NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

March 22, 2018

VIA ELECTRONIC FILING

Kirsten Walli, Board Secretary
Ontario Energy Board
P.O Box 2319
2300 Yonge Street
Toronto, Ontario, Canada
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Re: *North American Electric Reliability Corporation*

Dear Ms. Walli:

The North American Electric Reliability Corporation hereby submits Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standard PRC-025-2. NERC requests, to the extent necessary, a waiver of any applicable filing requirements with respect to this filing.

Please contact the undersigned if you have any questions concerning this filing.

Respectfully submitted,

/s/ Shamai Elstein

Shamai Elstein
Senior Counsel for the North American Electric Reliability Corporation

Enclosure

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ONTARIO ENERGY BOARD
OF THE PROVINCE OF ONTARIO

NORTH AMERICAN ELECTRIC	**)**
RELIABILITY CORPORATION	**)**

PETITION OF THE NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION FOR APPROVAL OF PROPOSED RELIABILITY STANDARD PRC-025-2

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OF THE PROVINCE OF ONTARIO

NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION)
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PETITION OF THE NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION FOR APPROVAL OF PROPOSED RELIABILITY STANDARD PRC-025-2

The North American Electric Reliability Corporation ("NERC") hereby submits for approval proposed Reliability Standard PRC-025-2 - Generator Relay Loadability. The PRC-025 Reliability Standard addresses setting load-responsive protective relays associated with generation Facilities[1] at a level to prevent unnecessary tripping of generators during a system disturbance for conditions that do not pose a risk of damage to the associated equipment. Proposed Reliability Standard PRC-025-2 improves upon currently-effective Reliability Standard PRC-025-1 by addressing certain relay setting application issues and by clarifying certain terminology and references. The proposed Reliability Standard (**Exhibit A**) is just, reasonable, not unduly discriminatory or preferential, and in the public interest. NERC also requests approval of: (i) the associated Implementation Plan (**Exhibit B**); (ii) the associated Violation Risk Factors ("VRFs") and Violation Severity Levels ("VSLs"), which remain unchanged from PRC-025-1 (**Exhibit D**); and (iii) the retirement of currently-effective Reliability Standard PRC-025-1.

This filing presents the technical basis and purpose of the proposed Reliability Standard, a demonstration that the proposed Reliability Standard meets the Reliability Standards criteria

[1] Unless otherwise designated, capitalized terms shall have the meaning set forth in the *Glossary of Terms Used in NERC Reliability Standards* ("NERC Glossary of Terms"), *available at* http://www.nerc.com/files/Glossary_of_Terms.pdf.

(**Exhibit C**), and a summary of the standard development history (**Exhibit E**). The proposed Reliability Standard was adopted by the NERC Board of Trustees on February 8, 2018.

This filing is organized as follows: Section I of the filing presents an executive summary of the proposed Reliability Standard. Section II of the filing provides the individuals to whom notices and communications related to the filing should be provided. Section III provides background on the structure governing the Reliability Standards approval process. This section also provides information on the development of the proposed Reliability Standards through Project 2016-04 - Modifications to PRC-025-1. Section IV of the filing provides a detailed discussion of the proposed Reliability Standard and explains how the proposed standard enhances reliability and improves flexibility in applying the various options. Section V of the filing provides a summary of the proposed implementation plan.

I. EXECUTIVE SUMMARY

Proposed Reliability Standard PRC-025-2 adds enhancements to the currently-effective generator loadability standard PRC-025-1, to better address risks of unnecessary generator tripping where the voltage is depressed and the generator is capable of increased Reactive Power output and voltage support during the disturbance. During the implementation of Reliability Standard PRC-025-1, NERC and industry identified the need to revise the standard to address certain applications and to clarify language to advance the reliability goals of the standard. These revisions are reflected in proposed Reliability Standard PRC-025-2. Specifically, the proposed Reliability Standard:

