April 13, 2011

VIA ELECTRONIC FILING

Veronique Dubois
Régie de l'énergie
Tour de la Bourse
800, Place Victoria
Bureau 255
Montréal, Québec H4Z 1A2

Re: *North American Electric Reliability Corporation*

Dear Ms. Dubois**:**

The North American Electric Reliability Corporation ("NERC") hereby submits this Notice of Filing of the following proposed Protection and Control (PRC) Reliability Standard set forth as **Exhibit A** to this notice that was approved by the NERC Board of Trustees on March 10, 2011:

- PRC-023-2 – Transmission Relay Loadability (PRC-023-2).

NERC also provides notice of the associated implementation plan for the proposed PRC-023-2 standard that establishes effective dates for each requirement as set out in section 5 – Effectives Dates of the PRC-023-2 Reliability Standard.

Additionally, NERC was directed by the Federal Energy Regulatory Commission ("FERC") in Order No. 733 to develop a process by which entities could challenge criticality determinations made by the Planning Coordinators under the proposed PRC-023-2.[1] To address this directive, NERC is including with this filing a proposed addition to the NERC Rules of Procedure, Section 1700 – Challenges to Determinations.

[1] Order No. 733 at P. 97.

This filing discusses the proposed PRC-023-2 Reliability Standard, including how the proposed standard and associated implementation plan meet the criteria identified by FERC in Order No. 672[2] for approving Reliability Standards.

This filing consists of the following:

- This transmittal letter;
- A table of contents;
- A narrative description explaining how the proposed PRC-023-2 Reliability Standard meets the goals of reliability;
- The proposed PRC-023-2 Reliability Standard (**Exhibit A**);
- The associated Implementation Plan for the proposed PRC-023-2 Reliability Standard (**Exhibit B**);
- The Standard Drafting Team Roster for Project 2010-13 Relay Loadability Order 733 (**Exhibit C**);
- The Mapping Document for Project 2010-13 Relay Loadability Order 733 Standard **(Exhibit D)**;
- Proposed NERC Rules of Procedure Section 1700 – Challenges to Determinations **(Exhibit E)**; and
- The Development Record of the proposed PRC-023-2 Reliability Standard and the associated Implementation Plan (**Exhibit F**).

Please contact me if you have any questions regarding this filing.

Respectfully submitted,

/s/ Holly A. Hawkins
Holly A. Hawkins
Assistant General Counsel for Standards and Critical Infrastructure Protection
North American Electric Reliability Corporation

[2] *See Rules Concerning Certification of the Electric Reliability Organization; Procedures for the Establishment, Approval and Enforcement of Electric Reliability Standards, FERC Stats. & Regs.*, ¶ 31,204 at PP 320-338 ("Order No. 672"), *order on reh'g*, FERC Stats. & Regs. ¶ 31,212 (2006) ("Order No. 672-A").

BEFORE THE
RÉGIE DE L'ÉNERGIE
THE PROVINCE OF QUÉBEC

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

NOTICE OF FILING OF THE NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION OF A PROTECTION AND CONTROL (PRC) RELIABILITY STANDARD

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April 13, 2011

TABLE OF CONTENTS

I. INTRODUCTION

The North American Electric Reliability Corporation ("NERC") hereby submits notice of the following Reliability Standard:

- PRC-023-2 – Transmission Relay Loadability (PRC-023-2).

NERC also provides notice of a proposed addition to the NERC Rules of Procedure, Section 1700 – Challenges to Determinations. This filing satisfies certain directives FERC issued in Order No. 733 pertaining to developing modifications to PRC-023-1 to:

- apply an "add in" approach to sub-100 kV facilities that are owned or operated by currently-Registered Entities or entities that become Registered Entities in the future, and are associated with a facility that is included on a critical facilities list defined by the Regional Entity (P.60);

- modify Requirement R3 of the Reliability Standard to specify the test that planning coordinators must use to determine whether a sub-200 kV facility is critical to the reliability of the Bulk-Power System (P. 69);

- develop an appeals process (or point to a process in its existing procedures) for entities to challenge criticality determinations (P 97);

- require that transmission owners, generator owners, and distribution providers give their transmission operators a list of transmission facilities that implement sub-requirement R1.2 (P. 186);

- modify sub-requirement R1.10 so that it requires entities to verify that the limiting piece of equipment is capable of sustaining the anticipated overload for the longest clearing time associated with the fault (P. 203);

- provide the ERO with information to document and to make available for review to users, owners and operators of the Bulk-Power System, by request, a list of those facilities that have protective relays set pursuant sub-requirement R1.12 (P. 224);

- add the Regional Entity to the list of entities that receive the critical facilities list from the Planning Coordinator (P. 237);

- include section 2 of Attachment A in the modified Reliability Standard as an additional Requirement with the appropriate violation risk factor and violation severity level (P. 244);

- revise section 1 of Attachment A to include supervising relay elements on the list of relays and protection systems that are specifically subject to the Reliability Standard (P. 264);

- include an implementation plan for sub-100 kV facilities (P. 283); and
- remove the exceptions footnote from the "Effective Dates" section (P. 284).

The NERC Board of Trustees approved the proposed Reliability Standard on March 10, 2011, and recommended it be added to the set of approved NERC Reliability Standards. In this filing, NERC provides notice of the proposed PRC-023-2 Reliability Standard, the associated implementation plan, and the proposed NERC Rules of Procedure Section 1700 – Challenges to Determinations.

Exhibit A to this filing sets forth the proposed Reliability Standard in both clean and redlined format. **Exhibit B** contains the Implementation Plan for PRC-023-2. **Exhibit C** contains the Standard Drafting Team Roster for Project 2010-13 Relay Loadability Order 733 which was responsible for drafting the proposed PRC-023-2 standard and associated Implementation Plan. **Exhibit D** contains the Mapping Document that shows the changes made to the approved PRC-023-1 Reliability Standard to address FERC's directives in Order 733 that resulted in the proposed PRC-023-2 Reliability Standard. **Exhibit E** contains the proposed NERC Rules of Procedure Section 1700 – Challenges to Determinations. **Exhibit F** contains the development record for the proposed PRC-023-2 Reliability Standard.

NERC filed the proposed PRC-023-2 Reliability Standard and associated documents with FERC, and is filing the proposed standard and associated documents with the other applicable governmental authorities in Canada.

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. Basis for Approval of Proposed Reliability Standard

The proposed PRC-023-2 Reliability Standard serves the important reliability goal of specifying that protective relay settings shall not limit transmission loadability; not interfere with system operators' ability to take remedial action to protect system reliability and; be set to reliably detect all fault conditions and protect the electrical network from these faults.

The proposed PRC-023-2 Reliability Standard improves reliability by:

- assuring that protective relay settings do not limit transmission loadability; do not interfere with system operators' ability to take remedial action to protect system reliability; and are set to reliably detect all fault conditions and protect the electrical network from these faults;
- providing awareness to entities regarding use of various criteria for verifying relay loadability (*i.e.,* when the relay loadability calculated circuit capability is used as the Facility Rating of the circuit, when the relay loadability has been verified based on the highest seasonal 15-minute Facility Rating, and when the desired transmission line capability is limited by the requirement to adequately protect the transmission line, and

- assuring consistent identification of circuits operated below 200 kV for which responsible entities must comply with this standard by the defining criteria in Attachment B that will be applied consistently by each Planning Coordinator to determine the circuits in its Planning Coordinator area that potentially could, if they trip due to relay loadability following an initiating event, contribute to undesirable system performance similar to what occurred during the August 2003 blackout.

b. Reliability Standards Development Procedure

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Standard Processes Manual*, which is included in the NERC Rules of Procedure as Appendix 3A. NERC's rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standardsdards.

The Development Process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders and a vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard for submission to the applicable governmental authorities.

The NERC Standards Committee initiated Project 2010-13 Relay Loadability Order 733 to address the directives identified in FERC Order No. 733. Relay loadability issues were brought to light by the investigation of the August 14, 2003 blackout, where it was noted that they were either causal or contributory to many of the major electric system disturbances dating back to the 1965 blackout.[1] The PRC-023 – Transmission Relay Loadability Reliability Standard was developed with the purpose of assuring that protective relay settings do not cause premature tripping due to relay loadability when circuits are operating within their capability, thereby limiting transmission loadability; do not interfere with system operators' ability to take

[1] *See, Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations,* U.S.-Canada Power System Outage Task Force, April 5, 2004.

remedial action to protect system reliability; and reliably detect all fault conditions and protect the electrical network from these faults.

Because relay loadability is not influenced by geographic variations, regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, or regional variations in market design, the Transmission Relay Loadability requirements must be applied uniformly throughout North America, with no exceptions. The proposed Transmission Relay Loadability Reliability Standard has been written to establish mandatory criteria that will be applied consistently by each Planning Coordinator to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with the standard. These criteria, included in Attachment B of the standard, assure that all Planning Coordinators will use comprehensive and rigorous criteria that are consistent across all regions to avoid vulnerability to similar problems that resulted in the cascade during the August 2003 blackout and other system disturbances.

Accordingly, the Standards Committee sought out highly talented and experienced candidates from industry to modify the PRC-023-1 — Transmission Relay Loadability (PRC-023-1) standard in response to FERC Order No. 733. The team that was formed consisted of 17 highly qualified industry stakeholders and four subject matter experts from NERC. The existing Relay Loadability drafting team was reconvened to address the directed modifications to the standard which resulted in the development of the proposed PRC-023-2 standard. The drafting team was assisted by a Blue Ribbon Panel that was formed to develop the criteria that would be consistently applied by the Planning Coordinator to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers

must comply with the standard. The drafting team and Blue Ribbon Panel consisted of members that each have on average about 30 years of extensive industry experience in transmission planning, operations planning, real-time operations, application of protective relaying to the transmission and distribution systems, power system dynamics modeling and simulation, performance assessment, and policy development. Many of these people work or have worked for a variety of investor-owned utilities and regional entities, while others have also taught the industry at the university level. The credentials of the drafting team members are exemplary, many with advanced degrees, and the majority of which are members, senior members, or fellows of IEEE or other technical industry bodies.

The work culminating in this filing originated from the directives in FERC Order No. 733.[2] In Order No. 733, FERC approved NERC's petition for the approval of PRC-023-1 and directed NERC to modify the PRC-023-1 standard through its Reliability Standards development process, to be completed by specific deadlines, and directed NERC to develop requirements to address issues related to Relay Loadability. The Order also directed development of two new Reliability Standards to address issues related to generator relay loadability and the operation of protective relays due to power swings. The following is a summary of the FERC directives from Order No. 733:

- P. 60 . . . modify PRC-023-1 to apply an "add in" approach to sub-100 kV facilities that are owned or operated by currently-Registered Entities or entities that become Registered Entities in the future, and are associated with a facility that is included on a critical facilities list defined by the Regional Entity.

- P. 69 . . . modify Requirement R3 of the Reliability Standard to specify the test that planning coordinators must use to determine whether a sub-200 kV facility is critical to the reliability of the Bulk-Power System.

- P. 97 . . . there should be some mechanism for entities to challenge criticality determinations. We agree that such a mechanism is appropriate and direct the ERO to

[2] *Transmission Relay Loadability Reliability Standard.* 130 FERC ¶ 61,221. (2010) ("Order No. 733").

develop an appeals process (or point to a process in its existing procedures) and submit it to the Commission no later than one year after the date of this Final Rule.

- P. 105 . . . In light of the ERO's statement that within two years it expects to submit to the Commission a proposed Reliability Standard addressing generator relay loadability, we direct the ERO to submit to the Commission an updated and specific timeline explaining when it expects to develop and submit this proposed Standard.

- P. 108 . . . the ERO consider whether a generic rating percentage can be established for generator step-up transformers and, if so, determine that percentage.

- P. 150 . . . because both NERC and the Task Force have identified undesirable relay operation due to stable power swings as a reliability issue, we direct the ERO to develop a Reliability Standard that requires the use of protective relay systems that can differentiate between faults and stable power swings and, when necessary, phases out protective relay systems that cannot meet this requirement.

- P 162 . . . consider "islanding" strategies that achieve the fundamental performance for all islands in developing the new Reliability Standard addressing stable power swings.

