



June 17, 2011

**VIA ELECTRONIC FILING**

Neil Thomson  
SaskPower,  
Law, Land Regulatory Affairs  
2025 Victoria Ave.  
Regina, Saskatchewan  
S4P 0S1

Re: *North American Electric Reliability Corporation*

Dear Mr. Thomson:

The North American Electric Reliability Corporation (“NERC”) hereby submits this Notice of Filing of:

- Reliability Standard FAC-008-3 — Facility Ratings and the associated Violation Risk Factors and Violation Severity Levels (FAC-008-3), which is included in **Exhibit A** to the petition, effective the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule;<sup>1</sup>
- the implementation plan for Reliability Standard FAC-008-3 — Facility Ratings which is included in **Exhibit B** to the petition; and
- the retirement of two Reliability Standards effective midnight immediately prior to the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule:
  - FAC-008-1- Facility Ratings Methodology
  - FAC-009-1 - Establish and Communicate Facility Ratings.

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<sup>1</sup> Because the proposed FAC-008-3 combines the currently effective FAC-008-1 and FAC-009-1, a redlined version of FAC-008-3 is not included in this filing.

The proposed FAC-008-3 standard addresses the important reliability goal of improving uniformity and transparency in the Facility Ratings process. The standard presents clear, measurable, and enforceable Requirements that require each Transmission Owner and Generator Owner to develop Facility Ratings methodologies for its facilities, which are essential for the determination of System Operating Limits. It also combines the elements of current FAC-008-1 and FAC-009-1 into a single standard.

Proposed FAC-008-3 addresses the three directives in Federal Energy Regulatory Commission (“FERC”) Order No. 693 related to FAC-008-1. In response to the first directive that the standard document underlying assumptions and methods used to determine normal and emergency facility ratings, the proposed standard requires Transmission Owners and Generation Owners to document underlying assumptions and methods used to determine normal and emergency Facility Ratings. This added transparency will allow customers, regulators, and other affected users, owners, and operators of the bulk power system to understand how facility owners set Facility Ratings through differing methods that provide equivalent results. Additionally, the proposed standard now requires Transmission Owners and Generation Owners to make their Facility Ratings documentation and methodologies available for inspection and technical review, thereby contributing to the important reliability goal of improving uniformity and transparency in the Facility Ratings process.

In response to the second directive that facility ratings be developed consistent with industry standards developed through an open, transparent, and validated process, the proposed FAC-008-3 Reliability Standard now requires that the methodology used to establish the Ratings of the equipment that comprises the facilities be consistent with at

least: (1) ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications such as nameplate rating; (2) one or more industry standards developed through an open process such as the Institute of Electrical and Electronic Engineers (IEEE) or International Council on Large Electric Systems (CIGRE); or (3) a practice that has been verified by testing, performance history, or engineering analysis. These improvements to Version 3 of the standard improves reliability by ensuring that a methodology chosen by a facility owner is consistent with industry standards developed through an open, transparent, and validated process.

Finally, the proposed standard presented for approval addresses the third Order No. 693 directive to modify the FAC-008-1 standard to require Transmission Owners and Generator Owners to calculate the increase in capacity if the first-limiting element is removed only for those facilities for which thermal ratings cause: (1) an Interconnection Reliability Operating Limit; (2) a limitation of Total Transfer Capability; (3) an impediment to generation deliverability; or (4) an impediment to service to major cities or load pockets. The standard drafting team interpreted the intent of this directive to be for reliability entities to be able to take rating information and prepare Operating Plans or Planning Assessments prior to Real-time, which could allow for better situational awareness and improved reliability of the bulk electric system.

Accordingly, the proposed FAC-008-3 Reliability Standard serves the important reliability goal of ensuring that each Transmission Owner and Generator Owner will establish Facilities Ratings. Additionally, the proposed standard improves uniformity and transparency in the Facility Ratings process by requiring Transmission Owners and

Generation Owners to make their Facility Ratings documentation and methodologies available for inspection and technical review.

The FAC-008-3 — Facility Ratings Reliability Standard was approved by the NERC Board of Trustees on May 24, 2011.

This Notice consists of the following:

- This transmittal letter;
- A table of contents for the entire petition;
- A narrative description providing justification for the proposed Reliability Standard FAC-008-3 — Facility Ratings;
- Reliability Standard FAC-008-3 — Facility Ratings (**Exhibit A**);
- Implementation Plan for Reliability Standard FAC-008-3 — Facility Ratings (**Exhibit B**);
- Mapping Document Between FAC-008-3 — Facility Ratings and FAC-008-1- Facility Ratings Methodology FAC-009-1 - Establish and Communicate Facility Ratings (**Exhibit C**);
- Consideration of Comments Reports created during the development of Reliability Standard FAC-008-3 — Facility Ratings (**Exhibit D**);
- The complete development record of the proposed Reliability Standard (**Exhibit E**); and
- The Standard Drafting Team Roster for NERC Standards Development Project 2009-06 Facility Ratings (**Exhibit F**).

Please contact the undersigned if you have any questions.

Respectfully submitted,

/s/ Holly A. Hawkins

Holly A. Hawkins

*Assistant General Counsel for North  
American Electric Reliability  
Corporation*



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## I. INTRODUCTION

The North American Electric Reliability Corporation (“NERC”) hereby provides notice of the following proposed Reliability Standard, Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”), the corresponding implementation plan, and retirement of two currently-effective Reliability Standards:

- Reliability Standard FAC-008-3 — Facility Ratings and the associated Violation Risk Factors and Violation Severity Levels (FAC-008-3), which is included in **Exhibit A**, effective the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule;<sup>2</sup>
- the implementation plan for Reliability Standard FAC-008-3 — Facility Ratings which is included in **Exhibit B**; and
- the retirement of two Reliability Standards effective the midnight immediately prior to the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule:
  - FAC-008-1- Facility Ratings Methodology (FAC-008-1); and
  - FAC-009-1 - Establish and Communicate Facility Ratings (FAC-009-1).

The proposed FAC-008-3 Reliability Standard addresses each of three directives associated with FAC-008-1 issued by FERC in Order No. 693.<sup>3</sup> This filing also meets the deadline for filing established in FERC’s March 18, 2010 and September 16, 2010 orders.

Order No. 693 contains three directives related to FAC-008:

- 1) Document underlying assumptions and methods used to determine normal and emergency facility ratings;
- 2) Develop facility ratings consistent with industry standards developed through an open, transparent, and validated process; and

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<sup>2</sup> Because the proposed FAC-008-3 combines the currently effective FAC-008-1 and FAC-009-1, a redlined version of FAC-008-3 is not included in this filing.