1. adds a provision to Attachment 1, Table 1 Relay Loadability Evaluation Criteria to address dispersed power producing resources that are unable to be set at 130% of the calculated current due to physical limitations of the protection equipment;

2. adds to the Table 1 relay type description the protective relay 50 Element associated with instantaneous (i.e., without intentional time delay) tripping of overcurrent based protection;

3. clarifies, in the Table 1 Application column, that an entity must apply settings to all the applications described therein;

4. clarifies that an entity, when employing simulation for setting relays associated with the transmission line interconnecting the generator or plant to the Transmission system, must simulate the 0.85 per unit depressed voltage at the remote end (i.e., Transmission system side) of the line;

5. removes the term "Pick Up" from the Attachment 1, Table 1 heading (so that the new heading reads "Setting Criteria"), to better align the setting to the calculated or simulated capability of the generator with an associated margin; and

6. clarifies certain terminology and references.

For the reasons explained more fully in this filing, proposed Reliability Standard PRC-025-2 is just, reasonable, not unduly discriminatory or preferential, and in the public interest.

II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:

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III. BACKGROUND

A. NERC Reliability Standards Development Procedure

The proposed Reliability Standard was developed in an open and fair manner and in accordance with the Reliability Standard development process. NERC develops Reliability

Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC Standard Processes Manual.[2]

NERC's rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards, and thus satisfy certain of the criteria for approving Reliability Standards. The development process is open to any person or entity with a legitimate interest in the reliability of the BPS. NERC considers the comments of all stakeholders. Stakeholders must approve, and the NERC Board of Trustees must adopt, a Reliability Standard before NERC submits the Reliability Standard to the applicable governmental authorities.

B. Project 2016-04 Modifications to PRC-025-1

On October 4, 2013, NERC submitted Reliability Standard PRC-025-1.[3] Reliability Standard PRC-025-1 was developed in response to certain Federal Energy Regulatory Commission ("FERC") directives in Order No. 733[4] to develop a standard governing generator protective relay loadability. Reliability Standard PRC-025-1 requires applicable Generator Owners, Transmission Owners, and Distribution Providers to apply an appropriate setting for load-responsive relays based on calculations or simulations for conditions established in Attachment 1 of the standard. The Attachment 1 criteria are representative of the short-term conditions during which generation Facilities have, in the past, disconnected when otherwise

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[2] The NERC Rules of Procedure are available at http://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx. The NERC Standard Processes Manual is available at http://www.nerc.com/comm/SC/Documents/Appendix_3A_StandardsProcessesManual.pdf.

[3] FERC approved this standard in *Generator Relay Loadability and Revised Transmission Relay Loadability Reliability Standards*, Order No. 799, 148 FERC ¶ 61,042 (2014). In this order, FERC also approved Reliability Standard PRC-023-3, which included clarifying changes to PRC-023-2 to establish a bright line between the applicability of load-responsive protective relays in the transmission and generator relay loadability Reliability Standards.

[4] *Transmission Relay Loadability Reliability Standard,* Order No. 733, 130 FERC ¶ 61,221 (2010) (Order No. 733); *order on reh'g and clarification,* Order No. 733-A, 134 FERC ¶ 61,127; *clarified*, Order No. 733-B, 136 FERC ¶ 61,185 (2011).

capable of providing Reactive Power. Under the phased implementation plan for PRC-025-1, applicable entities have between five and seven years to become compliant with the standard, depending on the scope of work required.