- P. 186 . . . require that transmission owners, generator owners, and distribution providers give their transmission operators a list of transmission facilities that implement sub-requirement R1.2.

- P. 203 . . . modify sub-requirement R1.10 so that it requires entities to verify that the limiting piece of equipment is capable of sustaining the anticipated overload for the longest clearing time associated with the fault.

- P. 224… direct the ERO to document, subject to audit by the Commission, and to make available for review to users, owners and operators of the Bulk-Power System, by request, a list of those facilities that have protective relays set pursuant sub-requirement R1.12.

- P. 237 . . . modify the Reliability Standard to add the Regional Entity to the list of entities that receive the critical facilities list. [sub-requirement R3.3]

- P. 244 . . . include section 2 of Attachment A in the modified Reliability Standard as an additional Requirement with the appropriate violation risk factor and violation severity level.

- P. 264 . . . revise section 1 of Attachment A to include supervising relay elements on the list of relays and protection systems that are specifically subject to the Reliability Standard.

- P. 283 . . . modify the Reliability Standard to include an implementation plan for sub-100 kV facilities.

- P. 284 . . . remove the exceptions footnote from the "Effective Dates" section.

Additionally, in Order No. 733, NERC was directed to file a report no later than 120 days of the Order addressing the issue of protective relay operation due to stable power swings, and was directed to include an action plan and timeline that explains how and when NERC intends to address this issue through its Reliability Standards Development Process. NERC submitted a Compliance Filing[3] on July 16, 2010 that includes an action plan and timeline to address the Order No. 733 directives. Exhibit A of the Compliance Filing identifies the phased approach that NERC is taking to address all of the directives from FERC Order No. 733. The three phases are:

- Phase I – Directed modifications to PRC-023, Transmission Relay Loadability
- Phase II – Development of a new Standard Addressing Generator Relay Loadability
- Phase III - Development of a new Standard Addressing the Issue of Protective Relay Operations Due to Power Swings

The proposed PRC-023-2 Reliability Standard addresses FERC's Order No. 733 directives directly related to PRC-023 in Phase I. The directives addressed in Phase I and the changes made to the standard to address these directives are:

- P. 60 . . . modify PRC-023-1 to apply an "add in" approach to sub-100 kV facilities that are owned or operated by currently-Registered Entities or entities that become Registered Entities in the future, and are associated with a facility that is included on a critical facilities list defined by the Regional Entity.

  The drafting team addressed this directive by adding the criteria defined in Attachment B that will be applied consistently by each Planning Coordinator to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with the standard.

- P. 69 . . . modify Requirement R3 of the Reliability Standard to specify the test that planning coordinators must use to determine whether a sub-200 kV facility is critical to the reliability of the Bulk-Power System.

[3] *See, Compliance Filing of the North American Electric Reliability Corporation in Response to FERC Order No. 733,* Docket No. RM08-13-000 (March 18, 2010).

The drafting team also addressed this directive with the criteria defined in Attachment B. The same criteria will be used by the Planning Coordinator for evaluating circuits operated at 100 kV to 200 kV as for circuits operated below 100 kV.

- P. 97 . . . there should be some mechanism for entities to challenge criticality determinations. We agree that such a mechanism is appropriate and direct the ERO to develop an appeals process (or point to a process in its existing procedures) and submit it to the Commission no later than one year after the date of this Final Rule.

  NERC addressed this directive by developing the proposed NERC Rules of Procedure Section 1700 – Challenges to Determinations. Section 1700 provides an appeals process for challenging criticality determinations made by Planning Coordinators under the proposed PRC-023-2 Reliability Standard.

- P. 186 . . . require that transmission owners, generator owners, and distribution providers give their transmission operators a list of transmission facilities that implement sub-requirement R1.2.

  The drafting team addressed this directive by adding a new Requirement R4 that requires each Transmission Owner, Generator Owner, and Distribution Provider to provide its Planning Coordinator, Transmission Operator, and Reliability Coordinator with an updated list of circuits that implement Requirement R1, criterion 2.

- P. 203 . . . modify sub-requirement R1.10 so that it requires entities to verify that the limiting piece of equipment is capable of sustaining the anticipated overload for the longest clearing time associated with the fault.

  The drafting team addressed this directive by modifying Requirement R1, criterion 10 to include sub-requirement 10.1 that requires entities to set load responsive transformer fault protection relays, if used, such that the protection settings do not expose the transformer to a fault level and duration that exceed the transformer's mechanical withstand capability.

- P. 224… direct the ERO to document, subject to audit by the Commission, and to make available for review to users, owners and operators of the Bulk-Power System, by request, a list of those facilities that have protective relays set pursuant sub-requirement R1.12.

  The drafting team addressed this directive by adding a new Requirement R5 to provide the ERO with the information necessary to document and to make available for review to users, owners, and operators of the Bulk-Power System, by request, a list of those facilities that have protective relays set pursuant to Requirement R1, criterion 12.

- P. 237 . . . modify the Reliability Standard to add the Regional Entity to the list of entities that receive the critical facilities list. [sub-requirement R3.3]

The drafting team addressed this directive by modifying Requirement R6, part 6.2 (formerly Requirement R3.3 in PRC-023-1), by adding the Regional Entity to the list of entities that receive the list of circuits from the Planning Coordinator.

- P. 244 . . . include section 2 of Attachment A in the modified Reliability Standard as an additional Requirement with the appropriate violation risk factor and violation severity level.

  The drafting team addressed this directive by adding Requirement R2, with an appropriate violation risk factor and violation severity level, to require entities to set out-of-step blocking elements to allow tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1. This new requirement replaces the requirement in Attachment A, section 2 of PRC-023-1.

- P. 264 . . . revise section 1 of Attachment A to include supervising relay elements on the list of relays and protection systems that are specifically subject to the Reliability Standard.

  The drafting team addressed this directive by revising Attachment A, section 1 to include phase overcurrent supervisory elements (*i.e.,* phase fault detectors) associated with current-based, communication-assisted schemes (*i.e.,* pilot wire, phase comparison, and line current differential) where the scheme is capable of tripping for loss of communications.

- P. 283 . . . modify the Reliability Standard to include an implementation plan for sub-100 kV facilities.

  The drafting team addressed this directive by including an implementation plan for sub-100 kV facilities within the standard.

- P. 284 . . . remove the exceptions footnote from the "Effective Dates" section.

  The drafting team addressed this directive by removing of the exceptions footnote from the "Effective Dates" section.

Test for Identifying Critical Facilities

The criteria in the proposed Reliability Standard PRC-023-2 Attachment B have been added to address the directive to modify Requirement R3 of the Reliability Standard to include the test that Planning Coordinators must use to identify sub-200 kV facilities that are critical to

the reliability of the bulk electric system.[4] These criteria also address the directive to apply an "add in" approach to sub-100 kV facilities that are owned or operated by currently-Registered Entities or entities that become Registered Entities in the future, and are associated with a facility that is included on a critical facilities list defined by the Regional Entity.[5] NERC is in the process of applying the test to a representative sample of utilities from each of the three Interconnections and plans to file the results of these tests within the 24-month extension granted in Order No. 733-A.[6] NERC plans to revise the applicability test defined in Attachment B, if necessary, pending review of the results of this testing and the clarifications provided in Order No. 733-A regarding the test for identifying critical facilities, and elements of the test such as desirable system performance and base case descriptions. In the interim, NERC believes the criteria in Attachment B of the proposed standard provide a significant step forward in addressing the concerns noted in Order No. 733 and Order No. 733-A. Notably, by providing criteria to be applied consistently by all Planning Coordinators, the test defined by these criteria addresses the concern that any test to identify critical facilities must be consistent across regions so that the effects of protective relay operation are consistent across regions.[7]

In this proposed standard, the guidance provided by the NERC System Protection and Control Task Force to the regions in 2005 has been refined to define a mandatory test to be applied by Planning Coordinators to identify all circuits that must comply to achieve the reliability objective of the standard. The methods included in the test are based on existing criteria used to establish Flowgates that address circuit loading-based reliability concerns, Interconnection Reliability Operating Limits (IROLs), and Nuclear Plant Interface Requirements

[4] Order No. 733 at P 47.
[5] *Id.* at P 60.
[6] *Transmission Relay Loadability Reliability Standard,* 134 FERC ¶61,127 (February 17, 2011) ("Order No. 733-A") at P 78.
[7] Order No. 733 at P 92.

(NPIRs), as well as criteria included in the Transmission Planning (TPL) standards. Using existing methods associated with Flowgates, IROLs, and NPIRs, and by drawing upon studies already required by other standards, PRC-023-2 promotes efficiency and consistency among the assessments that Planning Coordinators are required to conduct.

Order No. 733 establishes a number of parameters for the applicability test, noting that Planning Coordinators must use a process that is consistent across regions and robust enough to identify all facilities that should be subject to the Reliability Standard.[8] The Order states that the test must define expectations of desirable system performance and describe the steady state and dynamic base cases that Planning Coordinators must use in their assessments.[9] The Order provides additional guidance regarding FERC's concerns and provides an appropriate, but not necessarily exclusive, outcome to address those concerns.

NERC agrees with the overall principles in the Order—first and foremost the need to identify a test that is consistent across regions and robust enough to identify all facilities that should be subject to the standard. In developing this test, NERC has focused on the reliability objective of this standard: to ensure that the protective relay settings will not limit transmission loadability; not interfere with system operators' ability to take remedial action to protect system reliability; and be set to reliably detect all fault conditions and protect the electrical network from these faults. NERC believes that while the test developed in Attachment B of PRC-023-2 varies in some areas from the guidance provided in Order No. 733, the test nonetheless identifies all facilities that must be subject to the standard to achieve its reliability objective. The following discussion describes these differences and explains how the test in the proposed PRC-023-2 standard is an equally effective and efficient approach to address FERC's concerns.

[8] *Id.* at P 49.
[9] *Id.* at P 80.

1. The facilities that must be subject to the standard are described differently in various reports, Orders, and versions of the subject Reliability Standard. PRC-023-2 refers to circuits for which Transmission Owners, Generator Owners, and Distribution Providers must comply with Requirements R1 through R5, while PRC-023-1 refers to facilities critical to the reliability of the Bulk Electric System. Recommendation 21A of the *U.S. Canada Task Force Report* refers to operationally significant circuits.[10] During the standard development process, a number of industry comments expressed concern with potential confusion regarding use of the phrase "critical to the reliability of the bulk electric system" in the context of PRC-023-1 versus other standards such as those addressing critical infrastructure. As noted in Order No. 733, if a facility trips on relay loadability following an initiating event and contributes to undesirable system performance similar to what occurred during the August 2003 blackout (*e.g.*, cascading outages and loss of load) in the same way that the loss of monitored flowgates and interfaces contributed to the August 2003 blackout, the facility is operationally significant for the purposes of Recommendation 21A, and therefore critical to the reliability of the bulk electric system for the purposes of PRC-023-1.[11] Because the test defined in Attachment B is designed to identify circuits that if tripped on relay loadability following an initiating event could contribute to undesirable system performance similar to what occurred during the August 2003 blackout, NERC believes that referring to these circuits as circuits for which Transmission Owners, Generator Owners, and Distribution Providers must comply with Requirements R1 through R5 also conveys the same meaning and is an equally effective and efficient approach to referring to the circuits identified through the Planning Coordinators' assessments.

[10] *See, Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*, U.S.-Canada Power System Outage Task Force, April 5, 2004.
[11] Order No. 733-A at P 73.

2. During the standard development process, a number of industry comments also identified concern and confusion with the references to sub-100 kV facilities "that Regional Entities have identified as critical to the reliability of the Bulk Electric System." NERC believes the confusion, in part, is because at present very few such facilities have been identified by the Regional Entities. In most regions, no such facilities have been identified. NERC notes that references in the NERC Statement of Compliance Registry Criteria to elements "necessary to provide for the reliable operation of the interconnected transmission grid" are substantially the same as references in Order No. 743 to "facilities necessary for operating an interconnected electric transmission network." The proposed PRC-023-2 standard refers to transmission lines operated below 100 kV and transformers with low voltage terminals connected below 100 kV that are "part of the BES" to address industry concerns and to provide alignment with the definition of Bulk Electric System presently under development. NERC believes that the sub-100 kV circuits that Regional Entities may identify as critical facilities should be included in the definition of the Bulk Electric System, and that referring to sub-100 kV circuits that are part of the Bulk Electric System conveys the same meaning and is an equally effective and efficient approach to referring to the circuits that Regional Entities have identified as critical to the reliability of the Bulk Electric System.