<sup>3</sup> *Mandatory Reliability Standards for the Bulk-Power System*, 118 FERC ¶ 61,218, FERC Stats. & Regs. ¶ 31,242 (2007) (Order No. 693), *Order on reh’g, Mandatory Reliability Standards for the Bulk-Power System*, 120 FERC ¶ 61,053 (Order No. 693-A) (2007).



- 3) For each facility, identify the limiting component and, for critical facilities, the resulting increase in rating if that component is no longer limiting.

On May 12, 2010, the NERC Board of Trustees approved the proposed FAC-008-2 Reliability Standard that addressed the first two of the FERC directives in Order No. 693. NERC's proposed FAC-008-2 Reliability Standard was not filed with FERC for approval, but instead was revisited by the standard drafting team so that the third Order No. 693 directive could be addressed in response to FERC's March 18, 2010 Order directing that the third FAC-008 directive be addressed within 90 days of FERC issuing an Order in response to NERC's filing proposing changes to its standards development procedure.<sup>4</sup> FERC issued an order in response to NERC's compliance filing proposing changes to the standards development procedures on March 17, 2011.<sup>5</sup> As a result, the filing on FAC-008 addressing the third directive from Order No. 693 is due to be filed no later than June 15, 2011.

The ballot pool for FAC-008-3 approved the proposed standard with a quorum of 91.25% and an affirmative, weighted segment vote of 78.92%. On May 24, 2011, the NERC Board of Trustees approved the proposed FAC-008-3 Reliability Standard and the associated implementation plan. The proposed FAC-008-3 standard includes modifications to the standard that addresses all three FERC directives in Order No. 693. The NERC board also approved the retirement of FAC-008-1 and FAC-009-1 when FAC-008-3 becomes effective.

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<sup>4</sup> *North American Electric Reliability Corp., Order Directing NERC to Propose Modification of Electric Reliability Organization Rules of Procedure*, 130 FERC ¶61,203 (March 18, 2010) ("March 18 Order"). See also, *North American Electric Reliability Corp., Order Denying Rehearing, Denying Clarification, Denying Reconsideration, and Denying Request for Stay*, 132 FERC ¶61,218 (September 16, 2010) ("September 16 Order").

<sup>5</sup> See, *Order on Compliance Filing, North American Electric Reliability Corporation*, 134 FERC ¶61,216 (March 17, 2011).

NERC filed the proposed FAC-008-3 implementation plan, in addition to requesting the retirement of FAC-008-1 and FAC-009-1 when FAC-008-3 becomes effective, with FERC, and is also submitting this filing with the other applicable governmental authorities in Canada.

**Exhibit A** to this petition sets forth FAC-008-3. **Exhibit B** contains the Implementation Plan for FAC-008-3. **Exhibit C** contains a “mapping document” between the requirements contained in FAC-008-3 and the two Reliability Standards it replaces, FAC-008-1 and FAC-009-1. **Exhibit D** contains the Consideration of Comments Reports created during the development of the FAC-008-3 standard. **Exhibit E** contains the complete record of development for FAC-008-3. **Exhibit F** includes the roster and biographies for the standard drafting team appointed by the NERC Standards Committee to Project 2009-06 Facility Ratings, the standard drafting team responsible for developing FAC-008-3.

## **II. EXECUTIVE SUMMARY**

The proposed FAC-008-3 standard addresses the important reliability goal of improving uniformity and transparency in the Facility Ratings process. The standard presents clear, measurable, and enforceable Requirements that each Transmission Owner and Generator Owner develop Facility Ratings methodologies for its facilities, which are essential for the determination of System Operating Limits.

Additionally, the proposed standard requires Transmission Owners and Generation Owners to document underlying assumptions and methods used to determine normal and emergency Facility Ratings. This added transparency will allow customers,

regulators, and other affected users, owners, and operators of the bulk power system to understand how facility owners set Facility Ratings through differing methods that provide equivalent results. Additionally, the proposed standard requires Transmission Owners and Generation Owners to make their Facility Ratings documentation and methodologies available for inspection and technical review, thereby contributing to the important reliability goal of improving uniformity and transparency in the Facility Ratings process.

The proposed FAC-008-3 Reliability Standard also requires that the methodology used to establish the Ratings of the equipment that comprises the facilities to be consistent with at least: (1) ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications such as nameplate rating; (2) one or more industry standards developed through an open process such as the Institute of Electrical and Electronic Engineers (IEEE) or International Council on Large Electric Systems (CIGRE); or (3) a practice that has been verified by testing, performance history, or engineering analysis. These changes to Version 3 of the standard improve reliability by ensuring that a methodology chosen by a facility owner is consistent with industry standards developed through an open, transparent, and validated process.

Finally, the proposed standard presented for approval addresses the Order No. 693 directive to modify the FAC-008-1 standard to require Transmission Owners and Generator Owners to calculate the increase in capacity if the first-limiting element is removed for those facilities for which thermal ratings cause: (1) an Interconnection Reliability Operating Limit; (2) a limitation of Total Transfer Capability; (3) an impediment to generation deliverability; or (4) an impediment to service to major cities

or load pockets. The standard drafting team interpreted the intent of this directive to be for reliability entities to be able to take rating information and prepare Operating Plans or Planning Assessments prior to Real-time that could allow for better situational awareness and improved reliability of the bulk electric system. The directive is not intended, and the proposed Requirement R8 was not drafted, in such a way that would allow for the System Operator to change Ratings in Real-time, but rather to have operating plans, processes, or procedures in place for implementation for the limited subset of Facilities, when requested, whose thermal ratings may cause any of the events described above.

Accordingly, the proposed FAC-008-3 Reliability Standard serves the important reliability goal of ensuring that each Transmission Owner and Generator Owner will establish Facilities Ratings. Additionally, the proposed standard improves uniformity and transparency in the Facility Ratings process by requiring Transmission Owners and Generation Owners to make their Facility Ratings documentation and methodologies available for inspection and technical review.

The ballot pool for FAC-008-3 approved the proposed standard with a 92.25% of quorum and a 78.92% affirmative, weighted segment vote.

### **III. NOTICES AND COMMUNICATIONS**

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

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### **IV. BACKGROUND**

#### **a. Basis of Proposed Reliability Standards**

The purpose of FAC-008-3 is to ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System are determined based on technically sound principles. A Facility Rating is essential for the determination of System Operating Limits. The requirements of the standard provide for the establishment of facility ratings that are developed using a consistent methodology that was developed through an open and collaborative process.