In the course of implementing Reliability Standard PRC-025-1, industry identified issues for specific Facility applications and load-responsive protective relays. To address these issues, NERC initiated Project 2016-04 Modifications to PRC-025-1 in September 2016. The standard authorization request for this project directed the standard drafting team ("SDT") to consider revisions to the standard that would:

- Prevent instances of non-compliance for conditions where the Generator Owner may be prevented from achieving the margin specified by the standard for dispersed power producing resources.
- Prevent a lowering of reliability and potential non-compliance where the Generator Owner might apply a non-standard relay element application and undermine the goal of the standard.
- Prevent a lowering of reliability where the Generator Owner might only apply part of the Table 1 application(s), thereby misapplying the loadability margins to relays for the stated application(s).
- Prevent a lowering of dependability of protective relays directional toward the Transmission system at generating facilities that are remote to the transmission network.
- Modify or eliminate the use of the term "pickup setting" and other terms or phrases that relate to initial measurements and specific detection methods, and instead, use a term or phrase that clearly aligns with the intent of the standard for relays to "not trip" based on the criteria in Table 1.
- Clarify miscellaneous aspects of the standard, Attachment 1, and/or the Application Guidelines.

The SDT revised the PRC-025 standard to address the issues summarized above and to clarify language. Following two comment and ballot periods, proposed Reliability Standard PRC-025-2 was approved by the ballot pool on January 18, 2018. The NERC Board of Trustees adopted the proposed standard on February 8, 2018.

IV. JUSTIFICATION FOR APPROVAL

As discussed in **Exhibit C** and below, proposed Reliability Standard PRC-025-2 satisfies the Reliability Standards criteria and is just, reasonable, not unduly discriminatory or preferential, and in the public interest. Proposed Reliability Standard PRC-025-2 continues to consist of a single Requirement, Requirement R1, which requires entities to apply settings that are in accordance with Attachment 1: Relay Settings on each applicable load-responsive protective relay while maintaining reliable fault protection. The majority of the revisions in proposed PRC-025-2 are in Attachment 1. Corresponding revisions have been made to the Guidelines and Technical Basis material following the standard. A summary of the proposed standard revisions and the justification for each is provided below. The proposed revisions are shown in the PRC-025-2 redline attached to this filing as **Exhibit A**.

A. Revisions to Address Dispersed Power Producing Resources

Reliability Standard PRC-025-1 Table 1 Option 5 requires setting the overcurrent relay of a Protection System applied to an asynchronous generating unit or an Element utilized in the aggregation of dispersed power producing resources to a margin greater than 130% of the calculated current derived from the maximum aggregate nameplate megavolt-ampere (MVA) output at rated power factor. In some cases, manufacturer requirements or the physical limitations of dispersed power producing resources may prevent the entity from being able to achieve the 130% threshold. For example, the entity may exceed a manufacturer's warranty or design criteria when applying 130% margin to the calculated current based on the aggregate output or individual resource. As an example of a physical limitation, the physical size of the resource may prevent the entity from being able to install a larger breaker frame in order to meet the 130% margin. Other limitations include the inability of the resource to produce a level of current that would be capable of reaching the 130% threshold; many asynchronous resources

(e.g., inverters) are only capable of producing 1.1 to 1.2 per unit (110-120%) of their rated output.

To ensure that the load-responsive protective relays associated with asynchronous generation Facilities may be set at a level to prevent unnecessary tripping during a system disturbance, the proposed Reliability Standard PRC-025-2 Table 1 adds an alternative setting option, Option 5b.[5] Option 5b is available for inverter based machines that cannot achieve the 130% threshold due to the limitations described above. Protective devices associated with this equipment generally have adjustable trip values that allow the protection setting to be set not to infringe on the capability of the resource. Under new Option 5b, the overcurrent element shall be set greater than the maximum capability of the asynchronous resource and applicable equipment. The lower tolerance of the overcurrent element tripping characteristic shall be set to not infringe upon the resource capability (including the Mvar output of the resource and any static or dynamic reactive power control devices).[6] Option 5b refers to a new figure, Figure A, to demonstrate that the overcurrent element tripping characteristic shall not infringe upon the asynchronous resource capability.

The proposed standard also includes a new footnote 1 in the Applicability section concerning asynchronous resources. These resources are generally connected at voltages less than 1,000 volts. Footnote 1 clarifies that load-responsive protective relays include low-voltage protection devices that have adjustable settings.

[5] Current Option 5 remains in Table 1 as Option 5a for entities that have implemented the 130% setting.