3. Order No. 733 provides guidance that the test must describe the steady state and dynamic base cases that Planning Coordinators must use in their assessments. In developing the test in Attachment B and aligning it with the reliability objective of the standard, NERC believes it is sufficient to require power flow analysis based on steady-state base cases. Protective relays tripped unnecessarily on August 14, 2003 as the result of two distinct phenomena: load encroachment during steady-state conditions and unsecure operation during stable power swings.

The transmission lines that tripped unnecessarily on August 14 (*i.e.*, excluding the lines that tripped due to tree contact) up through tripping of the Argenta—Battle Creek and Argenta—Tompkins 345 kV lines, tripped on load encroachment, whereas the subsequent transmission line trips occurred due to power swings. While the power system did experience stable power swings following each line trip up through tripping of the Argenta lines, these swings were not significant in magnitude and were well-damped. Subsequent to each swing, the power system returned to a new steady-state condition until the next line tripped on load encroachment. Thus, power flow analysis using steady-state base cases is the appropriate study tool to assess the potential for lines tripping under these conditions. A power flow simulation is adequate to assess the post-contingency power flow state of the system. Transient stability analysis using dynamics base cases is the appropriate study tool to assess lines tripping due to power swings that began with tripping of the Thetford—Jewell and Hampton—Pontiac 345 kV lines. As directed in Order No. 733 this phenomena will be addressed in a separate reliability standard.[12] Limiting the applicability test in PRC-023-2 to power flow analysis with steady-state base cases and addressing dynamics base cases in the separate standard addressing power swings is an equally efficient and effective approach to address all aspects related to unnecessary tripping of transmission lines due to relay loadability that occurred on August 14, 2003. As long as all aspects of steady-state and dynamic base cases are addressed in Reliability Standards, it is equally effective to limit PRC-023-2 to addressing steady-state concerns. Requiring assessment of dynamic base cases in both PRC-023-2 and the separate standard addressing power swings is less efficient, resulting in duplication of effort and diversion of limited resources from other work.

[12] *Id.* at P 150.

4. Order No. 733 provides guidance that the test must include the same system simulations and assessments as the Transmission Planning (TPL) reliability standards for reliable operation for all categories of contingencies used in transmission planning for all operating conditions. In developing the test in Attachment B and aligning it with the reliability objective of the standard, NERC believes it is sufficient to require more focused testing that exceeds the TPL-003 Category C3 contingency. Because the TPL standards require the system to remain stable with both thermal and voltage limits within applicable ratings, and prohibit loss of demand and curtailment of firm transfers except demand directly served from the faulted facility, and planned interruption of electric supply to customers or curtailment of firm transfers for events resulting in loss of two or more elements, it is unnecessary to repeat this analysis within the test defined in the proposed PRC-023-2 standard. Requiring that testing in PRC-023-2 will identify circuits to which PRC-023-2 is applicable only in cases where entities are in violation of the TPL standards. NERC believes it is more informative, and in line with the reliability objective, to require testing of double contingency combinations without manual system adjustments in between the two contingencies, thereby modeling a situation where a system operator may not have time between the two contingencies to make appropriate system adjustments. That situation reflects the events that led to the cascading outages due to transmission lines tripping on load encroaching into the protective relay operating characteristic on August 14, 2003. For these reasons, NERC believes this focused testing that exceeds the requirements of the TPL standards is an equally effective and efficient approach to addressing FERC's concerns that the test must be robust enough to identify all circuits that must comply to achieve the reliability objective of the standard. While this approach requires analysis that exceeds that required in the TPL standards, NERC expects that Planning Coordinators will use the same steady-state base cases

used to demonstrate compliance with the TPL standards in their assessments, thus providing an efficient method of applying the test.

5. Order No. 733 also provides guidance regarding the components of desirable system performance that the test must seek to determine:

- how continuity of all firm load supply should be maintained except for supply directly served by the faulted facility;
- the system should always be stable and within both thermal and voltage limits for reliable operation;
- and continuity of all firm transfers should be maintained.

NERC agrees that these components of desirable system performance are appropriate when assessing the system simulations and assessments defined in the TPL standards. However, in developing the test in Attachment B and aligning it with the reliability objective of the standard, NERC believes it is most appropriate to focus on avoiding thermal loading of transmission circuits that will challenge relays that are not set to provide adequate relay loadability. If the loading of a transmission circuit exceeds its emergency rating above a threshold that interferes with a system operator's ability to take remedial action to protect system reliability, then that circuit must comply with PRC-023-2 to achieve the reliability objective of the standard. While the system performance measure in this test is less stringent than required for Category C contingencies in TPL-003, it is important to note that the contingency itself is more stringent than a Category C contingency, and the contingency and system performance measure have been developed together, specifically for alignment with the reliability objective of this standard. For this reason, NERC believes this test is an equally effective and efficient approach to addressing FERC's concerns and results in a test that is robust enough to identify all circuits that must comply to achieve the reliability objective of the standard.

Protective Relays Set Pursuant to Requirement R1, Criterion 2

Requirement R4 has been added to address the directive to modify PRC-023-1 to require that transmission owners, generator owners, and distribution providers give their transmission operators a list of transmission facilities that implement sub-requirement R1.2.[13] Providing this information assures that Planning Coordinators, Transmission Operators, and Reliability Coordinators are aware of situations in which a 15-minute rating has been used as the basis for verifying transmission line relay loadability.

Protective Relays Set Pursuant to Requirement R1, Criterion 10

Requirement R1, criterion 10.1 has been added to address the directive to modify sub-requirement R1.10 so that it requires entities to verify that the limiting piece of equipment is capable of sustaining the anticipated overload for the longest clearing time associated with the fault.[14] This additional requirement has been incorporated as a separate sub-requirement to address confusion raised in stakeholder comments during the standard development process regarding separation of requirements for "loadability" from requirements for "coordination with the equipment capability." The main requirement in criterion 10 is applicable to transformer fault protection relays and transmission line relays on transmission lines terminated only with a transformer, and requires that entities must set these relays to meet the loadability requirements.

The sub-requirement in criterion 10.1 addresses the issue of coordination with equipment capability. Criterion 10.1 requires coordination so that load responsive transformer fault protection relay settings do not expose transformers to a fault level and duration that exceeds the transformer's mechanical withstand capability.[15] NERC believes that stating the requirement in

[13] *Id.* at P 186.
[14] *Id.* at P 203.
[15] IEEE C57.109-1993 – IEEE Guide for Liquid-Immersed Transformer Through-Fault-Current Duration, Clause 4.4, Figure 4.

this manner is equally effective and efficient as the approach directed in Order No. 733, and addresses concerns identified through the standard development process.

Order No. 733 explains that for the application of a transmission line terminated in a transformer, protective relay settings implemented according to sub-requirement R1.10 would allow the transformer to be subjected to overloads higher than its established ratings for unspecified periods of time. FERC states that this negatively impacts reliability and raises safety concerns because transformers that have been subjected to currents over their maximum rating have been recorded as failing violently, resulting in substantial fires.[16] Order No. 733 explains further that applying protection systems that do not respect the actual or verified capability of the limiting facility will result in a degradation of system reliability. Failure of the transformer may not be limited to only the affected transformer, but may also affect other Bulk-Power Systems elements in its vicinity, further degrading the reliability of the Bulk-Power System.[17] Order No. 733-A also explains that the replacement due to a failure of such a transformer could require a long lead-time, prolonging the Bulk-Power System's return to the level of reliability that preceded the failure.[18]

During the standard development process, industry comments identified three main concerns with modifying criterion 10 specifically as directed: (1) the need to define the through-fault capability by which this requirement is evaluated; (2) the need to define the longest clearing time associated with the fault; and (3) availability of through-fault capability for every element in series with the transformer. NERC believes it is necessary to address these concerns to provide clear and measurable requirements to industry. To address these concerns NERC proposes an

[16] Order 733 at P191.
[17] *Id*, at P 210.
[18] Order 733-A at P 120.

alternative solution that is an equally effective and efficient approach to addressing FERC's reliability concerns and also addresses the industry's concerns.

NERC agrees that a definitive measure is necessary for assessing the capability of transformers to withstand through-fault currents. The relevant clause from the *IEEE Guide for Liquid-Immersed Transformer Through-Fault-Current Duration*[19] has been cited in the proposed PRC-023-2 standard to define this measure. The transformer damage curve has two components for through-faults: the "thermal component" begins at two times the transformer nominal nameplate rating, and the "mechanical component" begins at a current equal to the reciprocal of twice the transformer impedance (*e.g.,* five times the transformer nominal nameplate rating for a transformer with 10 percent impedance). Industry comments correctly identified that for many transformers, it is not possible to set fault protection relays to simultaneously meet the relay loadability requirement established in criterion 10 and to coordinate with the thermal component of the transformer damage curve. However, for through-fault magnitudes that exceed the mechanical damage threshold, the mechanical withstand capability is more limiting than the thermal withstand capability. For through-fault magnitudes below the mechanical damage threshold, the permissible time duration to avoid thermal damage is measured in tens of seconds, which is longer than the maximum expected through-fault duration for which a fault on the low-voltage side of the transformer could remain before it is cleared by a protection system.[20] Thus, requiring coordination of transformer fault protection relays with the mechanical withstand capability of transformers assures that the transformers will be capable of withstanding the

[19] IEEE C57.109-1993 – IEEE Guide for Liquid-Immersed Transformer Through-Fault-Current Duration, Clause 4.4, Figure 4.

[20] Order 733 at P 121 explains that the Commission's use of the phrase "longest clearing time" is in the context of the design and coordination of protection systems, where the "longest clearing time" refers to the longest time that a fault could remain on the Bulk-Power System before it is cleared by a protection system.

anticipated overload for the longest clearing time associated with a fault on the low-voltage side of the transformer.

Criterion 10.1 is limited to setting transformer fault protection relays to respect the transformer through-fault capability without referencing the most limiting piece of equipment. NERC believes that limiting criterion 10.1 to coordinating transformer fault protection relays with the transformer mechanical withstand capability addresses FERC's concerns regarding the potential for damage to transformers, potential damage to adjacent equipment if transformers fail violently, and the prolonged time to return the system to the level of reliability that preceded a failure due to the long lead-time required for replacement. Transformers, as a result of physical design constraints, are more limiting than other series elements with regard to through-fault capability when considering the expected duration for a fault on the low-voltage side of the transformer. Detailed fault withstand capability of terminal equipment is not always readily available (typically ratings are available only for momentary withstand capability and for thermal loading associated with time constants much longer than the expected duration for a fault on the low-voltage side of the transformer). Requiring entities to provide evidence that all equipment in series with the transformer is capable of withstanding the through-fault current for the expected duration for a fault on the low-voltage side of the transformer is not necessary to address FERC's stated concerns, and places an unnecessary burden on entities without a commensurate reliability benefit.

Protective Relays Set Pursuant to Requirement R1, Criterion 12

Requirement R5 addresses the directive to document, subject to audit by FERC, and to make available for review to users, owners, and operators of the Bulk-Power System, by request,

a list of those facilities that have protective relays set pursuant to sub-requirement R1.12.[21] By requiring entities that set transmission line relays according to Requirement R1 criterion 12 to provide an updated list of the circuits associated with those relays to its Regional Entity at least once each calendar year, NERC will have access to the information necessary to maintain and make available for review a list of circuits with protective relays set pursuant to Requirement R1, criterion 12.

List of Critical Facilities Provided by the Planning Coordinator

Requirement R6, part 6.2 (Requirement R3.3 in PRC-023-1) has been modified to address the directive to add the Regional Entity to the list of entities that receive the critical facilities list.[22] With this modification, the Planning Coordinators will be required to provide the list of circuits identified through application of the criteria in Attachment B to all Regional Entities, Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area. Requirement R6, part 6.2 was also modified to explicitly require providing the list to all of the listed entities to address concerns from some Distribution Providers that may not have circuits on the list, to ensure they receive the list as confirmation of this status.