#### **b. FERC Directives on FAC-008 Reliability Standard**

In Order No. 693, FERC issued three directives related to the FAC-008 standard. In Paragraph 771, FERC stated:

771. Accordingly, as discussed in the responses to comments above, the Commission approves FAC-008-1 as mandatory and enforceable. In addition, we direct the ERO to develop modifications to FAC-008-1 through its Reliability Standards development process requiring transmission and generation facility owners to: (1) document underlying assumptions and methods used to determine

normal and emergency facility ratings; (2) develop facility ratings consistent with industry standards developed through an open, transparent and validated process and (3) for each facility, identify the limiting component and, for critical facilities, the resulting increase in rating if that component is no longer limiting.

**i. Document Underlying Assumptions and Methods Used to Determine Normal and Emergency Facility Ratings**

The first directive from Order No. 693 was addressed by FERC in Paragraph 739:

739. As EEI, TANC, Valley Group and MidAmerican discuss in their comments, the Commission's proposal to modify FAC-008-1 to require additional documentation supports the Commission's goals of improving uniformity and transparency in the facility ratings process. EEI's suggestion that having this information available for review upon request of a registered user, owner or operator should be considered by the ERO in its Reliability Standards development process. As proposed in the NOPR, the Commission directs the ERO to submit a modification to FAC-008-1 that requires transmission and generation facility owners to document underlying assumptions and methods used to determine normal and emergency facility ratings. As stated in the NOPR, the Commission believes that this added transparency will allow customers, regulators and other affected users, owners and operators of the Bulk-Power System to understand how facility owners set facility ratings through differing methods that provide equivalent results.

EEI's suggestion that having Transmission Owners' and Generation Owners' documentation for determining its Facility Ratings and its Facility Ratings methodology available for review upon the request of a registered user, owner or operator was considered by the Standard Drafting Team and incorporated in the proposed standard through Requirement R4, which requires Transmission Owners and Generation Owners to make their Facility Ratings documentation and methodology available for inspection and technical review. Proposed FAC-008-3 Requirement R4 provides:

R4. Each Transmission Owner shall make its Facility Ratings methodology and each Generator Owner shall each make its documentation for determining its Facility Ratings and its Facility Ratings methodology available for inspection and technical review by those Reliability Coordinators, Transmission Operators, Transmission Planners

and Planning Coordinators that have responsibility for the area in which the associated Facilities are located, within 21 calendar days of receipt of a request.

The FERC directive that requires transmission and generation facility owners to document underlying assumptions and methods used to determine normal and emergency facility ratings was addressed by the inclusion of Requirement R2, Part 2.4.2 and Requirement R3, Part 3.4.2, which provides that the scope of Ratings addressed shall include, as a minimum, both Normal and Emergency Ratings.

**ii. Develop Facility Ratings Consistent with Industry Standards Developed Through an Open, Transparent and Validated Process**

The second directive from Order No. 693 is addressed in Paragraph 742:

742. In the NOPR, the Commission stated, “While not proposing to mandate a particular methodology, we do propose that the methodology chosen by a facility owner be consistent with industry standards developed through an open process such as IEEE or CIGRE.” These processes have been validated through actual testing and have been shown to provide appropriate results. Information from engineering textbooks, common sense or manufacturer information would be part of the underlying assumptions. The Commission’s intent in the NOPR was to require that FAC-008-1 be modified to require that facility ratings be developed consistent with industry standards developed through an open, transparent and validated process. The Commission agrees with Valley Group that IEEE and CIGRE are two examples of such processes and disagrees with LPPC that reference to industry standards is poor policy. Industry standards that have been verified by actual testing are appropriate. However, the Commission agrees with MidAmerican that IEEE and CIGRE are just two examples of such bodies; any other open process that has been technically validated for its provision of accurate, consistent ratings is also acceptable. The ERO should consider the concerns raised by LPPC and MRO in its Reliability Standards development process, and is hereby directed to do so. The Commission does not expect there to be any regional differences because the only differences should be from different underlying assumptions that are not defined by the Reliability Standard.

The Standard Drafting Team considered the comments and concerns raised and developed Requirement R3, Part 3.1 in response to the second directive. The second

bullet of Part 3.1 states that the methodology used to establish the Ratings of the equipment that comprises the Facility shall be consistent with at least one of the following:

- One or more industry standards developed through an open process such as Institute of Electrical and Electronics Engineers (IEEE) or International Council on Large Electric Systems (CIGRE).

Accordingly, the proposed FAC-008-3, Requirement R3, Part 3.1. addresses FERC's second FAC-008 directive from Order No. 693.

**iii. For Each Facility, Identify the Limiting Component and, for Critical Facilities, the Resulting Increase in Rating if That Component is no Longer Limiting**

The third directive from Order No. 693 is addressed in Paragraph 756 and is further clarified in Paragraph 29 of the September 16 Order:<sup>6</sup>

756. In response to the comments of APPA, Dynegy, EEI, MISO and Wisconsin Electric, the Commission clarifies that this Reliability Standard and the Commission's proposed modification apply to facilities. As defined in the NERC glossary, a facility is "a set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)." The most limiting component in a facility determines its rating, just like the rating of a chain is determined by the weakest link. The Commission's proposed modification would require identifying and documenting the limiting component for all facilities and the increase in rating if that component were no longer the most limiting component; in other words, the rating based on the second-most limiting component. The Commission further clarifies that this Reliability Standard will require this additional thermal rating information only for those facilities for which thermal ratings cause the following: (1) an IROL; (2) a limitation of TTC; (3) an impediment to generation deliverability or (4) an impediment to service to major cities or load pockets.

29. Moreover, consistent with the Commission's regulations, we direct the ERO, within 90 days of our subsequent order on proposed modifications to the ERO's rules, to comply with the Commission's directive in Order No. 693 to modify Reliability Standard FAC-008-1. As explained in greater detail in Order No. 693, the required modifications include (1) document underlying assumptions and methods used to determine normal and emergency facility ratings; (2) develop

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<sup>6</sup> September 16 Order at P29.



facility ratings consistent with industry standards developed through an open, transparent and validated process; and (3) for each facility, identify the limiting component and, for critical facilities, the resulting increase in rating if that component is no longer limiting.

