

August 1, 2014

**VIA ELECTRONIC FILING**

Kirsten Walli, Board Secretary  
Ontario Energy Board  
P.O Box 2319  
2300 Yonge Street  
Toronto, Ontario, Canada  
M4P 1E4

RE: *North American Electric Reliability Corporation*

Dear Ms. Walli:

The North American Electric Reliability Corporation (“NERC”) hereby submits Supplemental Information to the Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standard PRC-025-1 (Generator Relay Loadability). 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.

Respectfully submitted,

/s/ William H. Edwards

William H. Edwards  
*Counsel for the North American Electric  
Reliability Corporation*

Enclosure

3353 Peachtree Road NE  
Suite 600, North Tower  
Atlanta, GA 30326  
404-446-2560 | [www.nerc.com](http://www.nerc.com)

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**ONTARIO ENERGY BOARD  
OF THE PROVINCE OF ONTARIO**

**NORTH AMERICAN ELECTRIC )  
RELIABILITY CORPORATION )**

**SUPPLEMENTAL INFORMATION TO THE PETITION OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
FOR APPROVAL OF PROPOSED RELIABILITY STANDARD PRC-025-1  
(GENERATOR RELAY LOADABILITY)**

Gerald W. Cauley  
President and Chief Executive Officer  
North American Electric Reliability  
Corporation  
3353 Peachtree Road, N.E.  
Suite 600, North Tower  
Atlanta, GA 30326  
(404) 446-2560  
(404) 446-2595 – facsimile

Charles A. Berardesco  
Senior Vice President and General Counsel  
Holly A. Hawkins  
Assistant General Counsel  
William H. Edwards  
Counsel  
Brady A. Walker  
Associate Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
[charlie.berardesco@nerc.net](mailto:charlie.berardesco@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)  
[william.edwards@nerc.net](mailto:william.edwards@nerc.net)  
[brady.walker@nerc.net](mailto:brady.walker@nerc.net)

*Counsel for the North American Electric  
Reliability Corporation*

August 1, 2014

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**Exhibit A** Proposed Reliability Standard PRC-023-3

**Exhibit B** Implementation Plan for Proposed Reliability Standard PRC-023-3

**Exhibit C** Order No. 672 Criteria for Proposed Reliability Standard PRC-023-3

**Exhibit D** Summary of Development History and Complete Record of Development

**Exhibit E** Standard Drafting Team Report: Unit Auxiliary Transformer Issue

**ONTARIO ENERGY BOARD  
OF THE PROVINCE OF ONTARIO**

**NORTH AMERICAN ELECTRIC )  
RELIABILITY CORPORATION )**

**SUPPLEMENTAL INFORMATION TO THE PETITION OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
FOR APPROVAL OF PROPOSED RELIABILITY STANDARD PRC-025-1  
(GENERATOR RELAY LOADABILITY)**

The North American Electric Reliability Corporation (“NERC”) hereby submits proposed Reliability Standard PRC-023-3—Transmission Relay Loadability as a supplement to the filing of proposed Reliability Standard PRC-025-1—Generator Relay Loadability submitted on October 24, 2013. Proposed Reliability Standard PRC-023-3 (**Exhibit A**) should be approved concurrently with proposed Reliability Standard PRC-025-1, since the proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest.<sup>1</sup> NERC also requests approval of the associated implementation plan (**Exhibit B**) and retirement of the currently effective Reliability Standard PRC-023-2, as detailed in this supplement.

As noted in the filing, during the development of proposed Reliability Standard PRC-025-1, clarifying changes to Reliability Standard PRC-023-2 were identified by the standard drafting team as necessary to establish a bright-line distinction between the applicability of load-responsive protective relays in the transmission and generator relay loadability Reliability Standards. As a result, a supplemental Standard Authorization Request was approved by the Standards Committee at its January 16-17, 2013 meeting to authorize the standard drafting team to make the corresponding changes.

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

In the previously filed PRC-025-1 filing, NERC requested a delay of proposed Reliability Standard PRC-025-1 until proposed Reliability Standard PRC-023-3 – Transmission Relay Loadability was submitted in a supplemental filing. Proposed PRC-023-3 was approved by the NERC Board of Trustees at its November 7, 2013 meeting and is submitted here as a supplement to the pending proposed Reliability Standard PRC-025-1 filing. To preserve consistency between proposed Reliability Standards PRC-025 and PRC-023, concurrent action on the proposed Reliability Standards PRC-025-1 and PRC-023-3 should be taken.

This supplement presents the technical basis and purpose of proposed Reliability Standard PRC-023-3, a summary of the development history (**Exhibit D**), and a demonstration that the proposed Reliability Standard meets the Reliability Standards criteria (**Exhibit C**).