Attachment A – Out-of-Step Blocking Schemes

Requirement R2 has been added to the standard to address the directive to include section 2 of Attachment A in the modified Reliability Standard as an additional Requirement with the appropriate violation risk factor and violation severity level.[23] Within PRC-023-1 entities are required to verify settings of out-of-step blocking schemes to ensure that they do not block tripping for faults during the loading conditions defined within the requirements. This

[21] Order 733 at P 224.
[22] *Id.* at P 237.
[23] *Id.* at P 244.

requirement is stated in Attachment A, section 2 of PRC-023-1. This section of Attachment A has been deleted and replaced with the new Requirement R2. This new requirement has been assigned a Violation Risk Factor and Violation Severity Level similar to Requirement R1, to reflect the implicit link between Requirement R1 and Attachment A, section 2 in PRC-023-1 and the similar impact to reliability of violating either requirement.

Attachment A – Protection Systems Excluded from the Reliability Standard

Attachment A, section 1.6 has been added to the standard, and Attachment A, section 3.1 (now section 2.1) has been revised to address the directives to remove the exclusion of supervising relay elements in section 3.1 and to revise section 1 of Attachment A to include supervising relay elements on the list of relays and protection systems that are specifically subject to the Reliability Standard.[24] The new section 1.6 in Attachment A includes phase overcurrent supervisory elements (*i.e.*, phase fault detectors) associated with current-based, communication-assisted schemes (*i.e.*, pilot wire, phase comparison, and line current differential) where the scheme is capable of tripping for loss of communications as subject to the requirements in PRC-023-2. Section 2.1 (formerly section 3.1) has been modified to exclude elements that are only enabled during a loss of communications, except as noted in section 1.6. NERC believes that stating the requirement in section 1.6 in this manner is equally effective and efficient as the approach directed in Order No. 733, and addresses concerns identified through the standard development process.

Order No. 733 raised specific concerns about section 3.1, which excludes from the Reliability Standard's requirements relay elements that are enabled only when other relays or associated systems fail, such as those overcurrent elements enabled only during loss of potential conditions or elements enabled only during the loss of communications. FERC expressed

[24] *Id.* at P 264.

concern that section 3.1 could be interpreted to exclude certain protection systems that use communications to compare current quantities and directions at both ends of a transmission line, such as pilot wire protection or current differential protection systems supervised by fault detector relays. FERC explained that if supervising fault detector relays are not subject to the Reliability Standard, and they are set below the rating of the protected element, the loss of communications and heavy line loading conditions that approach the line rating would cause them to operate and unnecessarily disconnect the line; adjacent transmission lines with similar protection systems and settings would also operate unnecessarily, resulting in cascading outages.[25]

During the standard development process, industry comments identified concerns that modifying Attachment A specifically as directed will have an unintended negative impact on system reliability by impacting the dependability and security of certain protection systems. Commenters expressed particular concern with applying relay loadability requirements to overcurrent fault detectors applied to supervise phase distance (impedance) elements.

The elements described in section 1.6 are included explicitly to assure PRC-023-2 addresses the concerns stated in Order No. 733. The description is more specific than the directive based on careful consideration of industry comments that identified the potential for unintended, negative impacts on reliability that could occur with an overly broad description.

Phase overcurrent elements are often applied to supervise other protective functions for which responsible entities already are required to meet the relay loadability requirements; ***e.g.***, phase distance. These overcurrent elements are utilized as "fault detectors" to allow the supervised protective function to take action contingent on there being some level of fault current present. These overcurrent elements inherently add an important security to the overall

[25] *Id.* at P 251.

protection system and help prevent undesired operation. In this application, the fault detectors by themselves cannot trip on load current, with or without time delay. Since the trip logic requires assertion of the fault detector and the supervised protective function (which already is required to meet the loadability requirements), the overall protective system function will meet the loadability requirement. Requiring these supervisory elements to meet the requirements of PRC-023-2 is unnecessary to achieve the reliability objective of the standard and in many cases would have an unintended negative impact on reliability. Setting these fault detectors to meet the requirements of PRC-023 would restrict the ability of some distance elements to trip for end-of-zone faults, particularly on weak source systems, and would unnecessarily reduce the sensitivity of the protection system, in many cases preventing the protection system from providing adequate protection. Eliminating the fault detector to avoid this concern would have the negative impact of making the protection system susceptible to undesired tripping such as during close-in faults on adjacent elements, and in many cases microprocessor relays have inherent overcurrent supervision of impedance elements which cannot be disabled. Placing an unnecessary requirement on fault detectors in such cases would require unnecessary replacement of protection system equipment.

Fault detectors also are used to improve trip dependability in breaker failure protection schemes. In this application also, the fault detectors by themselves cannot trip on load current, with or without time delay. Because the breaker failure scheme is initiated only when a fault has been detected by a protective relay, the overall protective function will meet the loadability requirement. Requiring entities to set breaker failure fault detectors to meet the relay loadability requirements would decrease sensitivity of the breaker failure scheme, and could result in a failure to clear low-grade faults with current levels below the relay loadability requirement.

NERC believes that the concerns stated in Order No. 733 do not extend to fault detectors used to increase protection system security or dependability as described above. By restricting

section 1.6 of Attachment A as proposed, an equally effective and efficient approach is used to address FERC's concerns related to current-based communication-assisted schemes by requiring entities to set supervisory elements to meet the relay loadability requirements in those cases where the overcurrent element will trip directly for the loss of communication. This equally effective and efficient approach avoids placing unnecessary requirements on other supervisory elements, with potential negative impacts on overall system reliability.

Implementation Plan for Sub-100 kV Facilities

The Implementation Plan for PRC-023-2 includes Effective Dates for circuits operated below 100 kV to address the directive to modify the Reliability Standard to include an Implementation Plan for sub-100 kV facilities.[26] The Implementation Plan is the same for all applicable circuits operated below 200 kV.

Effective Dates -- Footnote 1

Footnote 1 has been removed from the standard to address the directive to remove the exceptions footnote from the "Effective Dates" section.[27] NERC notes that this modification has no impact on entities that received temporary exceptions under the Beyond Zone 3 protection system review program because all temporary exceptions have expired. The latest due date for mitigation of temporary exceptions was December 31, 2008.

A Mapping Document was prepared by the drafting team for Project 2010-13 Relay Loadability Order 733 to highlight and align the changes made to the PRC-023-1 standard requirements that address the industry stakeholder comments and FERC's directives. The mapping document summarizes the changes made to the PRC-023-1 standard in a

[26] *Id.* at P 283.
[27] *Id.* at P 284.

comprehensive, but streamlined manner and provides a record of the resulting changes to the PRC-023-1 requirements in the PRC-023-2 standard. Exhibit D contains the PRC-023-2 mapping of requirements from PRC-023-1.

The proposed Reliability Standard set out in **Exhibit A** has been developed and approved by industry stakeholders using NERC's *Reliability Standards Development Procedure* and its replacement, the NERC *Standard Processes Manual*.[28] A discussion of this process appears in section III.c. of this filing. The proposed PRC-023-2 Reliability Standard was approved by the NERC Board of Trustees on March 10, 2011.

IV. JUSTIFICATION OF PROPOSED MODIFICATIONS TO RELIABILITY STANDARDS

a. Section Overview

This section summarizes the development of the proposed PRC-023-2 Reliability Standard. The discussion in this section is also intended to demonstrate that modifications to the proposed PRC-023-2 Reliability Standard ensure that they are just, reasonable, not unduly discriminatory or preferential, and in the public interest.

The proposed PRC-023-2 Reliability Standard is provided in **Exhibit A** in both clean and redlined format. The Implementation Plan for PRC-023-2 is provided in **Exhibit B**. The standard drafting team roster for Project 2010-13 Relay Loadability Order 733, the drafting team responsible for drafting the proposed Reliability Standard, is provided in **Exhibit C**. The Mapping Document which highlights the revisions made to PRC-023-1 to address FERC's

[28] NERC's *Reliability Standards Development Procedure and its replacement the NERC Standard Processes Manual* are available on NERC's website at http://www.nerc.com/fileUploads/File/Standards/RSDP_V6_1_12Mar07.pdf. Note that FERC approved the new Reliability *Standard Processes Manual* on September 3, 2010 (FERC Docket No. RR10-12-000), which replaces the *Reliability Standards Development Procedure Version 7* in its entirety.

Directives in Order 733 is provided in **Exhibit D**. The complete development record for the proposed Reliability Standard and the associated Implementation Plan is provided in **Exhibit F**. This extensive development record includes successive drafts of the standard, the ballot pool members, the final ballot results by registered ballot body members, stakeholder comments received during the development of proposed PRC-023-2 Reliability Standard, and a discussion regarding how stakeholder comments were considered in developing the modifications to the standard.

The proposed PRC-023-2 Reliability Standard contains 6 requirements:

- Requirement R1 mandates that each Transmission Owner, Generator Owner, and Distribution Provider shall use any one of the identified criteria (Requirement R1, criteria 1 through 13) for any specific circuit terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the BES for all fault conditions. Each Transmission Owner, Generator Owner, and Distribution Provider shall evaluate relay loadability at 0.85 per unit voltage and a power factor angle of 30 degrees.
- Requirement R2 mandates that each Transmission Owner, Generator Owner, and Distribution Provider shall set its out-of-step blocking elements to allow tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1.
- Requirement R3 mandates that each Transmission Owner, Generator Owner, and Distribution Provider that uses a circuit capability with the practical limitations described in Requirement R1, criterion 6, 7, 8, 9, 12, or 13 shall use the calculated circuit capability as the Facility Rating of the circuit and shall obtain the

agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability

- Requirement R4 mandates that each Transmission Owner, Generator Owner, and Distribution Provider that chooses to use Requirement R1 criterion 2 as the basis for verifying transmission line relay loadability shall provide its Planning Coordinator, Transmission Operator, and Reliability Coordinator with an updated list of circuits associated with those transmission line relays at least once each calendar year, with no more than 15 months between reports
- Requirement R5 mandates that each Transmission Owner, Generator Owner, and Distribution Provider that sets transmission line relays according to Requirement R1 criterion 12 shall provide an updated list of the circuits associated with those relays to its Regional Entity at least once each calendar year, with no more than 15 months between reports, to allow the ERO to compile a list of all circuits that have protective relay settings that limit circuit capability
- Requirement R6 mandates that each Planning Coordinator shall conduct an assessment at least once each calendar year, with no more than 15 months between assessments, by applying the criteria in Attachment B to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with Requirements R1 through R5. The Planning Coordinator shall:
    - Maintain a list of circuits subject to PRC-023-2 per application of Attachment B, including identification of the first calendar year in which any criterion in Attachment B applies.

- Provide the list of circuits to all Regional Entities, Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area within 30 calendar days of the establishment of the initial list and within 30 calendar days of any changes to that list

a. Demonstration that the proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential and in the public interest

1. Proposed Reliability Standardis designed to achieve a specified reliability goal.

The proposed PRC-023-2 Reliability Standard is designed to achieve a specified reliability goal by requiring that protective relay settings do not limit transmission loadability; do not interfere with system operators' ability to take remedial action to protect system reliability; and are set to reliably detect all fault conditions and protect the electrical network from these faults. The standard is applicable to a subset of the circuits necessary for operating the interconnected transmission network; specifically, to circuits, that, if they trip due to relay loadability following an initiating event, may contribute to undesirable system performance similar to what occurred during the August 2003 blackout. This subset includes all circuits operated at 200 kV and above, and circuits operated below 200 kV that are selected by the Planning Coordinator by applying the criteria in Attachment B to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with the standard.

2. Proposed Reliability Standard contains a technically sound method to achieve the goal.

The proposed PRC-023-2 Reliability Standard establishes technically sound bases for assuring that protective relay settings do not limit transmission loadability and do not interfere with system operators' ability to take remedial action to protect system reliability; and also to assure that Planning Coordinators consistently apply a method that identifies all circuits that potentially could, if they trip due to relay loadability following an initiating event, contribute to undesirable system performance similar to what occurred during the August 2003 blackout.