The Standard Drafting Team addressed this directive through the development of Requirement 8 and its parts. Requirement R8 provides:

R8. Each Transmission Owner (and each Generator Owner subject to Requirement R2) shall provide requested information as specified below (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 Coordinator(s), Transmission Planner(s), Transmission Owner(s) and Transmission Operator(s): [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

8.1. As scheduled by the requesting entities:

8.1.1. Facility Ratings

8.1.2. Identity of the most limiting equipment of the Facilities

8.2. Within 30 calendar days (or a later date if specified by the requester), for any requested Facility with a Thermal Rating that limits the use of Facilities under the requester's authority by causing any of the following: 1) An Interconnection Reliability Operating Limit, 2) A limitation of Total Transfer Capability, 3) An impediment to generator deliverability, or 4) An impediment to service to a major load center:

8.2.1. Identity of the existing next most limiting equipment of the Facility

8.2.2. The Thermal Rating for the next most limiting equipment identified in Requirement R8, Part 8.2.1.

The proposed FAC-008-3, Requirement R8 requires that the ratings developed per Requirement R6 be provided to other entities as specified in the requirements. These requirements provide a defense in depth approach by requiring an entity to use the ratings documentation or methodology that was developed through prior requirements through an open and collaborative process.

### **c. Stakeholder Issues Addressed in FAC-008-3**

The Standard Drafting Team received many comments from stakeholders concerning the requirements applicable to the Generator Owner contained in the currently-existing FAC-008-1 standard. Stakeholders had concerns that, for older facilities, documentation may not exist with equipment ratings that comprise the generation facility.

To address these concerns, the Standard Drafting Team divided the FAC-008-1 Requirement R1 into two new Requirements. The first Requirement R1 allows the Generator Owner to document its generation facility ratings by using design criteria or actual testing of the facility. The second is Requirement R2, which places the same facility ratings methodology responsibility on the Generator Owner for “equipment connected between the location specified in R1 and the point of interconnection with the Transmission Owner” as Requirement R3 places on the Transmission Owner.

The Standard Drafting Team also encountered stakeholder resistance to the development of requirements concerning “an impediment to service to major cities or load pockets” as directed by FERC.<sup>7</sup> The consensus of stakeholders was that these terms were unclear in their definition and subject to erroneous interpretation. The Standard Drafting Team considered and adopted a suggestion to use the term “major load center” to address this part of the directive. This language was included in the proposed Requirement R8, Part 8.2 because power engineers and operators will be qualified to make the judgment of what a major load center is relative to the power systems they manage rather than having to judge the relative demographics of which cities in North American constitute “major cities.” Regarding the notion of load pocket, this is not a

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<sup>7</sup> Order No. 693 at P 756.

universally understood and applied concept across all North American and Canadian power systems and is a term more parochial to market areas indicating that certain generators may have market power and the ability to control pricing because they are critical to reliability (*i.e.*, “must run” in market areas). This is not a universal issue, not is it a universal position across North America. Operators and Planners should not have to define “load pocket.

Additionally, the standard drafting team received requests for clarification that the proposed standard clarify which entities can request the information identified in Requirement R8. To address this concern, the standard drafting team added language to specify that the requester must be an entity that has “authority” over the associated facility.

Finally, the standard drafting team received comments that the information that can be requested in the proposed Requirement R8 be limited to thermal ratings. To address this concern, the drafting team changed “Equipment Rating” in the proposed standard to “Thermal Rating,” which is consistent with FERC’s directive in Paragraph 756 of Order No. 693.

#### **d. 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 Process Manual*. 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 before the Reliability Standard is submitted to the applicable governmental authorities for approval. FAC-008-3 was approved by the NERC Board of Trustees on May 24, 2011.

As a result of FERC's March 18, 2010 Order directing NERC to address all of the FAC-008 directives within 90 days of FERC's issuance of an order on proposed modifications to the NERC Rules of Procedure,<sup>8</sup> NERC developed a supplemental Standards Authorization Request ("SAR") to initiate a standards development project to respond to FERC's third directive to address the directive relating to the "second most limiting component."<sup>9</sup> The Project 2009-06 standard drafting team was formed, and Requirement R8 was developed to address the third remaining FAC-008 directive issued in Order No. 693. The resulting FAC-008-3 Reliability Standard was approved by the registered ballot body on May 23, 2011 and subsequently approved by the NERC Board of Trustees on May 24, 2011. Section V, *Summary of the Reliability Standard Development Proceedings*, below, includes more a more detailed description of the development history of the FAC-008-3 standard.

The Project 2009-06 standard drafting team is comprised of individuals from various entities throughout the NERC footprint. Each individual has at least 30 years of experience in the industry, and are considered to be experts in their field. Additionally,

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<sup>8</sup> March 18 Order at P 29.

<sup>9</sup> A standard drafting team developed version 2 of FAC-008 (FAC-008-2) that addressed all three Commission directives from Order 693; however, this initial version of FAC-008-2 was "voted down" by stakeholders because they did not perceive a reliability-related benefit to one of the proposed requirements of the draft standard requiring the identification of the next limiting component(s) and the calculated increase in rating based on the next limiting component(s) for all critical facilities. The drafting team subsequently developed a version of FAC-008-2 that addressed two of the three directives from Order 693 which was then approved by stakeholders on March 18, 2010, and the NERC Board of Trustees on May 12, 2010.

the standard drafting team includes members who are Senior IEEE members, members of CIGRE, and members with extensive operating and planning backgrounds as well as expertise in transmission and generation facilities.

FAC-008-3 combines the elements that are now in the current FAC-008-1 standard and the current FAC-009-1 standard into a single standard. Thus, FAC-008-3 is intended to supersede FAC-008-1 and FAC-009-1. On that basis, FAC-008-1 and FAC-009-1 will be retired effective midnight immediately prior to the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule approving FAC-008-3.

## **V. JUSTIFICATION OF THE PROPOSED RELIABILITY STANDARD**

This section summarizes the development of the FAC-008-3 Reliability Standard, describes the reliability objectives to be achieved by approving the proposed Standard, explains the development history of the proposed Standard, and documents how the proposed Standard is just and reasonable. NERC, in its analysis of the proposed Reliability Standard, determined that the standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest.

The final discussion in this section provides the stakeholder ballot results and explains how other key issues were considered and addressed by the Standard Drafting Team.

To support the justification for approval of FAC-008-3, the following Exhibits have been included in this petition:

- **Exhibit C** contains a “mapping document” between the requirements contained in FAC-008-3 and the two Reliability Standards it replaces, FAC-008-1 and FAC-009-1.
- **Exhibit D** contains the Consideration of Comments Reports created during the development of FAC-008-3.
- **Exhibit E** contains the complete development record for FAC-008-3. This development record includes, among other things, the successive drafts of the Reliability Standard, the implementation plan, the ballot pool and the final ballot results by registered ballot body members, stakeholder comments received during the development of the Reliability Standard and how those comments were considered in developing the Reliability Standard.