[6] *See* proposed Reliability Standard PRC-025-2 (Exhibit A), Guidelines and Technical Basis at 45.

B. Revisions to Address Non-Standard Relay Element Applications

Proposed Reliability Standard PRC-025-2 improves upon the currently-effective version of the standard by addressing the inclusion of the IEEE 50 device element[7] and other similar instantaneous (i.e., without intentional delay) overcurrent elements for the various overcurrent applications within Table 1. In practice, a 50 element is generally set with a very high pick up and well above the loadability levels determined by the standard. By including the 50 element in Table 1, the proposed standard clarifies that the 50 element must also achieve the same or greater level of loadability as the 51 element (i.e., with intentional delay). The inclusion of the 50 element avoids the potential for setting the 50 element inconsistent with the objectives of the standard and unknowingly creating a 51 element[8] by adding a definite time characteristic, which is applicable to the standard. Including the 50 element avoids the risk where the overcurrent element could be applied with a lower, less desirable loadability setting according to the applications in Table 1.

In addition, revisions are made in Attachment 1 to clarify that IEEE device numbering convention varies by manufacturer. For example, a voltage-restrained (i.e., V-R) relay is variably referred to by IEEE function numbers 51V, 51R, 51VR, 51V/R, 51V-R, or other terms as discussed in the Guidelines and Technical Basis section under the heading Phase Time Overcurrent Relay – Voltage-Restrained (e.g., 51V-R). Likewise, manufacturers of low-voltage equipment generally use protective device trip unit designations for long-time delay, short-time delay, and instantaneous and are referred to as long (L), short (S), and instantaneous (I) as

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[7] Device numbers are identified in Institute of Electrical and Electronics Engineers ("IEEE") Std. C37.2-2008, *IEEE Standard Electrical Power System Device Function Numbers, Acronyms, and Contact Designations*. (2008). A citation to IEEE Standard C37.2-2008 is added to the Associated Documents section to clarify that the IEEE device numbers within the PRC-025-2 standard refer to typical protective device functions used by entities applying load-responsive protective relays to Elements on the BPS.

[8] Any 50 element being applied with a definite time characteristic is, by the IEEE definition, a 51 element and applicable to the standard.

discussed in Attachment 1 under the narrative heading Table 1. Although low-voltage designations are not specifically identified in Table 1, their relationship to the IEEE device numbers are widely understood by industry protection engineers.

These revisions improve the PRC-025 standard by drawing attention to the potential loadability issues when using the 50 element and by increasing awareness that not all protective relays are designated by an IEEE device number.

C. Revisions to Clarify Application Column of Table 1

Proposed Reliability Standard PRC-025-2 reflects several revisions to clarify the Application column of Table 1. In several places in the Application column of Reliability Standard PRC-025-1 Table 1, it is not clear whether applicable protective relays associated with all listed Elements are to be set using the setting criteria of Table 1 or just one of the multiple listed Elements. For example, in Options 4, 5, and 6, the Application column provides: "Asynchronous generating unit(s) (including inverter-based installations), or Elements utilized in the aggregation of dispersed power producing resources" (emphasis added). Entities could interpret the use of the "or" conjunction to require setting of only one particular application and not the other. To clarify that applicable protective relays associated with all listed Elements are to be set using the setting criteria in Table 1, revisions are proposed in the Application column of PRC-025-2 Table 1 for Options 1 through 6. The proposed language advances the goal of the Reliability Standard to ensure that loadability margins are applied to relays on all specified Elements from the generation resource to the Transmission system.

Other clarifications were made to Options 7 through 12 and 14 through 19 of Table 1 to remove the described location of the relay from the "Relay Type" column to the "Application" column.