The criteria established in Requirement R1 provide a sound, technical basis for assuring relay loadability does not interfere with system reliability by requiring responsible entities to validate their load-responsive phase protection settings against criteria specifically developed to assure that operators have time to take remedial actions before circuits operating within their capability are tripped by protection systems. Two criteria are based on thermal capability of transmission circuits. When transmission system loadability is limited by criteria other than thermal capability (***e.g.,*** transfer capability is limited by system stability or topology) a responsible entity may use an alternate criterion, based on situation-specific details, to verify relay loadability. Each of these criteria were developed by industry subject matter experts based on experience with actual system disturbances and system operating experience, and based on the protection system review programs developed following the August 2003 blackout. These same criteria also form the basis for setting out-of-step blocking protection systems that could be affected by the same operating conditions as load-responsive phase protection systems.

The criteria established in Requirement R6 and Attachment B provide a sound, technical basis for assuring that Planning Coordinators identify all circuits for which a failure to assure adequate relay loadability could result in cascading outages similar to what occurred during the

August 2003 blackout. The methods included in Attachment B are based on existing criteria used to establish Flowgates that address circuit loading-based reliability concerns, Interconnection Reliability Operating Limits (IROLs), and Nuclear Plant Interface Requirements (NPIRs), as well as criteria included in the Transmission Planning (TPL) standards. The criteria included in the TPL standards have been adapted to cover the specific reliability objective of this standard to assure relay loadability when contingencies occur without time for operator intervention between contingencies. Additional criteria also are included to address unique cases that are not addressed in the criteria described above.

3. Proposed Reliability Standard is applicable to users, owners, and operators of the bulk power system, and not others.

The proposed PRC-023-2 Reliability Standard is applicable only to Transmission Owners, Generator Owners, and Distribution Providers with load-responsive phase protection systems as described in PRC-023-2 - Attachment A, applied to circuits operated at 200 kV and above and applied to circuits operated below 200 kV as selected by the Planning Coordinator; and to Planning Coordinators who are required to apply the criteria in Attachment B to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with the standard.

4. Proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply.

Each of the requirements in the proposed PRC-023-2 Reliability Standard is clear in identifying the required performance (what) and the responsible entity (who).

Requirement R1 requires each Transmission Owner, Generator Owner, and Distribution Provider to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the bulk electric system for all fault

conditions. The responsible entities are required to use any one of 13 criteria, for each specific circuit terminal, to demonstrate that loadability requirements are met.

Requirement R2 requires each Transmission Owner, Generator Owner, and Distribution Provider to set its out-of-step blocking elements to allow tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1.

Requirement R3 requires each Transmission Owner, Generator Owner, and Distribution Provider that uses a circuit capability with the practical limitations described in Requirement R1, criterion 6, 7, 8, 9, 12, or 13 to use the calculated circuit capability as the Facility Rating of the circuit and to obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability.

Requirement R4 requires each Transmission Owner, Generator Owner, and Distribution Provider that chooses to use Requirement R1 criterion 2 as the basis for verifying transmission line relay loadability to provide its Planning Coordinator, Transmission Operator, and Reliability Coordinator with an updated list of circuits associated with those transmission line relays at least once each calendar year, with no more than 15 months between reports.

Requirement R5 requires each Transmission Owner, Generator Owner, and Distribution Provider that sets transmission line relays according to Requirement R1 criterion 12 to provide an updated list of the circuits associated with those relays to its Regional Entity at least once each calendar year, with no more than 15 months between reports, to allow the ERO to compile a list of all circuits that have protective relay settings that limit circuit capability.

Requirement R6 requires each Planning Coordinator to conduct an assessment at least once each calendar year, with no more than 15 months between assessments, by applying the

criteria in Attachment B of PRC-023-2 to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with Requirements R1 through R5. The Planning Coordinator is required to maintain a list of circuits subject to PRC-023-2 per application of Attachment B, including identification of the first calendar year in which any criterion in Attachment B applies, and to provide the list of circuits to all Regional Entities, Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area within 30 calendar days of the establishment of the initial list and within 30 calendar days of any changes to that list.

5. Proposed Reliability Standard includes clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.

The proposed standard includes clear and understandable consequences by assigning each primary requirement a violation risk factor ("VRF") and a violation severity level ("VSL"). These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in Reliability Standards, as defined in the ERO Sanction Guidelines. The table below shows the VRFs and VSLs resulting in the indicated range of penalties for violations.

Requirement R1

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
High	N/A	N/A	N/A	The responsible entity did not use any one of the following criteria (Requirement R1 criterion 1 through 13) for any specific circuit terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the Bulk Electric System for all fault conditions OR The responsible entity did not evaluate relay loadability at 0.85 per unit voltage and a power factor angle of 30 degrees

Requirement R2

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
High	N/A	N/A	N/A	The responsible entity failed to ensure that its out-of-step blocking elements allowed tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1

Requirement R3

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
Medium	N/A	N/A	N/A	The responsible entity that uses a circuit capability with the practical limitations described in Requirement R1 criterion 6, 7, 8, 9, 12, or 13 did not use the calculated circuit capability as the Facility Rating of the circuit OR The responsible entity did not obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability

Requirement R4

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
Lower	N/A	N/A	N/A	The responsible entity did not provide its Planning Coordinator, Transmission Operator, and Reliability Coordinator with an updated list of circuits that have transmission line relays set according to the criteria established in Requirement R1 criterion 2 at least once each calendar year, with no more than 15 months between reports

Requirement R5

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
Lower	N/A	N/A	N/A	The responsible entity did not provide its Regional Entity, with an updated list of circuits that have transmission line relays set according to the criteria established in Requirement R1 The responsible entity did not provide its Regional Entity, with an updated list of circuits that have transmission line relays set according to the criteria established in Requirement R1 criterion 12 at least once each calendar year, with no more than 15 months between reports

Requirement R6

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
High	N/A	The Planning Coordinator used the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met parts 6.1 and 6.2, but more than 15 months and less than 24 months lapsed between assessments OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 and 6.2 but failed to include the calendar year in which any criterion in Attachment B first applies OR The Planning Coordinator used the criteria established within Attachment B	The Planning Coordinator used the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met parts 6.1 and 6.2, but 24 months or more lapsed between assessments OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 and 6.2 but provided the list of circuits to the	The Planning Coordinator failed to use the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard OR The Planning Coordinator used the criteria established within Attachment B, at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard but failed to meet parts 6.1 and 6.2 OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard but failed to maintain the list of circuits determined according to the process described in Requirement R6. (part 6.1) OR

VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
		at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 and 6.2 but provided the list of circuits to the Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area between 31 days and 45 days after the list was established or updated. (part 6.2)	Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area between 46 days and 60 days after list was established or updated. (part 6.2)	The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 but failed to provide the list of circuits to the Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area or provided the list more than 60 days after the list was established or updated. (part 6.2) OR The Planning Coordinator failed to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard

6. Proposed Reliability Standard identifies clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner.

The proposed PRC-023-2 Reliability Standard identifies clear and objective criteria in the language of the requirements so that the standards can be enforced in a consistent and non-preferential manner. The language in the requirements is unambiguous with respect to the applicable entity expectations. Each requirement has a single associated measure.

M1. Each Transmission Owner, Generator Owner, and Distribution Provider shall have evidence such as spreadsheets or summaries of calculations to show that each of its transmission relays is set according to one of the criteria in Requirement R1, criterion 1 through 13 and shall have evidence such as coordination curves or summaries of calculations that show that relays set per criterion 10 do not expose the transformer to fault levels and durations beyond those indicated in the standard. (R1)

M2. Each Transmission Owner, Generator Owner, and Distribution Provider shall have evidence such as spreadsheets or summaries of calculations to show that each of its out-of-step blocking elements is set to allow tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1. (R2)

M3. Each Transmission Owner, Generator Owner, and Distribution Provider with transmission relays set according to Requirement R1, criterion 6, 7, 8, 9, 12, or 13 shall have evidence such as Facility Rating spreadsheets or Facility Rating database to show that it used the calculated circuit capability as the Facility Rating of the circuit and evidence such as dated correspondence that the resulting Facility Rating was agreed to by its associated Planning Coordinator, Transmission Operator, and Reliability Coordinator. (R3)

M4. Each Transmission Owner, Generator Owner, or Distribution Provider that sets transmission line relays according to Requirement R1, criterion 2 shall have evidence such as dated correspondence to show that it provided its Planning Coordinator, Transmission Operator, and Reliability Coordinator with an updated list of circuits associated with those transmission line relays within the required timeframe. The updated list may either be a full list, a list of incremental changes to the previous list, or a statement that there are no changes to the previous list. (R4)

M5. Each Transmission Owner, Generator Owner, or Distribution Provider that sets transmission line relays according to Requirement R1, criterion 12 shall have evidence such as dated correspondence that it provided an updated list of the circuits associated with those relays to its Regional Entity within the required timeframe. The updated list may either be a full list, a list of incremental changes to the previous list, or a statement that there are no changes to the previous list. (R5)

M6. Each Planning Coordinator shall have evidence such as power flow results, calculation summaries, or study reports that it used the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard as described in Requirement R6. The Planning Coordinator shall have a dated list of such circuits and shall have evidence such as dated correspondence that it provided the list to the Regional Entities, Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area within the required timeframe.

7. Proposed Reliability Standard achieves a reliability goal effectively and efficiently, but does not necessarily have to reflect "best practices" without regard to implementation cost.

The proposed PRC-023-2 Reliability Standard helps the industry achieve the stated goals effectively and efficiently. The proposed standard requires Transmission Owners, Generator

Owners, and Distribution providers to verify relay loadability using methods that were developed following the August 2003 blackout as part of the protection system review programs in response to Recommendation 8a of NERC's *Final Report on the August 2003 Blackout*[29] and Recommendation 21a of the *U.S.-Canada Power System Outage Task Force's Final Report on the Blackout*.[30] Use of these methods within PRC-023-2 assures achieving the reliability goal of this standard in an effective and efficient manner familiar to the responsible entities.

The proposed Reliability Standard also requires Planning Coordinators to apply the criteria established in Attachment B to identify all circuits for which a failure to assure adequate relay loadability could result in cascading outages similar to what occurred during the August 2003 blackout. The methods included in Attachment B are based on existing criteria used to establish Flowgates that address circuit loading-based reliability concerns, Interconnection Reliability Operating Limits (IROLs), and Nuclear Plant Interface Requirements (NPIRs), as well as criteria included in the Transmission Planning (TPL) standards. The criteria allow Planning Coordinators to utilize studies necessary for demonstrating compliance with the Transmission Planning (TPL) standards as a basis for the assessment required in PRC-023-2. By using existing methods associated with Flowgates, IROLs, and NPIRs, and by drawing upon studies already required by other standards, PRC-023-2 assures achieving the reliability goal of this standard in an effective and efficient manner familiar to the Planning Coordinators.

[29] *Technical Analysis of the August 14, 2003, Blackout: What Happened, Why, and What Did We Learn?*, Report to the NERC Board of Trustees by the NERC Steering Group, July 13, 2004.
[30] *Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*, U.S.-Canada Power System Outage Task Force, April 2004.

8. Proposed Reliability Standard is not "lowest common denominator," i.e., does not reflect a compromise that does not adequately protect bulk power system reliability.

The proposed Reliability Standard PRC-023-2 does not aim at "lowest common denominator." This standard establishes relay loadability requirements that exceed the methods used on an ad hoc basis within the industry prior to establishment of this standard, with due consideration of the size of entities that must comply and the associated cost. The criteria established in PRC-023-2 exceed the methods used prior to this standard by establishing uniform methods for assessing relay loadability, and most significantly, by considering system operation during stressed, but recoverable system conditions with voltage as low as 0.85 per unit. This standard also extends requirements to out-of-step blocking systems in addition to load-responsive phase protection systems.