**a. Basis and Purpose of Reliability Standard FAC-008-3 — Facility Ratings**

The primary purpose of this Reliability Standard is to ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System are determined based on technically sound principles. A Facility Rating is essential for the determination of System Operating Limits.

The proposed standard FAC-008-3 is a result of the Standard Drafting Team combining the NERC Board of Trustees approved FAC-008-2 Reliability Standard with the efforts of the Project 2009-06 to address the third FAC-008 directive from Order No. 693. Additionally, FAC-008-1—Facility Ratings Methodology, and FAC-009-1—Establish and Communicate Facility Ratings, were combined to place all requirements regarding facility ratings into one standard.

FAC-008-1, Requirement R1 was evaluated by the Standard Drafting Team and was revised to make more clear which functional entities were responsible for the rating of specific facilities. The requirement was divided into three distinct requirements with a single applicable entity. The proposed FAC-008-3 Requirement R1 establishes the documentation requirements placed upon a Generator Owner for determining the Facility Ratings of its solely and jointly owned generator Facility(ies) up to the low side terminals of the main step up transformer if the Generator Owner does not own the main step up transformer, and up to the high side terminals of the main step up transformer if the Generator Owner owns the main step up transformer.

Requirement R2 of the proposed FAC-008-3 standard requires each Generator Owner to have a documented methodology for determining Facility Ratings of its solely and jointly owned equipment connected between the location specified in R1 and the point of interconnection with the Transmission Owner.

Requirement R3 of the proposed FAC-008-3 standard requires each Transmission Operator to have documented methodology for determining Facility Ratings (Facility Ratings Methodology) of its solely and jointly owned Facilities.

The delineation of the above three requirements provide more clarity with respect to the responsible entity, the facility that is to be rated, and the considerations in the determination of the facility rating.

Requirement R4 of the proposed FAC-008-3 standard, which is carried over from Requirement R2 of the currently-effective FAC-008-1 standard, requires each entity to make its documentation and methodology available to other reliability entities for inspection and technical review. This provides for transparency in the techniques and

factors used in the development of facility ratings, thereby allowing other entities to have a better understanding of how facilities are rated.

Requirement R5 of the proposed FAC-008-3 standard revises the currently-approved FAC-008-1, Requirement R3, and requires Generator Owners and Transmission Owners that receive comments from another entity as a result of that entity's technical review of a Transmission Owner's Facility Ratings methodology or Generator Owner's documentation for determining its Facility Ratings and its Facility Rating methodology, to respond to the commenting entity within 45 calendar days of receipt of those comments. The response must indicate whether a change will be made to the Facility Ratings methodology and, if no change will be made, the reasons for that decision. The proposed requirement provides for an open discussion of how entities rate facilities and allows for collaboration to improve the determination of ratings.

Requirement R6 of the proposed FAC-008-3 standard carries forward the currently-effective FAC-009-1, Requirement R1, and requires that the Generator Owner and Transmission Owner also establish Facility Ratings for their solely and jointly owned Facilities that are consistent with the associated Facility Rating methodology or documentation for determining their Facility Ratings. Requirement R7 provides that the ratings must be provided to other entities as specified in the requirements. Requirement R7 provides a defense in depth approach an entity must use when establishing its facility ratings by requiring that those ratings be shared through an open and collaborative process.

Requirement R8 of the proposed FAC-008-3 standard presents a new requirement that was developed to address the third FAC-008 directive in response to Order No. 693,



which requires that the limiting component for all facilities and the increase in rating if that component were no longer the limiting component, *i.e.*, the rating for the second-most limiting component, for facilities associated with an IROL, a limitation of TTC, an impediment to generator deliverability, or an impediment to service in major cities or load pockets be identified and documented.<sup>10</sup>

Requirement R8 requires entities to provide information to requesting entities regarding their facilities. Part 8.1 requires an entity to provide the identity of the most limiting equipment of a facility as well as the facility rating to requesting entities as scheduled.

The second Part of Requirement 8 (Part 8.2 and its subparts) requires the identity of the next most limiting equipment of a facility as well as the thermal rating of that equipment. Part 8.2 applies only to a requested Facility with a Thermal Rating that limits the use of Facilities under the requester's authority by causing any of the following: 1) An Interconnection Reliability Operating Limit; 2) A limitation of Total Transfer Capability; 3) An impediment to generator deliverability; or 4) An impediment to service to a major load center. Part 8.2 further provides that the identity of the existing next most limiting equipment of the Facility and its Thermal Rating are furnished to requesting entities. The information obtained under this requirement may be used by entities to develop Operating Plans to address short term limits on certain types of equipment.

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<sup>10</sup> Order No. 693 at P 756.

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

**1. Proposed Reliability Standard is designed to achieve a specified reliability goal and contains a technically sound method to achieve that goal.**

The proposed FAC-008-3 standard achieves the specific reliability goal of ensuring that Facility Ratings, which are essential to the determination of System Operating Limits, are used in the reliable planning and operation of the Bulk Electric System. The proposed standard is based on technically sound principles by defining the requirements for documenting, determining, and implementing technically sound Facility Ratings.

The proposed standard gives responsible entities the latitude to determine Facility Ratings based on a number of technically sound methods. For example, Requirement R1 allows a Generator Owner the latitude to use design or construction information such as manufacturer ratings or specifications as well as technically based ratings consistent with ANSI or IEEE ratings. The proposed standard also allows for the use of unit commissioning or testing data, which is readily accessible, to document the Facility Rating.

Requirements R2 and R3 of the proposed standard require the Generator Owner and the Transmission Owner to each have a documented methodology for determining their Facility Ratings of their solely and jointly owned equipment. Parts 2.1 and 3.1 require that this methodology be consistent with at least one of the following: the use of ratings provided by equipment manufacturers, Institute of Electrical and Electronics Engineers (IEEE) or International Council of Large Electrical Systems (CIGRE) standards or any practice that has been verified by testing, performance history or

engineering analysis. Additionally, parts 2.2 and 3.2 require that the underlying assumptions, design criteria, and methods used to determine the Equipment Ratings be addressed in the methodology. The methodology must also identify how each of the following were considered: Equipment Rating standard(s) used in development of the methodology; Ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications; ambient conditions (for particular or average conditions or as they vary in real-time); and operating limitations.

In addition, the methodology must include a statement that a Facility Rating shall respect the most limiting applicable Equipment Rating of the individual equipment that comprises a Facility, as well as the process by which the equipment Rating is determined. This includes, but is not limited to, transmission conductors, transformers, relay protective devices, terminal equipment, and series and shunt compensation devices as well as both Normal and Emergency Ratings.