D. Revisions to Address Dependability of Protective Relays that Interconnect Generating Facilities to the Transmission System

Proposed Reliability Standard PRC-025-2 contains revisions to Table 1 Options 14b, 15b, and 16b to address cases where the interconnecting Transmission line impedance impacts the maximum Reactive Power capability of the generator or plant. Where a generating Facility is generally small (i.e., electrically weak) and remote (i.e., as few as 20 miles) to the Transmission network, the maximum Reactive Power output capability can be significantly lower than the capability determined by the specific Table 1 Options. For these Facilities, setting load-responsive protective relays using the maximum resource capability without considering the effects of line impedance could result in an overly conservative loadability setting. An overly conservative setting could reduce relay dependability for clearing faults, create substantive difficulty in coordinating backup protection schemes, or result in the application of more complex and costly protective schemes (e.g., transfer-trip).

These revisions move the point of the system disturbance (i.e., 0.85 per unit nominal voltage) from the terminals of the generator step-up transformer to the remote end of the line to account for the effects of line impedance. This revision enhances reliability by improving dependability of load-responsive protective relays for clearing faults, reducing difficulty in coordinating backup protection schemes, and potentially eliminating the need for more complex and costly protective schemes.

E. Revisions to Address Use of Term "Pickup Setting"

Reliability Standard PRC-025-1 uses the term "pickup setting"; this term relates to initial measurements and specific detection methods (see, e.g., Table 1 "Pickup Setting Criteria"). The intent of the standard, however, is for relays to "not trip" based on the capability of the generator or plant, using the criteria in Table 1. To address this issue and avoid the assumption that an

initial specific measurement is mandatory, the term "pickup" is eliminated from the fifth column of proposed Reliability Standard PRC-025-2 Table 1 so that it reads "Setting Criteria." Confirming changes are made in the Attachment 1 text preceding Table 1.

F. Miscellaneous Revisions to Attachment 1: Relay Settings

Revisions are proposed in PRC-025-2 Attachment 1 under the "Generators" heading to clarify that the phrase regarding unit capability "reported to the Transmission Planner" is a minimum criterion and that a greater unit capability is acceptable. Additionally, low voltage protection devices that do not have adjustable settings are now specifically listed under the list of Exclusions in Attachment 1. This change is consistent with the addition of the new footnote 1 in the Applicability section of the standard described above.

G. Revisions to PRC-025 Guidelines and Technical Basis

In accordance with the standard authorization request for this project, NERC has revised the Guidelines and Technical Basis section for proposed Reliability Standard PRC-025-2 to add supporting information regarding the above-described standard changes as well as provide clarification in several areas. For example, revisions have been made to clarify the various Figures, which illustrate the standard's applicability to a given configuration. As the Guidelines and Technical Basis section is not enforceable, NERC does not seek approval for these revisions but describes them for informational purposes only.

H. Enforceability of the Proposed Reliability Standard

The proposed Reliability Standard contains a VRF of High and VSL of Severe for the single standard Requirement, Requirement R1. The VRF and VSL remain unchanged from currently-enforceable Reliability Standard PRC-025-1. The VSL provides guidance on the way that NERC will enforce the Requirements of the proposed Reliability Standard. The VRF is one

of several elements used to determine an appropriate sanction when the associated Requirement is violated. The VRF assesses the impact to reliability of violating a specific Requirement.

In addition, the proposed Reliability Standard also includes a Measure that supports Requirement R1 by clearly identifying what is required and how the Requirement will be enforced. This Measure, which is unchanged from currently-enforceable Reliability Standard PRC-025-1, helps ensure that the Requirement will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.

V. EFFECTIVE DATE

The proposed implementation plan is attached to this filing as Exhibit B. Under the proposed implementation plan,

where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter after the effective date of the applicable governmental authority's order approving the standard, or as otherwise provided for by the applicable governmental authority. Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.Reliability Standard PRC-025-1 would be retired immediately prior to the effective date of PRC-025-2 in the particular jurisdiction in which the revised standard is becoming effective.