The proposed Reliability Standard also does not aim at a "lowest common denominator" with respect to identifying circuits for which responsible entities must comply with the requirements in this standard. In the approved Reliability Standard PRC-023-1, Planning Coordinators were provided the latitude to develop their own methods for identifying circuits critical to the reliability objective of the standard. The criteria developed within Attachment B of PRC-023-2 were developed based on established methods for assuring system reliability, irrespective of the methods presently used by Planning Coordinators to demonstrate compliance with PRC-023-1. Basing the criteria in Attachment B on established methods for establishing Flowgates, Interconnection Reliability Operating Limits (IROLs), and Nuclear Plant Interface Requirements (NPIRs) assures a system reliability basis for identifying circuits. Adapting planning study methods from reliability standard TPL-003 to address the specific reliability objective of this standard provides a high level of confidence that all circuits are identified that could impact system reliability if relay loadability requirements are not met. Providing the

Planning Coordinator the latitude to include additional circuits based on other studies or assessments, in consultation with the facility owner, allows Planning Coordinators to address unique cases by including any other circuits for which Transmission Owners, Generator Owners, and Distribution Providers must comply to assure the reliability objective of this standard is met.

9. ***Proposed Reliability Standard considers costs to implement for smaller entities but not at consequence of less than excellence in operating system reliability.***

The proposed PRC-023-2 Reliability Standard does not create any differentiation in requirements based on size. All entities, small and large, are expected to comply with this standard in the same manner. The proposed PRC-023-2 Reliability Standard allows an entity sufficient time to budget, procure, and install equipment when necessary to become compliant. Smaller entities will have proportionately fewer circuits to which the standard is applicable and therefore will have proportionately smaller costs to comply with the standard. The proposed standard was posted for public comment on three occasions during the development of the standard. During these postings, no entities expressed concerns that the requirements would be too costly for smaller entities to implement.

10. Proposed Reliability Standard is designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one area or approach.

The requirements in the proposed PRC-023-2 Reliability Standard apply throughout North America, with no exceptions. The proposed PRC-023-2 Reliability Standard is a single standard that will be universally applicable in the portions of the United States and Canada that recognize NERC as the ERO. The proposed PRC-023-2 Reliability Standard has been written to establish mandatory criteria that will be applied consistently by each Planning Coordinator to

determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with the standard. These criteria in Attachment B of the standard assure that all Planning Coordinators will use comprehensive and rigorous criteria that are consistent across regions to avoid vulnerability to similar problems that resulted in the cascade during the August 2003 blackout and other system disturbances. A review of disturbances in which relay loadability has been a causal or contributing factor confirm this phenomenon is not influenced by geographic variations, regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, or regional variations in market design. Accordingly, the requirements for identifying circuits for which responsible entities must comply with the standard, and the requirements assigned to the responsible entities, are applied uniformly throughout North America, with no exceptions.

11. Proposed Reliability Standard causes no undue negative effect on competition or restriction of the grid.

The requirements in the proposed PRC-023-2 Reliability Standard should cause no undue negative effect on competition or restriction of the grid because it helps to assure that protective relay settings do not limit loadability of the transmission system and do not interfere with system operation. Responsible entities are required to meet these objectives except in specific cases for which meeting these objectives prevent setting protective relays to reliably detect faults. In these cases the standard requires the responsible entity to use the calculated circuit capability as the Facility Rating of the circuit and to obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability. In such cases, obtaining agreement of the Planning Coordinator, Transmission Operator, and

Reliability Coordinator assures system reliability in a transparent manner that prevents undue preference or advantage for one competitor over another. Additionally, the proposed PRC-023-2 Reliability Standard enhances the operation and reliability of the grid and does not constrain competition or restrict transmission capability. The purpose of the proposed standard is to assure that protective relay settings do not limit transmission loadability; do not interfere with system operators' ability to take remedial action to protect system reliability; and are set to reliably detect all fault conditions and protect the electrical network from these faults.

12. The implementation time for the proposed Reliability Standard is reasonable.

The proposed Implementation Plan is reasonable (see **Exhibit B**). The Implementation Plan does not allow an excessively long time period for entities to become fully compliant, but allows sufficient time to transition to become compliant. The Implementation Plan recognizes that in some jurisdictions requirements in approved standard PRC-023-1 are not yet effective and provides allowances accordingly.

The Implementation Plan provides Planning Coordinators 18 months to apply the criteria in Attachment B to determine the circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with the standard. The 18-month phase-in for compliance is intended to provide Planning Coordinators sufficient time: (1) to perform an initial assessment of all Transmission lines operated at 100 kV to 200 kV and transformers with low voltage terminals connected at 100 kV to 200 kV, and all Transmission lines operated below 100 kV and transformers with low voltage terminals connected below 100 kV that are part of the BES; and (2) to develop a list of circuits subject to PRC-023-2 per application of Attachment B, including identification of the first calendar year in which any criterion in Attachment B applies, and provide the list of circuits to all Regional

Entities, Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area.

The Implementation Plan provides Transmission Owners, Generator Owners, and Distribution Providers varying amounts of time to comply with new or modified requirements in PRC-023-2 depending on the amount of effort required to become compliant. Where no modifications have been made to the standard, entities are required to be compliant on the first effective date to avoid any gap in reliability.

Transmission Owners, Generator Owners, and Distribution Providers are provided six months to become compliant with new Requirements R4 and R5. The time provided reflects the reporting nature of these requirements.

Transmission Owners, Generator Owners, and Distribution Providers are provided 12 months to become compliant with Requirement R1, criterion 10.1. The time provided reflects that entities will be required to validate their transformer fault protective relays settings.

Transmission Owners, Generator Owners, and Distribution Providers are provided 24 months to become compliant with the standard for supervisory elements as described in Attachment A, section 1.6 of the proposed standard. The time provided reflects that entities will be required validate their supervisory element settings, and revise settings or replace protective relay systems when the supervisory elements cannot be reset to comply with the relay loadability requirements.

Transmission Owners, Generator Owners, and Distribution Providers are required to be compliant on the first effective date of PRC-023-2 for their switch-on-to-fault schemes if PRC-023-1 already is effective for switch-on-to-fault schemes when PRC-023-2 is approved. Otherwise, the effective date will be the same as for PRC-023-1. This approach assures there is

no gap in reliability while also assuring that the length of time provided to become compliant in PRC-023-1 is not reduced by approval of PRC-023-2.

Transmission Owners, Generator Owners, and Distribution Providers are provided 39 months to become compliant with the standard for circuits identified by the Planning Coordinator by applying the criteria in Attachment B, or until first day of the first calendar year in which any criterion in Attachment B applies if the Planning Coordinator identifies the circuit in an assessment of a future year more than 39 months beyond the year in which the assessment is conducted. The time provided reflects the idea that entities will be required validate their protective relays settings, and revise settings or replace protective relay systems when the protective relays cannot be reset to comply with the relay loadability requirements. The time also takes into consideration the fact that a significant number of circuits may be identified by the Planning Coordinator and allows time to budget, procure, and install any protection system equipment modifications. The implementation plan is consistent with the time provided in PRC-023-1 for circuits designated by the Planning Coordinator as critical to the reliability of the Bulk Electric System.

13. The Reliability Standard development process was open and fair.

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Standard Processes Manual*, which is included in the NERC Rules of Procedure as Appendix 3A. In its ERO Certification Order, FERC found that NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards. The Development Process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders and a

vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard for submission to applicable governmental authorities. The drafting team developed this standard by following the Reliability Standards development process. In this case, the standard was publicly posted for comment on two occasions in 2010. The standard drafting team considered comments from the industry and revised the standard and implementation plan accordingly. Directed modifications to the standard and the new applicability test (Attachment B) were posted for informal comment in August 2010 and September 2010 respectively, and the entire revised standard PRC-023-2 was posted for formal comment in November 2010. The formal posting included a concurrent initial ballot during the last 10 days of the 45-day posting. A successive ballot was conducted in January 2011 and a final recirculation ballot in February 2011. A total of four drafts of the PRC-023-2 standard were developed. The ballot achieved a weighted segment affirmative vote of 68.83% with a quorum of 87.35%.

14. Proposed Reliability Standard balances with other vital public interests.

The proposed PRC-023-2 Reliability Standard does not conflict with any vital public interests. Compliance with this proposed PRC-023-2 Reliability Standard supports reliability of the interconnected systems by assuring that protective relay settings do not limit transmission loadability; do not interfere with system operators' ability to take remedial action to protect system reliability; and are set to reliably detect all fault conditions and protect the electrical network from these faults. There are no vital public interests that conflict with this reliability goal and so it was not necessary to balance the reliability goal of this standard against any other vital public interests.

15. Proposed Reliability Standard considers any other relevant factors.

No other factors for consideration were identified in the development of the proposed PRC-023-2 Reliability Standard.

b. Violation Risk Factor and Violation Severity Level Assignments

The proposed PRC-023-2 Reliability Standard includes VRF and VSL assignments. The ranges of possible penalties for violations are based upon the applicable VRF and VSLs and will be administered based on the Sanctions table and supporting penalty determination process described in the NERC Sanction Guidelines, included as Appendix 4B to the NERC Rules of Procedure. Each primary requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in Reliability Standards, as defined in the ERO Sanction Guidelines.

Assignment of Violation Risk Factors

The standard drafting team applied the following criteria when proposing VRFs for the requirements in the proposed PRC-023-2 Reliability Standard.

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. However, violation of a medium risk requirement is unlikely to lead to bulk electric system instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical

state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk electric system instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement
A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. A planning requirement that is administrative in nature.[31]

The standard drafting team also considered consistency with the Violation Risk Factor Guidelines for setting VRFs:[32]

Guideline (1) — Consistency with the Conclusions of the Final Blackout Report
The Commission seeks to ensure that Violation Risk Factors assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System.

In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:[33]

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities

[31] These three levels of risk are defined by NERC and recognized by FERC in the *Order on Violation Risk* Factors, 119 FERC ¶61,145 at P9 (May 18, 2007) ("VRF Rehearing Order"), and the *Order on Compliance* Filing, 121 FERC ¶61,179 at Appendix A (November 16, 2007).
[32] *See*, VRF Rehearing Order.
[33] *Id.* at n. 15.

– Appropriate use of transmission loading relief.

Guideline (2) — Consistency within a Reliability Standard
The Commission expects a rational connection between the sub-Requirement Violation Risk Factor assignments and the main Requirement Violation Risk Factor assignment.

Guideline (3) — Consistency among Reliability Standards
The Commission expects the assignment of Violation Risk Factors corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) — Consistency with NERC's Definition of the Violation Risk Factor Level
Guideline (4) was developed to evaluate whether the assignment of a particular Violation Risk Factor level conforms to NERC's definition of that risk level.

Guideline (5) — Treatment of Requirements that Co-mingle More Than One Obligation
Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

The following discussion addresses how the standard drafting team considered FERC's VSL Guidelines 2 through 5. The team followed Guideline 4 (rather than Guideline 1) in assigning VSLs because Guideline 4 directs assignment of VRFs based on the impact of a specific requirement to the reliability of the system, whereas Guideline 1 identifies a list of topics that encompass nearly all topics within NERC's Reliability Standards and implies that these requirements should be assigned a "High" VRF.

There are six requirements in the proposed PRC-023-2 Reliability Standard:

Requirement R1

VRF for PRC-023-2, Requirement R1: *High*

§ FERC's Guideline 1 — This requirement is directly related to NERC Recommendation 8a and US Canada Power System Outage Task Force Recommendation 21a, and is developed explicitly to address those recommendations. A High VRF is consistent with the role that relay loadability played in contributing to the August 14, 2003 Northeast Blackout.

- § FERC's Guideline 2 — Requirement R2 has a similar reliability objective and is assigned a High VRF.
- § FERC's Guideline 3 — Not applicable. There are no other NERC Reliability Standards that address similar reliability goals.
- § FERC's Guideline 4 — The proposed VRF is consistent with the NERC definitions of VRFs because as described above, the requirement ensures that load-responsive protective relays will not improperly operate during the loading conditions described within the R1 criteria. This requirement if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.
- § FERC's Guideline 5 — The proposed requirement does not co-mingle more than one obligation and therefore this guideline does not apply.

Requirement R2 –

VRF for PRC-023-2, Requirement R2: High

- § FERC's Guideline 1 — Not applicable. Out-of-step blocking elements did not prevent tripping of phase protective relays during the August 14, 2003 Northeast Blackout.
- § FERC's Guideline 2 — Requirement R2 references Requirement R1 and both requirements are assigned a "High" VRF.
- § FERC's Guideline 3 — Not applicable. There are no other NERC Reliability Standards that address similar reliability goals.
- § FERC's Guideline 4 — The proposed VRF is consistent with the NERC definitions of VRFs because as described above the requirement ensures that out-of-step blocking elements allow tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1. This requirement is in the planning time frame and if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.
- § FERC's Guideline 5 — The proposed requirement does not co-mingle more than one obligation and therefore this guideline does not apply.

