

December 30, 2014

**VIA ELECTRONIC FILING**

Ms. Erica Hamilton, Commission Secretary  
British Columbia Utilities Commission  
Box 250, 900 Howe Street  
Sixth Floor  
Vancouver, B.C.  
V6Z 2N3

RE: *North American Electric Reliability Corporation*

Dear Ms. Hamilton:

The North American Electric Reliability Corporation (“NERC”) hereby submits Notice of Filing of the North American Electric Reliability Corporation of Proposed Reliability Standard PRC-006-2. NERC requests, to the extent necessary, a waiver of any applicable filing requirements with respect to this filing.

Please contact the undersigned if you have any questions.

Respectfully submitted,

/s/ William H. Edwards

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

Enclosure

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

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**BEFORE THE  
BRITISH COLUMBIA UTILITIES COMMISSION  
OF THE PROVINCE OF BRITISH COLUMBIA**

**NORTH AMERICAN ELECTRIC                    )  
RELIABILITY CORPORATION                    )**

**NOTICE OF FILING OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
OF PROPOSED RELIABILITY STANDARD  
PRC-006-2**

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

Charles A. Berardesco  
Senior Vice President and General Counsel  
Holly A. Hawkins  
Associate General Counsel  
Milena Yordanova  
Associate Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
charlie.berardesco@nerc.net  
holly.hawkins@nerc.net  
milena.yordanova@nerc.net

*Counsel for the North American Electric  
Reliability Corporation*

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I.	EXECUTIVE SUMMARY .....	2
II.	NOTICES AND COMMUNICATIONS .....	2
III.	BACKGROUND .....	3
A.	NERC Reliability Standards Development Procedure.....	3
B.	History of PRC-006 and Project 2008-02: Underfrequency Load Shedding.....	4
IV.	JUSTIFICATION FOR APPROVAL.....	5
A.	Purpose and Applicability of PRC-006-2.....	5
1.	FERC Directive .....	5
2.	Proposed Requirement R15 .....	6
3.	Proposed Requirements R9 and R10 .....	7
B.	Enforceability of Proposed Reliability Standard.....	8

<b>Exhibit A</b>	Proposed Reliability Standard PRC-006-2
<b>Exhibit B</b>	Implementation Plan
<b>Exhibit C</b>	Reliability Standards Criteria
<b>Exhibit D</b>	Consideration of FERC Directive
<b>Exhibit E</b>	Underfrequency Load Shedding Standard Drafting Team Response to Paragraph 81 and Independent Expert Review Project Recommendations for PRC-006-1
<b>Exhibit F</b>	Analysis of Violation Risk Factors and Violation Severity Levels
<b>Exhibit G</b>	Summary of Development History and Complete Record of Development
<b>Exhibit H</b>	Standard Drafting Team Roster

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BRITISH COLUMBIA UTILITIES COMMISSION  
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**NORTH AMERICAN ELECTRIC )  
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**NOTICE OF FILING OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
OF PROPOSED RELIABILITY STANDARD  
PRC-006-2**

The North American Electric Reliability Corporation (“NERC”) hereby submits proposed Reliability Standard PRC-006-2 (Automatic Underfrequency Load Shedding) (Exhibit A). The proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest.<sup>1</sup> NERC also provides notice of: (i) the Implementation Plan for the proposed Reliability Standard (Exhibit B); (iii) the associated changes to the Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) (Exhibits A and F); and (iv) the retirement of Reliability Standard PRC-006-1 as listed in the Implementation Plan. The changes in proposed Reliability Standard apply throughout North America and do not conflict with any existing regional variances contained in the PRC-006 Reliability Standard.

This filing presents the technical basis and purpose of proposed Reliability Standard PRC-006-2, a summary of the development history (Exhibit G), and a demonstration that the proposed Reliability Standard meets the Reliability Standards criteria (Exhibit C). The NERC Board of Trustees adopted proposed Reliability Standard PRC-006-2 on November 13, 2014.