Under the PRC-025-1 implementation plan, entities have either 60 or 84 months to come into compliance with the standard, as follows:

- 60 months, where the entity applies settings to its existing load-responsive relays that are capable of meeting the standard while maintaining reliable fault protection, or by October 1, 2019 for U.S.-based entities; or

- 84 months, where the entity needs to replace or remove its existing load-responsive protective relays, or by October 1, 2021.

The proposed PRC-025-2 implementation plan recognizes that entities are in the process of implementing the standard to meet these dates, but that certain revisions in PRC-025-2 may give reason for entities to re-evaluate their settings for load-responsive protective relays or require further time for implementation. The proposed PRC-025-2 implementation plan provides a new phased compliance schedule that is intended to supersede the phased compliance schedule provided in the currently-effective PRC-025-1 implementation plan. For existing Options, entities would have at least as much time to come into compliance with the proposed standard as they would have under the PRC-025-1 implementation plan. New phased compliance dates are provided for new and revised Table 1 Relay Loadability Evaluation Criteria Options, including:

- New Option 5b: 24 or 48 months, depending on whether replacement or removal is necessary;
- For the 50 element only in Options 2a, 2b, 2c, 5a, 5b, 8a, 8b, 8c, 11, 13a, and 13b: 60 or 84 months, depending on whether replacement or removal is necessary;
- Revised Options 14b, 15b, 16b: 24 or 48 months, depending on whether replacement or removal is necessary.

For load-responsive relays that later become applicable to the proposed standard, entities would continue to have 60 or 84 months to come into compliance, depending on whether replacement or removal is necessary.

The proposed implementation plan provides additional timing for new Option 5b due to the number of dispersed power generating resources that may be have been unable to apply the existing 130% threshold; however, the burden to adjust the settings to ensure the capability of the resource does not infringe on the protection setting is expected to be minimal.

The proposed implementation plan also provides a full 60 and 84 month implementation timeline to address the newly-added 50 element in certain Options. This timeline accounts for

engineering review, potential equipment procurement, and outage coordination to commission the equipment and apply the appropriate settings.

Additionally, the proposed implementation plan allows entities sufficient time to address newly-revised Options addressing Transmission lines interconnecting the generating unit or plant to the Transmission system. The proposed timeframe allows entities to re-evaluate their settings to account for line impedance effects and to make appropriate modifications to the settings.

VI. CONCLUSION

For the reasons set forth above, NERC respectfully requests approval of:

- proposed Reliability Standard PRC-025-2 and associated elements included in **Exhibit A**;
- the implementation plan included in **Exhibit B**; and
- the retirement of currently-effective Reliability Standard PRC-025-1.

Respectfully submitted,

/s/ Lauren A. Perotti

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March 22, 2018

EXHIBIT A — B and D -- F

Exhibit C

Reliability Standards Criteria

Exhibit C — Reliability Standards Criteria — Proposed Reliability Standard PRC-025-2

Reliability Standards Criteria

The discussion below explains how the proposed Reliability Standard has met or exceeded the Reliability Standards criteria:

1. **Proposed Reliability Standards must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve that goal.**

The purpose of proposed Reliability Standard PRC-025-2, which is unchanged from currently-effective Reliability Standard PRC-025-1, is to set load-responsive protective relays associated with generation Facilities at a level to prevent unnecessary tripping of generators during a system disturbance for conditions that do not pose a risk of damage to the associated equipment.

Reliability Standard PRC-025-1 requires applicable entities to apply relay settings in accordance with the criteria table in Attachment 1. Table 1 provides specific setting criteria for load-responsive protective relays in a variety of scenarios, with several options available. Proposed Reliability Standard PRC-025-2 enhances reliability by addressing certain issues that have been identified in the course of implementing PRC-025-1. These revisions include: (i) adding a provision to Attachment 1, Table 1 Relay Loadability Evaluation Criteria to address dispersed power producing resources that are unable to be set at 130 percent of the calculated current due to physical limitations of the protection equipment; (ii) adding to the Table 1 relay type description the protective relay 50 Element associated with instantaneous (i.e. without intentional time delay) tripping of overcurrent based protection; (iii) clarifying, in the Table 1 Application column, that an entity must apply settings to all the applications described therein; (iv) clarifying that an entity, when employing simulation for setting relay associated with the transmission line interconnecting the generator or plant to the Transmission system, must