Requirement R3 -

VRF for PRC-023-2, Requirement R3: Medium

- § FERC's Guideline 1 — Not applicable. The criteria to which this requirement is related did not exist at the time of the August 14, 2003 Northeast Blackout.
- § FERC's Guideline 2 — Not applicable. There are no other requirements in this standard that address similar reliability goals.
- § FERC's Guideline 3 — Requirement R2 of FAC-009-1 states that the Transmission Owner and Generator Owner shall each provide Facility Ratings for its solely and jointly owned Facilities that are existing Facilities, new Facilities, modifications to existing Facilities and re-ratings of existing Facilities to its associated Reliability Coordinator(s), Planning Authority(ies), Transmission Planner(s), and Transmission Operator(s) as scheduled by such requesting entities. This data exchange requirement is assigned a Medium VRF.
- § FERC's Guideline 4 — Because the purpose of the requirement is to ensure that entities have consistent Facility Ratings in order to operate the BES effectively, this VRF is consistent with the NERC Definition of a Medium VRF.
- § FERC's Guideline 5 — The proposed requirement does not co-mingle more than one obligation and therefore this guideline does not apply.

Requirement R4 -

VRF for PRC-023-2, Requirement R4: Lower

- § FERC's Guideline 1 — Not applicable. The criterion to which this requirement is related did not exist at the time of the August 14, 2003 Northeast Blackout.
- § FERC's Guideline 2 — Requirement R5 has a similar reliability objective and is assigned a Lower VRF.
- § FERC's Guideline 3 — Requirement R3 of PRC-015-0 states that the Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of SPS data and the results of studies that show compliance of new or functionally modified SPSs with NERC Reliability Standards and Regional Reliability Organization criteria to affected Regional Reliability Organizations and NERC on request (within 30 calendar days). This data exchange requirement is assigned a Lower VRF.
- § FERC's Guideline 4 — Because the purpose of the requirement is to share information with other entities through the exchange of a report the requirement is considered administrative in nature and consistent with the definition of a Lower VRF.
- § FERC's Guideline 5 — The proposed requirement does not co-mingle more than one obligation and therefore this guideline does not apply.

Requirement R5 -

VRF for PRC-023-2, Requirement R5: Lower

- FERC's Guideline 1 — Not applicable. The criterion to which this requirement is related did not exist at the time of the August 14, 2003 Northeast Blackout.
- FERC's Guideline 2 — Requirement R4 has a similar reliability objective and is also assigned a Lower VSL.
- FERC's Guideline 3 — Requirement R3 of PRC-015-0 states that the Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of SPS data and the results of studies that show compliance of new or functionally modified SPSs with NERC Reliability Standards and Regional Reliability Organization criteria to affected Regional Reliability Organizations and NERC on request (within 30 calendar days). This data exchange requirement is assigned a Lower VRF.
- FERC's Guideline 4 — Because the purpose of the requirement is to share information with other entities through the exchange of a report, the requirement is considered administrative in nature and consistent with the definition of a Lower VRF.
- FERC's Guideline 5 — The proposed requirement does not co-mingle more than one obligation and therefore this guideline does not apply.

Requirement R6 -

VRF for PRC-023-2, Requirement R6: High

- FERC's Guideline 1 — A High VRF is consistent with the role that relay loadability played in contributing to the August 14, 2003 Northeast Blackout. The Blackout Report identifies examples of sub-200 kV transmission lines tripping due to relay loadability issues, which resulted in cascading outages of higher voltage transmission lines.
- FERC's Guideline 2 — Requirement R6 requires Planning Coordinators to determine which sub-200 kV facilities are subject to Requirement R1 and R2. Since the facilities identified by the Planning Coordinator pursuant to Requirement R6 are required to meet Requirement R1 and R2, the reliability risk to the bulk power system of a violation of Requirement R6 is the same as a violation of Requirement R1 or R2. Assigning a High VRF to Requirement R6 is consistent with the VRFs assigned to Requirements R1 and R2.
- FERC's Guideline 3 — Not applicable. There are no other standards that address similar reliability goals.
- FERC's Guideline 4 — The proposed VRF is consistent with the NERC definitions of VRFs because, as described above, the requirement ensures that the Planning Coordinator will evaluate sub-200 kV circuits to determine which such circuits could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk

electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition. Circuits thus identified will be subject to the other requirements of PRC-023-2.

- § FERC's Guideline 5 — The VRF is consistent with the highest risk reliability objective contained in this requirement.

Violation Severity Levels

The VSLs are presented below, followed by an analysis of whether the VSLs meet the

FERC Guidelines for assessing VSLs:

Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior Levels of Non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when Levels of Non-compliance were used.

Guideline 2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a "binary" type requirement must be a "Severe" VSL.

Do not use ambiguous terms such as "minor" and "significant" to describe noncompliant performance.

Guideline 3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline 4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations

. . . unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the "default" for penalty calculations.

Requirement R1

Proposed Lower VSL	N/A
Proposed Moderate VSL	N/A

Proposed High VSL	N/A
Proposed Severe VSL	The responsible entity did not use any one of the following criteria (Requirement R1 criterion 1 through 13) for any specific circuit terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the Bulk Electric System for all fault conditions. OR The responsible entity did not evaluate relay loadability at 0.85 per unit voltage and a power factor angle of 30 degrees
FERC VSL G1 Discussion	The proposed VSL for Requirement is consistent with the approved VSL for the similar Requirement R1 within PRC-023-1.
FERC VSL G2 Discussion	Guideline 2a: The proposed VSL is binary and assigns a "Severe" category for the violation of the requirement. Guideline 2b: The proposed VSL for Requirement R2 does not contain ambiguous language
FERC VSL G3 Discussion	The proposed VSL is consistent with the corresponding Requirement, R1.
FERC VSL G4 Discussion	The proposed VSL is based on a single violation and not a cumulative number of violations.

Requirement R2

Proposed Lower VSL	N/A
Proposed Moderate VSL	N/A
Proposed High VSL	N/A
Proposed Severe VSL	The responsible entity failed to ensure that its out-of-step blocking elements allowed tripping of phase protective relays for faults that occur during the loading conditions used to verify transmission line relay loadability per Requirement R1.
FERC VSL G1 Discussion	The proposed VSL for Requirement R2 does not lower the current level of compliance regarding out of step blocking elements. Out-of-step blocking elements are addressed in Requirement R1 in PRC-023-1. Out-of-step blocking has been included in a separate requirement in PRC-023-2 per Order 733 and the VSLs for Requirements R1 and R2 are consistent.
FERC VSL G2 Discussion	Guideline 2a: The proposed VSL is binary and assigns a "Severe" category for the violation of the requirement. Guideline 2b: The proposed VSL for Requirement R2 does not contain ambiguous

	language.
FERC VSL G3 Discussion	The proposed VSL is consistent with the corresponding Requirement, R2.
FERC VSL G4 Discussion	The proposed VSL is based on a single violation and not a cumulative number of violations.

Requirement R3

Proposed Lower VSL	N/A
Proposed Moderate VSL	N/A
Proposed High VSL	N/A
Proposed Severe VSL	The responsible entity that uses a circuit capability with the practical limitations described in Requirement R1 criterion 6, 7, 8, 9, 12, or 13 did not use the calculated circuit capability as the Facility Rating of the circuit. OR The responsible entity did not obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability.
FERC VSL G1 Discussion	This VSL is consistent with the VSL assigned to Requirement R2 of approved PRC-023-1, which is essentially identical and is replaced by this requirement.
FERC VSL G2 Discussion	Guideline 2a: The VSL is binary and establishes a severe level. Guideline 2b: The proposed VSL for Requirement R3 does not contain ambiguous language.
FERC VSL G3 Discussion	The proposed VSL is consistent with the corresponding Requirement R3.
FERC VSL G4 Discussion	The proposed VSL is based on a single violation and not a cumulative number of violations.

Requirement R4

Proposed Lower VSL	N/A
Proposed Moderate VSL	N/A
Proposed High VSL	N/A
Proposed Severe VSL	The responsible entity did not provide its Planning Coordinator, Transmission Operator, and Reliability Coordinator with an updated list of circuits that have transmission line relays set according to the criteria established in Requirement R1 criterion 2 at least once each calendar year, with no more than 15 months between reports.

FERC VSL G1 Discussion	This VLS does not lower the current level of compliance because this is a new Requirement that did not exist in PRC-023-1.
FERC VSL G2 Discussion	Guideline 2a: The VSL is binary and establishes a severe level. Guideline 2b: The proposed VSL for Requirement R4 does not contain ambiguous language.
FERC VSL G3 Discussion	The proposed VSL is consistent with the corresponding Requirement R4.
FERC VSL G4 Discussion	The proposed VSL is based on a single violation and not a cumulative number of violations.

Requirement R5

Proposed Lower VSL	N/A
Proposed Moderate VSL	N/A
Proposed High VSL	N/A
Proposed Severe VSL	The responsible entity did not provide its Regional Entity, with an updated list of circuits that have transmission line relays set according to the criteria established in Requirement R1 criterion 12 at least once each calendar year, with no more than 15 months between reports.
FERC VSL G1 Discussion	The proposed VSL for Requirement R5 does not have the unintended consequence of lowering the current level of compliance because PRC-023-1 does not have this requirement as it was added to PRC-023-2.
FERC VSL G2 Discussion	Guideline 2a: The proposed VSL is binary and was assigned a severe VSL. Guideline 2b: The proposed VSL for Requirement R5 does not contain ambiguous language.
FERC VSL G3 Discussion	The proposed VSL is consistent with the corresponding Requirement R5.
FERC VSL G4 Discussion	The proposed VSL is based on a single violation and not a cumulative number of violations.

Requirement R6

Proposed Lower VSL	N/A
Proposed Moderate VSL	The Planning Coordinator used the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met parts 6.1 and 6.2, but more than 15 months and less than 24 months lapsed between

	assessments. OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 and 6.2 but failed to include the calendar year in which any criterion in Attachment B first applies. OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 and 6.2 but provided the list of circuits to the Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area between 31 days and 45 days after the list was established or updated. (part 6.2)
Proposed High VSL	The Planning Coordinator used the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met parts 6.1 and 6.2, but 24 months or more lapsed between assessments. OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 and 6.2 but provided the list of circuits to the Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area between 46 days and 60 days after list was established or updated. (part 6.2).
Proposed Severe VSL	The Planning Coordinator failed to use the criteria established within Attachment B to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard. OR The Planning Coordinator used the criteria established within Attachment B, at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard but failed to meet parts 6.1 and 6.2. OR The Planning Coordinator used the criteria established within Attachment B at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard but failed to maintain the list of circuits determined according to the process described in Requirement R6. (part 6.1) OR The Planning Coordinator used the criteria established within Attachment B

	at least once each calendar year, with no more than 15 months between assessments to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard and met 6.1 but failed to provide the list of circuits to the Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within its Planning Coordinator area or provided the list more than 60 days after the list was established or updated. (part 6.2) OR The Planning Coordinator failed to determine the circuits in its Planning Coordinator area for which applicable entities must comply with the standard.
FERC VSL G1 Discussion	The proposed VSL for Requirement R6 does not have the unintended consequence of lowering the current level of compliance. The currently approved VSL for Requirement R3 of PRC-023-1 is binary with only a Severe VSL assigned. However, the structure of Requirement R6 is very different from the requirement it replaced (R3 in PRC-023-1) and the new structure does allow for partial compliance. In its June 19, 2008 VSL Order, FERC indicated a preference for using graduated VSLs wherever practical. In this instance, when comparing noncompliance with PRC-023-1 Requirement R3 and noncompliance with PRC-023-2 Requirement R6, both sets of VSLs assign a Severe VSL for failure to perform the study. Thus, the graduated VSL for Requirement R6 does not have the unintended consequence of lowering the current level of compliance.
FERC VSL G2 Discussion	Guideline 2a: N/A Guideline 2b: The proposed VSL for Requirement R6 does not contain ambiguous language
FERC VSL G3 Discussion	The proposed VSL is consistent with the corresponding Requirement R6.
FERC VSL G4 Discussion	The proposed VSL is based on a single violation and not a cumulative number of violations.