## **I. NOTICES AND COMMUNICATIONS**

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

Charles A. Berardesco  
Senior Vice President and General Counsel  
Holly A. Hawkins  
Assistant General Counsel  
William H. Edwards  
Counsel  
Brady A. Walker  
Associate Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
[charlie.berardesco@nerc.net](mailto:charlie.berardesco@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)  
[william.edwards@nerc.net](mailto:william.edwards@nerc.net)  
[brady.walker@nerc.net](mailto:brady.walker@nerc.net)

Mark G. Lauby  
Vice President and Director of Standards  
Steven Noess  
Associate Director Standards Development  
North American Electric Reliability  
Corporation  
3353 Peachtree Road, N.E.  
Suite 600, North Tower  
Atlanta, GA 30326  
(404) 446-2560  
(404) 446-2595 – facsimile  
[mark.lauby@nerc.net](mailto:mark.lauby@nerc.net)  
[steven.noess@nerc.net](mailto:steven.noess@nerc.net)

## **II. JUSTIFICATION FOR APPROVAL**

As discussed in detail in **Exhibit C**, proposed Reliability Standard PRC-023-3 satisfies the Reliability Standards criteria and is just, reasonable, not unduly discriminatory or preferential, and in the public interest.

### **A. Improvements Reflected in proposed Reliability Standard PRC-023-3**

During the development of proposed Reliability Standard PRC-025-1, the standard drafting team and industry stakeholders identified the potential for compliance overlap between Reliability Standard PRC-023-2 and proposed Reliability Standard PRC-025-1. The concern was that the two Reliability Standards would overlap with regard to the application of load-responsive protective relays on transmission lines that connect the generating plant or generating units to the Transmission System. Proposed Reliability Standard PRC-025-1 introduces criteria

for relays applied at the terminals of such lines. Requirement R1, Criterion 6 of Reliability Standard PRC-023-2, however, requires entities to “set transmission line relays applied on transmission lines connected to generation stations remote to load so they do not operate at or below 230% of aggregated generation nameplate capability.” The potential compliance overlap could result in a finding of a non-compliance with both Reliability Standards unless appropriate clarifying revisions are made.

To properly align proposed Reliability Standard PRC-025-1, the standard drafting team undertook an effort to revise Reliability Standard PRC-023-2. Following is an explanation of the revisions included in proposed Reliability Standard PRC-023-3.

Requirement R1, Criterion 6 of Reliability Standard PRC-023-2 was removed and the applicability section was revised to exclude “Elements that connect the GSU transformer(s) to the Transmission system that are used exclusively to export energy directly from a Bulk Electric System generating unit or generating plant.” These changes avoid overlap with the Requirements in proposed Reliability Standard PRC-025-1 that apply to these Facilities.

Proposed Reliability Standard PRC-025-1 was developed to include relay loadability requirements for all load responsive protective relays applied at the terminals of generators and GSU transformers. As such, section 2.4 of Attachment A of Reliability Standard PRC-023-2—which addressed applicability to generator protection relays—was removed in proposed Reliability Standard PRC-023-3 to avoid overlap between the two proposed Reliability Standards.

The applicability sections for the two proposed Reliability Standards are based on the location where the relays are applied and are independent of the intended protection function.

Basing applicability on the physical location where the relay is applied provides the following advantages:

- (i) Facilitates the establishment of generator relay loadability requirements based on the physics associated with increased generator output during stressed system conditions.
- (ii) Avoids ambiguity as to whether the intended protection function is for the generating unit or the Transmission System. For example, a relay may be applied at the terminals of a generator to provide backup protection for the GSU transformer, but because the relay setting must “over-reach” the GSU transformer terminals, the relay inherently provides backup protection for the high-voltage bus and close-in portions of transmission lines.
- (iii) Provides clear division of applicability between the Generator and Transmission Relay Loadability Reliability Standards based on the physical location, independent of the entity that owns the relay.

The applicability requirements in proposed Reliability Standard PRC-025-1 and corresponding revisions to the applicability requirements in proposed Reliability Standard PRC-023-3 address the concern that all generator and GSU transformer load-responsive protective relays are subject to appropriate requirements in a Reliability Standard.

**B. Enforceability of proposed Reliability Standard PRC-023-3**

The proposed Reliability Standard PRC-023-3 contains Measures that support the Requirements by clearly identifying acceptable evidence of compliance and how the Requirements will be enforced. The Implementation Plan also discusses the documentation necessary to comply with the proposed Reliability Standard. The VSLs provide further guidance



on the processes through which NERC will enforce the Requirements of the proposed Reliability Standard. The VRFs and VSLs for the proposed Reliability Standard comport with NERC guidelines related to their assignment. The VSLs have been developed based on the situations an auditor may encounter during a compliance audit.

### **III. MINORITY UNIT AUXILIARY TRANSFORMER ISSUE**

As discussed in the filing for proposed Reliability Standard PRC-025-1, minority comments raised questions as to whether the low-voltage side relays of unit auxiliary transformers (“UAT”) should be included in the proposed Reliability Standard. The standard drafting team has studied this issue and determined there is no adverse reliability impact created by the Reliability Standard as proposed. Based on the standard drafting team’s findings, no changes to proposed Reliability Standard PRC-025-1 regarding the addition of low-voltage side relays are necessary at this time. However, NERC staff will implement a recommendation by the standard drafting team to monitor UAT performance through its customary data collection processes.