simulate the 0.85 per unit depressed voltage at the remote end (i.e. Transmission system side) of the line; (v) removing the term "Pick Up" from the Attachment 1, Table 1 heading (new heading: "Setting Criteria") to better align the setting to the calculated or simulated capability of the generator with an associated margin; and (vi) clarifying certain terminology and references. The revisions provide additional options and clarity, and thus the PRC-025 standard continues to provide a technically sound means of achieving the stated reliability goal.

2. **Proposed Reliability Standards must be applicable only to users, owners and operators of the bulk power system, and must be clear and unambiguous as to what is required and who is required to comply.**

The proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply. Proposed Reliability Standard PRC-025-2 continues to apply to Generator Owners, Transmission Owners, and Distribution Providers. The proposed Reliability Standard clearly lists the types of Facilities subject to compliance. Table 1 in the proposed Reliability Standard is clear and provides information by application, relay type, voltage, and setting. The proposed standard clearly articulates the actions that each entity must take to comply

3. **A proposed Reliability Standard must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.**

The Violation Risk Factor ("VRF") and Violation Severity Level ("VSL") for proposed Reliability Standard PRC-025-2, as reflected in **Exhibit A,** are unchanged from currently-effective Reliability Standard PRC-025-1. The VRF and VSL comport with NERC and FERC guidelines related to their assignment. The VSL is consistent with the corresponding Requirement and does not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations. For these reasons, the proposed Reliability Standard includes clear and understandable consequences.

4. **A proposed Reliability Standard must identify clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner.**

The proposed Reliability Standard includes a Measure that support the proposed standard's sole Requirement by clearly identifying what is required and how the Requirement will be enforced. This Measure, which remains substantively unchanged from the Measure in currently-effective Reliability Standard PRC-025-1, helps provide clarity regarding how the Requirement will be enforced, and helps ensure that the Requirement will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.

5. **Proposed Reliability Standards should achieve a reliability goal effectively and efficiently — but do not necessarily have to reflect "best practices" without regard to implementation cost or historical regional infrastructure design.**

The proposed Reliability Standard achieves its reliability goals effectively and efficiently. The revisions reflected in proposed Reliability Standard PRC-025-2 effectively address the issues identified during the implementation of PRC-025-1 by clarifying the various options and approaches for setting relays. Further, the proposed standard adds a new setting option, Option 5b, for the overcurrent relay of a Protection System applied to an asynchronous generating unit including an Element utilized in the aggregation of dispersed power producing resources. This new Option helps to ensure reliability in those situations where manufacturer or physical limitations would prevent an entity from being able to set the relay in accordance with the requirements of currently effective PRC-025-1.

6. **Proposed Reliability Standards cannot be "lowest common denominator," *i.e.*, cannot reflect a compromise that does not adequately protect Bulk-Power System reliability. Proposed Reliability Standards can consider costs to implement for smaller entities, but not at consequences of less than excellence in operating system reliability.**

The proposed Reliability Standard does not reflect a "lowest common denominator" approach. To the contrary, the revisions reflected in proposed Reliability Standard PRC-025-2

provide significant benefits for the reliability of the Bulk Power System by refining relay loadability requirements for generating Facilities to prevent unnecessary tripping of generators during a system disturbance: The proposed Reliability Standard does not sacrifice excellence in operating system reliability for costs associated with implementation of the Reliability Standard.

7. **Proposed Reliability Standards must be designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one geographic area or regional model. It should take into account regional variations in the organization and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.**

The proposed Reliability Standard applies throughout North America and does not favor one geographic area or regional model.