V. PROPOSED NERC RULES OF PROCEDURE SECTION 1700—CHALLENGES TO DETERMINATIONS

FERC directed in Order No. 733 NERC to develop a mechanism that would allow entities to challenge criticality determinations made by the Planning Coordinators in compliance with the proposed PRC-023-2 Reliability Standard. Paragraph 97 of Order No. 733 states:

> 97. Finally commenters argue that there should be some mechanism for entities

> to challenge criticality determinations. We agree that such a mechanism is appropriate and direct the ERO to develop an appeals process (or point to a process in its existing procedures) and submit it to the Commission no later than one year after the date of this Final Rule.

In response to this directive, NERC staff developed the proposed NERC Rules of Procedure Section 1700—Challenges to Determinations, included at **Exhibit E** to this filing. Under the proposed Section 1700, a registered entity with concerns about a determination by a Planning Coordinator regarding the circuits in its Planning Coordinator area for which registered entities must comply with the PRC-023-2 standard, would first work with the Planning Coordinator directly. If the matter cannot be resolved there, the registered entity may ask the appropriate Regional Entity to decide the matter. An entity not satisfied with the Regional Entity decision may appeal to NERC. Review at the NERC level would be handled by a panel appointed by the NERC Board of Trustees for that purpose. The NERC Board of Trustees would have the discretion, but not the obligation, to review the matter further upon request. Upon the final NERC Board of Trustees' decision on the matter, a registered entity may seek ERO governmental authority review of the NERC decision.

The proposed Section 1700—Challenges to Determinations was posted for a forty-five day comment period, from January 21, 2011 to March 7, 2011. Nine parties provided comments in response to the proposed changes.[34] Proposed Section 1700 was widely supported by all those who commented.

Comments received were generally focused on the following points:

- Several commenters requested more clarity regarding the intent of Section 1700. One commenter specifically pointed out that the scope of authority in Section 1701 was vague, and NERC should state that Section 1701 governs appeals under the PRC-023 Reliability Standard. Other commenters requested that Section 1700 not be limited to situations presented solely by the PRC-023 Reliability Standard.

[34] The full set of comments received on the proposed Section 1700 is available at: http://www.nerc.com/page.php?cid=1|8|169.

- One commenter proposed revising Section 1702.1 to more closely match the language in FERC's Order No. 733 directive for facilities that "are critical to the reliability of the bulk power system" rather than the proposed Section 1702.1 language which provides for "circuits in [the] Planning Coordinator Area for which Registered Entities must comply with the standard."

- Several commenters suggested modifying the proposed Section 1700 to more clearly define and formalize the timeframes for every step of the appeal process for expediency and monitoring purposes. One commenter suggested that the opportunity to appeal not be left open-ended and proposed that a 60-day window from the date of notification to file an appeal. Another commenter suggested setting the deadlines for submitting requests to the NERC Board of Trustees and to applicable governmental authorities to 30 days each. Another commenter requested a definite time period by which the Board of Trustees must: (i) decline to review the decision of the panel; and (ii) issue a determination (if it wishes to do so) on appeal.

- Two commenters suggested that the proposed rule should include a statement of the standard of review that should be applied in making decisions on challenges.

- One commenter requested that a list of criteria similar to that included in Section 1702.6 regarding the make-up of the appeal panel at the NERC Board of Trustee level be added to paragraph 1702.4 regarding the make-up of the appeal panel at the Regional Entity level.

- Several commenters requested clarification on the compliance expectations during the challenge process, and suggestions were made to suspend compliance obligations while the appeals process is ongoing.

- One commenter suggested limiting the authority granted in Section 1702.5 to appeal decisions to only affected Registered Entities, rather than "any entity."

- Two commenters proposed adding additional procedures to require Planning Coordinators to establish their own formal processes for receiving challenges to determinations. One commenter suggested that these provisions would also clarify which Planning Coordinator personnel should be provided with the notice of a challenge from a Registered Entity.

In response to comments received, NERC made the following changes to the proposed Section 1700:

- Section 1702.1 was modified to more closely track the language in the PRC-023 standard to specify that a challenge of a Planning Coordinator's determination will apply to sub-200kV circuits in its Planning Coordinator area for which Transmission Owners, Generator Owners, and Distribution Providers must comply with PRC-023.

- Section 1702.2 was added to include more clarity on procedures the Planning Coordinator must follow. This includes establishing a procedure for a Registered Entity to submit a written request for an explanation of a determination made by the Planning Coordinator, timelines for submitting such a request, and a timeline for responding to such a request.

- Section 1702.3 was modified to provide more clarity on the elements required to support a Registered Entity's challenge of a Planning Coordinator's determination.

- Section 1702.4 was added to state that a challenge filed in good faith would suspend the time period for compliance with the PRC-023 standard for the particular facility involved until the challenge is withdrawn, settled, or resolved.

- Section 1702.5 was modified to provide more clarity regarding what is required in the Regional Entity's decision on the challenge by a Registered Entity. Section 1702.5 also includes the standard of review: The Regional Entity should affirm the determination of the Planning Coordinator if it is supported by substantial evidence.

- Section 1702.6 was modified to state that a Regional Entities, Registered Entity, or Planning Coordinator may file a response to an appeal within 30 days of the appeal.

- Section 1702.7 was modified to provide more clarity to the scope of the panel that the Board of Trustees appoints to hear appeals from Regional Entity decisions regarding PRC-023. A time period of 90 days for the panel to issue its decision was also added to this section.

- Section 1702.8 was modified to clarify the process that the Board of Trustees will use in reviewing decisions issued by the panel appointed by the board. Importantly, review by the Board of Trustees is at the Board's discretion. The process includes three options: (a) issuing a decision on the merits, which shall be the final NERC decision; (b) issuing a notice declining to review the decision of the panel, in which case the panel's decision shall be the final NERC decision; or (3) if no written decision or notice declining review is issued within 90 days, the appeal shall have been deemed denied by the board.

- Section 1702.9 was modified to provide that a Registered Entity or Planning Coordinator may appeal the final NERC decision to the applicable governmental authority within 30 days of the decision.

- Section 1702.10 was modified to encourage the Planning Coordinators and Registered Entity to resolve any disputes using alternative dispute resolution procedures.

Additionally, one commenter suggested that a Regional Entity should be required to make use of the formal hearing procedures from the Compliance Monitoring and Enforcement Program for deciding all challenges under the proposed PRC-023-2 standard. NERC did not implement that change, because NERC determined that the nature of the decision does not warrant those formal procedures.

VI. SUMMARY OF THE RELIABILITY STANDARD DEVELOPMENT PROCEEDINGS

a. Development History

The proposed PRC-023-2 standard incorporates the first phase of the changes to PRC-023-1 that were directed by FERC in Order No. 733, which focuses on Transmission Relay Loadability. The standard drafting team posted the draft PRC-023-2 Reliability Standard for 3 public comment periods, including one informal comment period, one formal comment period, and one Successive Ballot and comment period. Additionally, the standard drafting team informally posted and requested comments on Attachment B to the proposed PRC-023 standard.

The initial draft of the standard was posted for a 30-day informal comment period from August 19, 2010 to September 19, 2010. The proposed PRC-023-2 standard includes an "applicability test" that was established by a Blue Ribbon Panel of industry experts formed by NERC for use by Planning Coordinators to determine whether a sub-200 kV facility must comply with PRC-023-2. The applicability test (Attachment B of the standard) was separately posted for an abbreviated 20-day informal comment period from September 23, 2010 to October 12, 2010.

The PRC-023-2 standard including the Attachment B applicability test was posted for a formal 45-day comment period with a 10-day concurrent ballot period from November 1, 2010

through December 16, 2010. A Ballot Pool was formed during the first 30 days of the comment period, and a concurrent initial ballot period was open during the last 10-days of the comment period, from December 7, 2010 through December 16, 2010. The drafting team received 38 sets of comments, including comments from more than 67 different people from approximately 73 companies representing 9 of the 10 Industry Segments. Based on the comments received, the changes made to the standard primarily clarified the obligations assigned to the entities and did not substantively change the requirements. The significant comments received were focused on the following areas of the standard:

- Applicability: Modified to separately address the circuits for which Transmission Owners, Generator Owners, and Distribution Providers must comply with Requirements R1 through R5 versus the circuits to which the Planning Coordinator must apply the criteria in Attachment B per Requirement R6

- Effective Dates: The effective dates were modified to address the timeframe in which Facility owners must comply with Requirements R1 through R5 when the Planning Coordinator identifies a circuit for which the Facility owner must comply with the standard

- Requirement R1: Modified to provide additional clarity to ensure that protection settings do not expose transformers to fault level and duration that exceed their mechanical withstand capability.

- Requirement R5: Registered Entities that set transmission line relays according to Requirement R1 criterion 12 are required to provide a list of the circuits associated with those relays to the Regional Entity at least once each calendar year, with no more than 15 months between reports. The drafting team modified the requirement to allow that an updated list of the circuits associated with those relays be provided. The drafting team also added clarification within the requirement that the purpose is to allow the ERO to compile a list of all circuits that have protective relay settings that limit circuit capability.

- Requirement R6: This requirement was modified to avoid redundancy with other sections of this standard and to improve the clarity of the requirement. References made to the Statement of Compliance Registry were replaced with the phrase "that are included on a critical facilities list defined by the Regional Entity."

- Requirement R7: Deleted to remove the double jeopardy concern between Requirements R1 through R5 and Requirement R7.

- Attachment B (Applicability Test): Significant modifications were made to Attachment B to help clarify the purpose and understanding of the requirements of this standard and the applicability of the criteria identified in Attachment B.

A 20-day successive ballot and non-binding poll was conducted on the proposed PRC-023-2 standard and VRF/VSLs, respectively, from January 24, 2011 to February 14, 2011. The successive ballot achieved a quorum of 83.95% and a weighted segment approval of 65.71%. For the non-binding poll on the VRF/VSLs, 80.0% of those registered provided an opinion, and 65% of those who provided an opinion indicated support for the VRFs and VSLs that were proposed. The drafting team revised the text of the standard and the VRF/VSLs to account for industry input and the formal comments received, and formally responded to each of the stakeholder comments.

The significant comments received that resulted in modifications to the standard were focused on the following areas:

- Applicability: The references to circuits operated below 100 kV "that are included on a critical facilities list defined by the Regional Entity" were revised to address industry concerns. The drafting team modified this reference in the standard to circuits operated below 100 kV that are "part of the BES" to provide additional clarification and alignment with the definition of Bulk Electric System (BES) presently under development.

- Effective Dates: The presentation of effective dates was revised from a narrative description to a tabular format to make the dates easier to comprehend. Commenters had expressed confusion with the five different effective dates, and their relationship with effective dates in PRC-023-1 and the timing of Planning Coordinator assessments.

- Attachment A: Section 1.6 was revised by inserting parenthetical statements to clarify that the phrase "phase overcurrent supervisory elements" refers to phase fault detectors and "current-based communication-assisted schemes" refers to pilot wire, phase comparison, and line current differential schemes.

- Measures: M4 and M5 were modified to clarify that attestations are acceptable forms of evidence in years when there are no changes to the applicable lists of circuits.

- Violation Severity Levels: A VSL was added for Requirement R6 to cover the situation where an entity is totally noncompliant with the requirement

The PRC-023-2 Reliability Standard was posted for a 10-day Recirculation Ballot from February 24, 2011 to March 7, 2011, and an industry webinar was held on March 2, 2011 to provide the industry with an opportunity to ask questions and better understand the issues and concerns being addressed and the reasoning behind the revisions made to the standard. Reliability Standard PRC-023-2 passed the recirculation ballot with a weighted affirmative vote of 68.83% and a quorum of 87.35%.

Respectfully submitted,

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Exhibits A - F

(Available on the NERC Website at http://www.nerc.com/fileUploads/File/Filings/Attachments_PRC-023-2.pdf)