The standard drafting team has prepared a report on this issue; it is attached to this petition as **Exhibit E**.

### **IV. CONCLUSION**

For the reasons set forth above, NERC respectfully requests:

- approval of proposed Reliability Standard PRC-023-3 and associated elements included in **Exhibit A**, effective as proposed herein;
- approval of the Implementation Plan included in **Exhibit B**; and
- approval of the retirement of Reliability Standard PRC-023-2, effective as proposed herein.

Respectfully submitted,

/s/ Brady A. Walker

Charles A. Berardesco  
Senior Vice President and General Counsel  
Holly A. Hawkins  
Assistant General Counsel  
William H. Edwards  
Counsel  
Brady A. Walker  
Associate Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
[charlie.berardesco@nerc.net](mailto:charlie.berardesco@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)  
[william.edwards@nerc.net](mailto:william.edwards@nerc.net)  
[brady.walker@nerc.net](mailto:brady.walker@nerc.net)

*Counsel for the North American Electric  
Reliability Corporation*

Date: August 1, 2014

**Exhibits A, B, D, and E**

**(Available on the NERC Website at**

**[http://www.nerc.com/FilingsOrders/ca/Canadian%20Filings%20and%20Orders%20DL/PRC-023-3\\_filing.pdf](http://www.nerc.com/FilingsOrders/ca/Canadian%20Filings%20and%20Orders%20DL/PRC-023-3_filing.pdf)**)

**Exhibit C—Reliability Standards Criteria—Proposed Reliability Standard PRC-023-3—  
Transmission Relay Loadability**

The discussion 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 proposed standard achieves the specific reliability goal of ensuring that Reliability Standards are clear and unambiguous in their Applicability. This is accomplished by inserting clarifying language regarding the applicability of proposed Reliability Standard PRC-023-3 and thereby strengthening the previously submitted and currently pending proposed Reliability Standard PRC-025-1 as a response to Federal Energy Regulatory Commission (“FERC”) directives.

- 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. The proposed Reliability Standard applies to Distribution Providers, Generator Owners, Planning Coordinators, and Transmission Owners and clearly articulates the actions that such entities must take to comply with the proposed Reliability Standard.

- 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 Factors (“VRFs”) and Violation Severity Levels (“VSLs”) for the proposed Reliability Standard comport with NERC guidelines related to their assignment. The VRFs and VSLs in the proposed Reliability Standard have not been revised; the VRFs and VSLs contained in Reliability Standard PRC-023-2<sup>2</sup> will remain in effect upon approval of proposed Reliability Standard PRC-023-3.

- 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 contains Measures that support each Requirement by clearly identifying what is required and how the Requirement will be enforced. The Measures in the proposed Reliability Standard have not been revised; the Measures contained in Reliability Standard PRC-023-2<sup>3</sup> will remain in effect upon approval of proposed Reliability Standard PRC-023-3.

- 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. With a clear distinction between proposed Reliability Standards PRC-023-3 and PRC-025-1,

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<sup>2</sup> Available at: <http://www.nerc.com/ layouts/PrintStandard.aspx?standardnumber=PRC-023-2&title=Transmission%20Relay%20Loadability&jurisdiction=United%20States>

<sup>3</sup> Available at: <http://www.nerc.com/ layouts/PrintStandard.aspx?standardnumber=PRC-023-2&title=Transmission%20Relay%20Loadability&jurisdiction=United%20States>

Entities are now able to effectively implement both Reliability Standards without the risk of inconsistent compliance and enforcement procedures.

- 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 proposed standard represents a significant improvement over the previous version as described herein. By providing clarity in Applicability, the risk of redundant compliance violations is significantly decreased making the proposed Reliability Standard much more effectively enforceable and understandable to industry. These revisions also support FERC’s directives that lead to the development of proposed Reliability Standard PRC-025-1, which is currently pending.

- 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.**

Proposed Reliability Standard PRC-023-3 has no undue negative impact on competition. The proposed Reliability Standard requires the same performance by each of the applicable Functional Entities.

The proposed Reliability Standard does not unreasonably restrict the available transmission capability or limit use of the Bulk-Power System in a preferential manner. The Requirements in the proposed Reliability Standard have been clarified to further enable Entities to meet important reliability goals.

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

The proposed effective dates for the standard are just and reasonable and appropriately balance the urgency in the need to implement the standards against the reasonableness of the time allowed for those who must comply to develop necessary procedures, software, facilities, staffing or other relevant capability. This will allow applicable entities adequate time to ensure compliance with the Requirements. The proposed effective dates are explained 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 D** 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, multiple 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. The initial and recirculation ballots both achieved a quorum and exceeded the required ballot pool approval levels.

**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 this proposed Reliability Standard. No comments were received that indicated the proposed Reliability Standard conflicts with other vital public interests.

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

No other negative factors relevant to whether the proposed Reliability Standard is just and reasonable were identified.