Requirements R4 and R5 provide for transparency and collaboration among various functional entities in the development of a Facilities Rating methodology or supporting documentation. Requirement R4 requires each entity to make its documentation and methodology available to other reliability entities for inspection and technical review. Requirement R5 requires Generator Owners and Transmission Owners that receive comments from another entity as a result of that entity's technical review of a Transmission Owner's Facility Ratings methodology or Generator Owner's documentation for determining its Facility Ratings and its Facility Ratings methodology, to respond to the commenting entity within 45 calendar days of receipt of those

comments and to indicate whether a change will be made to the Facility Ratings methodology. If no change will be made, the reasons for that decision are to be provided.

Requirement R6 requires that the Generator Owner and Transmission Owner also establish Facility Ratings for their solely and jointly owned Facilities that are consistent with the associated Facility Rating methodology or documentation for determining their Facility Ratings. Requirements R7 and R8 require that the ratings developed per Requirement R6 be provided to other entities as specified in the requirements. These requirements provide a defense in depth approach by requiring an entity to use the ratings documentation or methodology that was developed through an open and collaborative process.

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

The proposed Reliability Standard is applicable only to users, owners and operators of the North American bulk power system, and not others. As identified in the applicability section of the proposed standard, the requirements apply only to Generator Owners and Transmission Owners. No other registered entities are required to comply.

Additionally, the requirements are structured to set out who shall do what and under what conditions by identifying a Functional Entity (Transmission Owner or Generator Owner) that is obligated to comply with the requirement. The requirements also include a statement that identifies the specific expectations for those Functional Entities. The proposed Reliability Standard's requirements clearly and unambiguously establish the applicable entities' compliance obligations by providing details that must be addressed in determining and implementing Facility Ratings for the Generator Owner and

Transmission Owner. The proposed requirements also provide other entities the opportunity to conduct a technical review and comment on the documentation or methodology, as applicable. Measures are provided for each requirement and include examples of evidence that are acceptable to demonstrate compliance with the requirement.

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

The proposed Reliability Standard includes a Violation Risk Factor (“VRF”) and Violation Severity Level (“VSL”) for each main requirement, which are explained in more detail in Section IV. c., below. The range of penalties for violations will be based on the applicable VRF and VSL and will be administered based on the sanctions table and supporting penalty determination process described in NERC Sanction Guidelines, Appendix 4B in NERC’s Rules of Procedure. Therefore, responsible entities understand the potential impacts of non-compliance to the proposed requirements.

**4. 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 Reliability Standard contains measures that support each standard requirement by clearly identifying what is required and how the requirement will be enforced. These measures, included below, help provide clarity regarding how the requirements will be enforced, and ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.

- M1.** Each Generator Owner shall have documentation that shows how its Facility Ratings were determined as identified in Requirement 1.
- M2.** Each Generator Owner shall have a documented Facility Ratings methodology that includes all of the items identified in Requirement 2, Parts 2.1 through 2.4.

- M3.** Each Transmission Owner shall have a documented Facility Ratings methodology that includes all of the items identified in Requirement 3, Parts 3.1 through 3.4.
- M4.** Each Transmission Owner shall have evidence, such as a copy of a dated electronic note, or other comparable evidence to show that it made its Facility Ratings methodology available for inspection within 21 calendar days of a request in accordance with Requirement 4. The Generator Owner shall have evidence, such as a copy of a dated electronic note, or other comparable evidence to show that it made its documentation for determining its Facility Ratings or its Facility Ratings methodology available for inspection within 21 calendar days of a request in accordance with Requirement 4.
- M5.** If the Reliability Coordinator, Transmission Operator, Transmission Planner or Planning Coordinator provides documented comments on its technical review of a Transmission Owner's or Generator Owner's Facility Ratings methodology or a Generator Owner's documentation for determining its Facility Ratings, the Transmission Owner or Generator Owner shall have evidence, (such as a copy of a dated electronic or hard copy note, or other comparable evidence from the Transmission Owner or Generator Owner addressed to the commenter that includes the response to the comment,) that it provided a response to that commenting entity in accordance with Requirement 5.
- M6.** Each Transmission Owner and Generator Owner shall have evidence to show that its Facility Ratings are consistent with the documentation for determining its Facility Ratings as specified in Requirement R1 or consistent with its Facility Ratings methodology as specified in Requirements R2 and R3 (Requirement 6).
- M7.** Each Generator Owner shall have evidence, such as a copy of a dated electronic note, or other comparable evidence to show that it provided its Facility Ratings to its associated Reliability Coordinator(s), Planning Coordinator(s), Transmission Planner(s), Transmission Owner(s) and Transmission Operator(s) in accordance with Requirement R7.
- M8.** Each Transmission Owner (and Generator Owner subject to Requirement R2) shall have evidence, such as a copy of a dated electronic note, or other comparable evidence to show that it provided its Facility Ratings and identity of limiting equipment to its associated Reliability Coordinator(s), Planning Coordinator(s), Transmission Planner(s), Transmission Owner(s) and Transmission Operator(s) in accordance with Requirement R8.

**5. 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 Reliability Standard provides guidance regarding acceptable documentation or methodologies that can be used to achieve compliance with the standard. This guidance provides flexibility in those situations where costs may be a factor, while also ensuring a sound technical basis for developing Facility Ratings consistent with the requirements. For example, the Standard Drafting Team received comments suggesting that the requirements for documentation could be onerous and costly for older generators. Accordingly, a Requirement R1 was developed that allows a Generator Owner the latitude to use design or construction information such as manufacturer ratings or specifications as well as technically based ratings consistent with ANSI or IEEE ratings, which still achieves the reliability objective of the standard. Additionally, the use of unit commissioning or testing data, which is readily accessible, can be used to document the Facility Rating while still achieving the proposed standard’s reliability objectives. For Requirement R8, the standard drafting team believes that Transmission and Generator Owners have the information that is to be provided through the Requirement. This will not add any significant cost or expenditure of manpower to comply with the Requirement R8.

**6. Proposed Reliability Standard is not “lowest common denominator,” *i.e.*, does not reflect a compromise that does not adequately protect bulk power system reliability. Proposed Reliability Standard considers 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 Standard Drafting Team took measured steps to ensure that

the reliability objective of developing and implementing technically sound Facility Ratings was met and that each requirement provides details of what is necessary to be addressed in the applicable documentation or methodology. Further, the Reliability Standard provides for a technical peer review mechanism to ensure sound Facility Rating development.