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

## **I. EXECUTIVE SUMMARY**

Proposed Reliability Standard PRC-006-2 contains changes that specifically address the Federal Energy Regulatory Commission's ("FERC") concern related to Requirement R9 of PRC-006-1 in Order No. 763.<sup>2</sup> In Order No. 763, FERC approved PRC-006-1, but directed NERC to include explicit language in a subsequent version of the standard clarifying that applicable entities are required to implement corrective actions identified by the Planning Coordinator in accordance with a schedule established by the same Planning Coordinator.<sup>3</sup>

Proposed Reliability Standard PRC-006-2, through proposed new Requirement R15, and proposed enhanced language of the existing Requirements R9 and R10, requires the Planning Coordinator to develop a schedule for implementation of any necessary corrective actions, and requires that the applicable entities will implement these corrective actions according to the schedule established by the Planning Coordinator.

For the reasons discussed in this filing, the proposed Reliability Standard PRC-006-2 is just, reasonable, not unduly discriminatory or preferential, and in the public interest.

## **II. NOTICES AND COMMUNICATIONS**

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

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<sup>2</sup> *Automatic Underfrequency Load Shedding and Load Shedding Plans Reliability Standards*, Order No. 763, 139 FERC ¶ 61,098 (2012), *order on clarification*, 140 FERC ¶ 61,164 (2012).

<sup>3</sup> *Id.* at P 48.

Charles A. Berardesco  
Senior Vice President and General Counsel  
Holly A. Hawkins  
Associate General Counsel  
Milena Yordanova  
Associate Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
charles.berardesco@nerc.net  
holly.hawkins@nerc.net  
milena.yordanova@nerc.net

Valerie L. Agnew  
Director of Standards  
North American Electric Reliability  
Corporation  
3353 Peachtree Road, N.E.  
Suite 600, North Tower  
Atlanta, GA 30326  
(404) 446-2560  
(404) 446-2595 – facsimile  
valerie.agnew@nerc.net

### **III. BACKGROUND**

#### **A. NERC Reliability Standards Development Procedure**

The proposed Reliability Standard was developed in an open and fair manner and in accordance with the Reliability Standard development process. NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC Standard Processes Manual.<sup>4</sup> 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 and thus satisfies certain of the criteria for approving Reliability Standards. The development process is open to any person or entity with a legitimate interest in the reliability of the Bulk-Power System. NERC considers the comments of all stakeholders, and stakeholders must approve, and the NERC Board of Trustees must adopt a Reliability Standard before the Reliability Standard is submitted to the applicable governmental authorities.

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<sup>4</sup> The NERC *Rules of Procedure* are available at <http://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx>. The NERC *Standard Processes Manual* is available at [http://www.nerc.com/comm/SC/Documents/Appendix\\_3A\\_StandardsProcessesManual.pdf](http://www.nerc.com/comm/SC/Documents/Appendix_3A_StandardsProcessesManual.pdf).

## **B. History of PRC-006 and Project 2008-02: Underfrequency Load Shedding**

PRC-006 establishes design and documentation requirements for automatic underfrequency load shedding (“UFLS”) programs to arrest declining frequency, assist recovery of frequency following underfrequency events, and provide last resort system preservation measures. On April 4, 2006, NERC submitted Reliability Standard PRC-006-0 as a “fill-in-the-blank”<sup>5</sup> standard because the Reliability Standard included references to regional procedures that had not been submitted by NERC.

On April 13, 2011, NERC filed Reliability Standard PRC-006-1. In Order No. 763, FERC approved PRC-006-1 and stated that “[the] Reliability Standard is necessary for reliability because UFLS is used in extreme conditions to stabilize the balance between generation and load after an electrical island has been formed, dropping enough load to allow frequency to stabilize within the island.”<sup>6</sup> However, FERC expressed concern that PRC-006-1 did not explicitly state how soon after an event an entity would need to implement the corrective actions identified by a Planning Coordinator. As a result, FERC directed NERC to make it explicit, in a future version of PRC-006, that corrective actions should be taken in accordance with the schedule established by the Planning Coordinator.<sup>7</sup>

To address FERC’s directive in Order No. 763, NERC developed PRC-006-2 in Project 2008-02.<sup>8</sup> The UFLS standard drafting team: 1) revised PRC-006-1 to meet FERC’s directive in Order No. 763; and 2) determined whether any of the PRC-006-1 Requirements should be

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<sup>5</sup> In Order No. 693, FERC classified certain Reliability Standards as “fill-in-the-blank” standards because they contained provisions that required the regional reliability organizations to develop criteria for use by users, owners or operators within each region. Order No. 693 at PP 287-88, 297.