8. **Proposed Reliability Standards should cause no undue negative effect on competition or restriction of the grid beyond any restriction necessary for reliability.**

The proposed Reliability Standard has no undue negative effect on competition. The proposed Reliability Standard requires the same performance by each of applicable entity. The proposed Reliability Standard does not unreasonably restrict the available generation or transmission capability or limit use of the Bulk-Power System in a preferential manner.

9. **The implementation time for the proposed Reliability Standard is reasonable.**

The proposed effective dates for the proposed Reliability Standard are just and reasonable and appropriately balance the urgency in the need to implement the proposed Reliability Standard against the reasonableness of the time allowed for those who must comply to develop necessary procedures, software, facilities, staffing or other relevant capability. NERC proposes an effective date for PRC-025-2 as provided in Exhibit B. Reliability Standard PRC-025-1 would be retired immediately prior to the effective date of PRC-025-2.

Under the PRC-025-1 Implementation Plan, entities have either 60 or 84 months to come into compliance with the standard, depending on whether the entity can apply settings to its existing relays (October 1, 2019) or whether removal or replacement is necessary (October 1, 2021). The proposed PRC-025-2 implementation plan recognizes that entities are in the process of implementing the standard to meet these dates, but that certain revisions in PRC-025-2 may give reason for entities to re-evaluate their settings for load responsive protective relays or require further time for implementation. The proposed PRC-025-2 implementation plan provides a new phased compliance schedule that is intended to supersede the phased compliance schedule provided in the PRC-025-1 Implementation Plan. For existing Options, entities would have at least as much time to come into compliance with the standard as they would have under the PRC-025-1 implementation plan. New phased compliance dates are provided for new and revised Table 1 Relay Loadability Evaluation Criteria Options, including:

- New Option 5b: 24 or 48 months, depending on whether replacement or removal is necessary;
- For the 50 element only in Options 2a, 2b, 2c, 5a, 5b, 8a, 8b, 8c, 11, 13a, and 13b: 60 or 84 months, depending on whether replacement or removal is necessary;
- Revised Options 14b, 15b, 16b: 24 or 48 months, depending on whether replacement or removal is necessary.

For load-responsive relays that later become applicable to the standard, entities would continue to have 60 or 84 months to come into compliance, depending on whether replacement or removal is necessary.

The proposed implementation plan provides additional timing for new Option 5b due to the number of dispersed power generating resources that may be have been unable to apply the

existing 130% threshold; however, the burden to adjust the settings to ensure the capability of the resource does not infringe on the protection setting is expected to be minimal.

The proposed implementation plan also provides a full 60 and 84 month implementation timeline to address the newly-added 50 element in certain Options. This timeline accounts for engineering review, potential equipment procurement, and outage coordination to commission the equipment and apply the appropriate settings.

The proposed implementation plan also allows entities sufficient time to address newly-revised Options addressing Transmission lines interconnecting the generating unit or plant to the Transmission system. The proposed timeframe allows entities to re-evaluate their settings to account for line impedance effects and to make appropriate modifications to the settings.

The proposed effective dates are reflected in the proposed implementation plan, attached as **Exhibit B**.

10. The Reliability Standard was developed in an open and fair manner and in accordance with the Reliability Standard development process.

The proposed Reliability Standard was developed in accordance with NERC's ANSI-accredited processes for developing and approving Reliability Standards. **Exhibit E** includes a summary of the Reliability Standard development proceedings, and details the processes followed to develop the proposed Reliability Standard. These processes included, among other things, comment periods, pre-ballot review periods, and balloting periods. Additionally, all

meetings of the standard drafting team were properly noticed and open to the public.

11. NERC must explain any balancing of vital public interests in the development of proposed Reliability Standards.

NERC has identified no competing public interests regarding the request for approval of the proposed Reliability Standard. No comments were received indicating the proposed Reliability Standard is in conflict with other vital public interests.

12. Proposed Reliability Standards must consider any other appropriate factors.

No other factors relevant to whether the proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential were identified.