes
☐ No
Comments: Studies, control room practices and monitoring all will be needed. These are business practice changes and have a cost which should be considered in this Standard’s development. It should be.

10. If you have any other comments on this SAR that you haven’t already mentioned above, please provide them here.

Comments: The Standard is a reasonable response to the FERC Directives.

When EOP-010-1 becomes effective IRO-005-3a Requirement R3 becomes redundant and should be removed. This information should be added to the "Related Standards" section of the SAR.