<sup>6</sup> Order No. 763, 139 FERC ¶ 61,09 at P 12.

<sup>7</sup> *Id.* at P 48.

<sup>8</sup> This Project also included the development of a proposed Reliability Standard addressing undervoltage load shedding, which is the topic of a separate filing submitted by NERC. The UFLS and undervoltage load shedding aspects of the Project were separately developed within the Project.

modified or retired in response to a review of Requirements pursuant to NERC's Paragraph 81 initiative in Project 2013-02.<sup>9</sup> The standard drafting team also considered recommendations from the Independent Experts Review Panel ("IERP").<sup>10</sup>

#### **IV. JUSTIFICATION**

As discussed in Exhibit C and below, the proposed Reliability Standard PRC-006-2, satisfies the Reliability Standards criteria and is just, reasonable, not unduly discriminatory or preferential, and in the public interest. The following section provides a brief summary of the purpose and applicability of the proposed Reliability Standard and how the enhanced language of PRC-006-2 satisfies the outstanding FERC directive in Order No. 763. Finally, this section includes a discussion of the enforceability of the proposed Reliability Standard.

##### **A. Purpose and Applicability of PRC-006-2**

The purpose and applicability of the proposed Reliability Standard PRC-006-2 remains unchanged from PRC-006-1. The purpose of the proposed Reliability Standard is to establish design and documentation requirements for automatic UFLS programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures. The proposed Reliability Standard continues to apply to the same entities as in PRC-006-1.

##### **1. FERC Directive**

As previously noted, in Order No. 763, FERC issued a directive requiring NERC to include in a subsequent version of PRC-006-1 an explicit statement that entities should

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<sup>9</sup> NERC initiated a Project 2013-02 in response to P 81 of FERC's order approving NERC's Compliance Enforcement Initiative, including the Find, Fix, Track and Report program. In that paragraph, FERC encouraged NERC to identify requirements in Reliability Standards that would likely provide little protection for Bulk-Power System reliability or may be redundant. Consistent with FERC's guidance NERC initiated the "P 81 Project" to identify such requirements. *See N. Am. Elec. Reliability Corp.*, 138 FERC ¶ 61,193 at P 81 (2012) ("P 81").

<sup>10</sup> For additional information related to NERC's Project 2013-02 Paragraph 81 and the IERP project, *see* Exhibit E.



implement corrective actions in accordance with the schedule established by the Planning Coordinator. The directive is satisfied, as noted below, through the introduction of a new proposed Requirement R15 and associated modifications in R9 and R10. The proposed improvements in the language of the proposed Reliability Standard explicitly require the Planning Coordinator to develop a Corrective Action Plan and schedule for implementation by the applicable entities.

2. Proposed Requirement R15

The language of the proposed Requirement R15 states:

***R15.*** *Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. [VRF: High][Time Horizon: Long-term Planning]*

***15.1.*** *For UFLS design assessments performed under Requirement R4 or R5, the Corrective Action Plan shall be developed within the five-year time frame identified in Requirement R4.*

***15.2.*** *For UFLS design assessments performed under Requirement R12, the Corrective Action Plan shall be developed within the two-year time frame identified in Requirement R12.*

Under proposed Requirement R15, the Corrective Action Plan developed by the Planning Coordinator will identify the specific timeframe for an UFLS entity to implement corrections to remedy any deficiencies identified by the Planning Coordinator following a UFLS design assessment under Requirements R4 (dynamic simulations), R5 (multiple planning Coordinator

areas), and R12 (program deficiencies identified following an event assessment).<sup>11</sup> Of particular note, the development of the Corrective Action Plan and schedule for implementation must be completed within the timeframe for performing assessments and consideration of deficiencies already included in the respective Requirements referenced in Parts 15.1 and 15.2 of Requirement R15.