The proposed Reliability Standard was not developed or adopted solely to protect against the imposition of reasonable expenses. The drafting team considered and evaluated the effect this standard would impose on the impacted entities and determined that no entities would be unduly burdened by the cost to implement its requirements. No special accommodation was made for smaller entities, and the proposed standard will apply equally to all applicable entities in a consistent manner.

**7. 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 proposed Reliability Standard applies throughout North America and does not favor one area or approach.

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

The proposed Reliability Standard does not restrict the available transmission capability or limit use of the bulk power system in a preferential manner. The proposed Reliability Standard requires responsible entities to determine technically sound Facility Ratings that are consistent with the documentation or methodology for determining Facility Ratings. Additionally, the proposed standard requires that the responsible entity provide its Facility Ratings to other Reliability Coordinator(s), Planning Coordinator(s), Transmission Planner(s), Transmission Owner(s) and Transmission Operator(s) upon



request, which will help to limit an entity's use of the bulk power system in an unduly preferential manner.

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

The proposed effective date for the FAC-008-3 standard is the first day of the first calendar quarter that is twelve months following the effective date of a Final Rule. This will allow applicable entities adequate time to develop the documentation and other evidence necessary to Exhibit compliance with the requirements.

**10. The Reliability Standard development process was open and fair.**

The proposed Reliability Standard was developed in accordance with NERC's ANSI- accredited processes for developing and approving Reliability Standards. Section V, *Summary of the Reliability Standard Development Proceedings*, below, details the processes followed to develop the FAC-008-3 standard. These processes included, among other things, multiple comment periods, pre-ballot review periods, and balloting periods. Additionally, all drafting team meetings were properly noticed and open to the public. The initial and recirculation ballots both achieved a quorum and met the required ballot pool approvals.

**11. Proposed Reliability Standard balances with other vital public interests.**

NERC has identified no competing public interests regarding the request for approval of this proposed Reliability Standard. No comments were received that indicated the proposed standard conflicts with other vital public interests.

**12. Proposed Reliability Standard considers any other relevant factors.**

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

**c. Violation Risk Factors and Violation Severity Levels**

The Violation Severity Levels Standard Drafting Team (VSLSDT) — Project 2007-23 posted proposed VSLs for FAC-008-1 and FAC-009-1 that were carried forward for use in the proposed FAC-008-3 standard. The table below shows how the VSLs approved for the requirements of the FAC-008-1 and FAC-009-1 standards were carried forward to the FAC-008-3 requirements proposed herein.

<b>Approved Standard</b>	<b>Approved Requirement</b>	<b>Proposed Standard</b>	<b>Proposed Requirement</b>
FAC-008-1	R1	FAC-008-3	R1, R2, R3
FAC-008-1	R2	FAC-008-3	R4
FAC-008-1	R3	FAC-008-3	R5
FAC-009-1	R1	FAC-008-3	R6
FAC-009-1	R2	FAC-008-3	R7, R8

The standard drafting team developed VRFs for the proposed Requirements R1–R3 which vary slightly from the currently-approved VRFs. The current version of the standard, FAC-008-1 — Facility Ratings Methodology, includes the following VRFs:

Requirement Number	Text of Requirement	VRF
R1.	The Transmission Owner and Generator Owner shall each document its current methodology used for developing Facility Ratings (Facility Ratings Methodology) of its solely and jointly owned Facilities. The methodology shall include all of the following:	Lower
R1.1.	A statement that a Facility Rating shall equal the most limiting applicable Equipment Rating of the individual equipment that comprises that Facility.	Medium
R1.2.	The method by which the Rating (of major BES equipment that comprises a Facility) is determined.	Medium
R1.2.1.	The scope of equipment addressed shall include, but not be limited to, generators, transmission conductors, transformers, relay protective devices, terminal equipment, and series and shunt compensation	Medium

	devices.	
R1.2.2.	The scope of Ratings addressed shall include, as a minimum, both Normal and Emergency Ratings.	Medium
R1.3.	Consideration of the following:	Lower
R1.3.1.	Ratings provided by equipment manufacturers.	Medium
R1.3.2.	Design criteria (e.g., including applicable references to industry Rating practices such as manufacturer’s warranty, IEEE, ANSI or other standards).	Medium
R1.3.3.	Ambient conditions.	Medium
R1.3.4.	Operating limitations.	Medium
R1.3.5.	Other assumptions.	Lower

The standard drafting team revised the elements of Requirement R1 and its components and created three separate requirements to differentiate between Generator Owner requirements and Transmission Owner requirements. The first two requirements of proposed FAC-008-3, which are applicable to Generator Owners, apply to radial facilities only, and are planning-related requirements, were assigned VRFs of “Lower.” These requirements call for the Generator Owner to “have documentation for determining the Facility Ratings of its solely and jointly owned generator Facility (ies)...” (R1) and to “have a documented methodology for determining Facility Ratings (Facility Ratings methodology) of its solely and jointly owned equipment connected between the location specified in R1 and the point of interconnection with the Transmission Owner...” (R2). Both of these requirements are administrative in nature and, 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.

Requirement R3 pertains to Transmission Owners and states that “Each Transmission Owner shall have a documented methodology for determining Facility Ratings (Facility Ratings methodology) of its solely and jointly owned Facilities (except for those generating unit Facilities addressed in R1 and R2).” This requirement was assigned a VRF of “Medium” consistent with the existing approved VRF. The Facilities under this requirement are not radial facilities and could therefore directly affect the electrical state or the capability of the bulk electric system.

The Standard Drafting Team indicated that it believed that the original intent of the VRFs assigned to FAC-008-1 Requirement R1 is addressed with the proposed VRFs for the first three requirements of proposed FAC-008-3.

The VRFs assigned to Requirements R4 to R8 remain unchanged from the approved VRFs for the Requirements of FAC-008-1 and FAC-009-1 that were carried forward into the proposed FAC-008-3 standard (*see*, mapping table above).

## **VI. SUMMARY OF THE RELIABILITY STANDARD DEVELOPMENT PROCEEDINGS**

### **a. Development History**

The development record for the proposed FAC-008-3 standard is composed of two NERC standards development projects: 2006-09 Facility Ratings (Project 2006-09) and Project 2009-06 Facility Ratings (Project 2009-06). FAC-008-3 is a direct product of Project 2009-06; however, both projects are described below because the requirements included in the proposed FAC-008-3 standard were developed by the standard drafting teams for both projects. **Exhibit D** contains the Consideration of Comments Reports created during the development of Reliability Standard FAC-008-3 — Facility Ratings.