As previously explained by NERC in its comments to FERC's Notice of Proposed Rulemaking on PRC-006-1, the time allotted by the Planning Coordinator for implementing corrections in the UFLS program will depend on the extent of the deficiencies identified.<sup>12</sup> The implementation schedule specified by the Planning Coordinator will reflect the time necessary for budget planning and implementation.

In line with the UFLS design-assessment timeframes already established by Reliability Standard PRC-006-1, the standard drafting team included a five-year time limit for developing a Corrective Action Plan and schedule associated with deficiencies identified by assessments performed under Requirement R4 and R5 (*See* Requirement R15, part 15.1). Requirement R15 also includes a two-year time period for developing a Corrective Action Plan and schedule associated with deficiencies identified under Requirement R12 (*See* Requirement R15, part 15.2).

### 3. Proposed Requirements R9 and R10

***R9.*** *Each UFLS entity shall provide automatic tripping of Load in accordance with the UFLS program design and schedule for implementation, including any Corrective Action Plan, as determined by its Planning Coordinator(s) in each Planning Coordinator area in which it owns assets. [VRF: High][Time Horizon: Long-term Planning]*

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<sup>11</sup> A "Corrective Action Plan" is defined in the NERC Glossary as, "a list of actions and an associated timetable for implementation to remedy a specific problem."

<sup>12</sup> *See* NERC Dec. 21, 2011 Comments at 8.

***R10.** Each Transmission Owner shall provide automatic switching of its existing capacitor banks, Transmission Lines, and reactors to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, as determined by the Planning Coordinator(s) in each Planning Coordinator area in which the Transmission Owner owns transmission. [VRF: High][Time Horizon: Long-term Planning]*

In addition to adding Requirement R15, the standard drafting team added language to Requirements R9 and R10 that requires UFLS entities (Requirement R9) and/or Transmission Owners (Requirement R10) to implement the Corrective Action Plan and schedule developed by the Planning Coordinator under Requirement R15.<sup>13</sup> These changes provide greater consistency throughout the Requirements in the proposed Reliability Standard.

**B. Enforceability of Proposed Reliability Standard**

Proposed Reliability Standard PRC-006-2 includes Measures that support each Requirement to help ensure that the Requirements will be enforced in a clear, consistent, non-preferential manner and without prejudice to any party. The proposed Reliability Standard also includes VRFs and VSLs for each Requirement, including the new Requirement R15. The VRFs and VSLs for the proposed Reliability Standard comport with NERC and FERC guidelines related to their assignment. A detailed analysis of the assignment of VRFs and the VSLs for proposed Reliability Standard PRC-006-2 is included as Exhibit F.

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<sup>13</sup> In connection with the proposed changes in R9 and R10, the word “application” was replaced with “implementation” in Requirements R3 and R14. *See* Exhibit A.

Respectfully submitted,

/s/ Milena Yordanova

Charles A. Berardesco  
Senior Vice President and General Counsel  
Holly A. Hawkins  
Associate General Counsel  
Milena Yordanova  
Associate Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
charlie.berardesco@nerc.net  
holly.hawkins@nerc.net  
milena.yordanova@nerc.net

*Counsel for the North American Electric  
Reliability Corporation*

Date: December 30, 2014

**EXHIBITS A—B and D – H**

(Available on the NERC Website at:

<http://www.nerc.com/FilingsOrders/ca/Canadian%20Filings%20and%20Orders%20DL/PRC-006-2%20exhibits.pdf>)

**Exhibit C**  
**Reliability Standards Criteria**

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

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

Proposed Reliability Standard PRC-006-2, as compared to PRC-006-1, continues to achieve the specific reliability goal of establishing a framework for developing, designing, assessing and coordinating automatic underfrequency load shedding (“UFLS”) programs. Proposed PRC-006-2 enhances the language of the currently effective version of this Reliability Standard by adding language requiring the applicable entities to implement any corrective actions according to a schedule established by the Planning Coordinator.

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

The proposed Reliability Standard applies to Planning Coordinators, UFLS entities responsible for the ownership, operation, or control of UFLS equipment as required by the UFLS program established by the Planning Coordinators (Transmission Owners and Distribution Providers), and Transmission Owners that own Elements identified in the UFLS program established by the Planning Coordinators. The changes reflected in the proposed Reliability Standard do not change the applicability of the PRC-006-1 Reliability Standard.

The proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply. The proposed new Requirement R15 clearly specifies that the Planning Coordinator should develop a Corrective Action Plan and a schedule for

implementation by the UFLS entities if deficiencies in the UFLS program are identified. In addition, the revised language of Requirements R9 and R10 unambiguously specify that the UFLS entities and Transmission Owners should follow the Corrective Action Plan implementation schedule established by the Planning Coordinator.

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

The Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) for the proposed Reliability Standard comport with NERC and FERC guidelines related to their assignment. The assignments of the severity levels for the VSLs, including the VSL for the new Requirement R15, are consistent with the corresponding Requirement and will ensure uniformity and consistency in the determination of penalties. The VSLs do not use any ambiguous terminology, and support uniformity and consistency in the determination of similar penalties for similar violations. For these reasons, the proposed Reliability Standard includes clear and understandable consequences.

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

The proposed Reliability Standard contains Measures that support the Requirements by clearly identifying what is required and how the Requirements will be measured for compliance. The Measures, listed after the Requirements of the proposed PRC-006-2 Reliability Standard, are unchanged from the currently effective version of the standard, except for the Measures for the new Requirement R15, and the modified R9 and R10. The Measures for these three proposed Requirements are as follows:

**M9.** Each UFLS Entity shall have dated evidence such as spreadsheets summarizing feeder load armed with UFLS relays,

spreadsheets with UFLS relay settings, or other dated documentation that it provided automatic tripping of load in accordance with the UFLS program design and schedule for implementation , including any Corrective Action Plan, per Requirement R9.

**M10.** Each Transmission Owner shall have dated evidence such as relay settings, tripping logic or other dated documentation that it provided automatic switching of its existing capacitor banks, Transmission Lines, and reactors in order to control over-voltage as a result of underfrequency load shedding if required by the UFLS program and schedule for implementation, including any Corrective Action Plan, per Requirement R10.

**M15.** Each Planning Coordinator that conducts a UFLS design assessment under Requirement R4, R5, or R12 and determines that the UFLS program does not meet the performance characteristics in Requirement R3, shall have a dated Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, that was developed within the time frame identified in Part 15.1 or 15.2.

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

The proposed Reliability Standard achieves its reliability goal effectively and efficiently.

The proposed Reliability Standard continues to employ the same process for establishing and implementing UFLS programs, but clarifies that the applicable entities should implement any Corrective Action Plan according to the schedule established by the Planning Coordinator. This clarification removes any potential ambiguities in the language of the proposed Reliability Standard and promotes efficiency in implementing and monitoring compliance of the Reliability Standard.



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

The proposed Reliability Standard does not reflect a “lowest common denominator” approach. The changes directly respond to the directive issued by FERC in Order No. 763.

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

The proposed Reliability Standard includes variances for the Western Electricity Coordinating Council and the Quebec Interconnection. These variances remain the same as those included in PRC-006-1, with the exception of minor changes to reflect the updated version number in cross references within each variance.

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

Proposed Reliability Standard PRC-006-1 has no undue negative effect on competition and does not unreasonably restrict transmission or generation operation on the Bulk-Power System.

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

The effective date for the proposed Reliability Standard appropriately balances the urgency to implement the standard against the time needed by those who must comply to develop necessary adjustments to procedures in support of the proposed Reliability Standard. The effective date provided in the Implementation Plan allows covered Entities adequate and reasonable time to comply with the proposed Reliability Standard.

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

The proposed Reliability Standard was developed in accordance with NERC's ANSI-accredited processes for developing and approving Reliability Standards. Exhibit G includes a summary of the standard development proceedings, and details the processes followed to develop the Reliability Standard. These processes included, among other things, multiple comment periods, pre-ballot review periods, and balloting periods. Additionally, all meetings of the standard drafting team were properly noticed and open to the public.

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

NERC has not identified competing public interests regarding the proposed Reliability Standard. No comments were received that indicated the proposed Reliability Standard conflicts with other vital public interests.

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

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