**Exhibit E** contains the complete record of development for the proposed Reliability Standard.

Project 2006-09

Project 2006-09 was initiated in January of 2007 for the purpose of revising FAC-008-1 and FAC-009-1. The Standard Authorization Request (SAR) for this project described the purpose of the project to:

1. Provide an adequate level of reliability for the North American bulk power systems — the standards are complete and the requirements are set at an appropriate level to ensure reliability.
2. Ensure they are enforceable as mandatory Reliability Standards with financial penalties — the applicability to bulk power system owners, operators, and users, and as appropriate particular classes of facilities, is clearly defined; the purpose, requirements, and measures are results-focused and unambiguous; the consequences of violating the requirements are clear.
3. Consider comments received during the initial development of the standards and other comments received from ERO regulatory authorities and stakeholders.
4. Bring the standards into conformance with the latest version of the Reliability Standards Development Procedure and the ERO Rules of Procedure.
5. Satisfy the standards procedure requirement for five-year review of the standards.

Draft 1 of the Facility Ratings SAR and the first draft of the proposed standard FAC-008-2 were posted for a 45-day public comment period from January 15–February 28, 2007. There were 33 sets of comments, including comments from more than 98 different people from more than 72 companies representing 8 of the 10 Industry Segments.

Based on stakeholder comments, the drafting team made the following modifications to the standard:

The Applicability section was modified to make the standard applicable to all Generator Owners with units in a plant directly connected to the Bulk Electric System and units in a plant with an aggregate > 300 MVA (gross nameplate rating) not directly connected to the Bulk Electric System.

The requirement to have a Facilities Rating methodology was subdivided so that the criteria for the Generator Owner's Facility Rating methodology for generating unit Facilities is separated from the criteria for methodology for all other Facilities. The criteria for the generating unit Facility Rating methodology were modified to eliminate the need to identify an industry Equipment Rating standard for the rating of each component of the facility. The revised requirement was intended to result in a methodology that produces better data without requiring the investment of additional resources just to document the methodology. The revised requirement for the Generator Owner stated:

R1. The Generator Owner shall have a documented methodology for determining the Facility Ratings (Facility Ratings Methodology) of its solely and jointly owned generating unit Facilities that identifies how the following were considered:  
[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]

R1.1. Facility commissioning data

R1.2. Performance history or testing accompanied by engineering analysis

R1.3. Ratings provided by equipment manufacturers

R1.4. Ambient conditions

R1.5. Equipment Rating standard(s) used in the development of this methodology

The VRF for the requirement to have documentation was changed from 'Medium' to 'Lower' to reflect that the requirement is administrative in nature. The Time Horizons

for the requirements to have and communicate Facility Ratings were expanded to include additional Time Horizons to reflect that Facility Ratings may be developed and communicated in ‘Real-time’, ‘Same-day’ or the ‘Operations Planning’ Time Horizons. Additionally, the data retention requirement was modified to support the modifications in actual audit cycles which are now once every three years for the Reliability Coordinator, Balancing Authority, and Transmission Operator — and once every six years for other functional entities.

The second draft of the Reliability Standard was posted for a 30-day public comment period from July 19–August 17, 2007. There were 35 sets of comments, including comments from 115 different people from more than 50 companies representing 9 of the 10 Industry Segments.

Based on comments received, the Standard Drafting Team made the following modifications to the Reliability Standard:

- The language in the Applicability section of the standard was removed — the revised standard applies to all Generator Owners.
- The Proposed Effective Date was modified to recognize that in some jurisdictions, there is no formal regulatory approval.
- The section that identifies acceptable methods of establishing equipment ratings was modified to include nameplate ratings, practices that have been verified by testing or engineering analysis, or industry standards developed through an open process.
- The “Lower” VRFs from the requirements to have rating methodologies were revised to “Medium” VRFs based on a review of the criteria for VRFs.
- Typographical errors were corrected and some text was re-arranged to make the standard easier to comprehend.
- The compliance elements of the standard were revised to align with the VSL Development Guidelines Criteria.

The third draft of Reliability Standard FAC-008-2 was posted for a 30-day public comment period from July 28–August 26, 2008. There were 36 sets of comments,

including comments from more than 100 different people from over 50 companies representing 8 of the 10 Industry Segments.

Stakeholders identified some typographical errors and some areas in the standard where adding words or rearranging words improved clarity — and the drafting team made those modifications. Based on stakeholder comments, the drafting team made the following modifications to the standard:

- Measure M6 was deleted because it asked for evidence of a “set” of Facility Ratings, and this was not addressed by the associated requirement.
- The Violation Severity Levels for R2, R3, and R4 were modified to provide more variation in the categories of possible noncompliant performance, and to better align the language in the VSLs with the exact language in the associated requirements.

The proposed FAC-008-2 — Facility Ratings Reliability Standard was posted for the 30-day pre-ballot review from September 26–October 25, 2008 during which time members of the registered ballot body were registered for the ballot pool. The initial ballot was conducted from October 27–November 5, 2008. The voting statistics are listed below, and the Ballot Results Web page provides a link to the detailed results:

Quorum: 89.13 percent

Approval: 70.01 percent

Because at least one negative ballot included a comment, these results were not final and a second (or recirculation) ballot was conducted. As part of the recirculation ballot process, the drafting team drafted and posted responses to voter comments. The drafting team determined that no further revisions to the standard were warranted and the recirculation ballot ensued. The recirculation ballot was conducted from December 10–



19, 2008. Voting statistics for the recirculation ballot are listed below, and the Ballot Results Web page provides a link to the detailed results:

Quorum: 93.04 percent

Approval: 57.37 percent

The ballot pool rejected the standard because the standard did not achieve the requisite two-thirds weighted segment vote. Stakeholders concluded that Requirement R7 had no associated reliability benefit and was a commercial requirement not necessary for the reliability of the bulk power system. Requirement R7 was developed to meet the FERC directive in Order No. 693 that required identification of the most limiting component of a facility and the theoretical increase in rating if the limitation were removed. As a result of the failed ballot, pursuant to the Reliability Standards Development Procedure which states “[i]f the standard is rejected, the process is ended and any further work in this area would require a new SAR,” Project 2006-09 was terminated.

#### Project 2009-06

Upon the failure of Project 2006-09 to pass the stakeholder ballot and the project’s subsequent termination, a SAR was drafted to initiate Project 2009-06 for the purpose of addressing FERC’s FAC-008 directives from Order No. 693. The draft SAR and the proposed FAC-008-2 Reliability Standard developed in Project 2006-09, but with Requirement R7 removed, were posted for comment in January 2009. The Standard Drafting Team received 38 sets of comments on the first posting, including comments

from more than 85 different people from over 50 companies representing 8 of the 10 Industry Segments.

Several commenters expressed concern that the proposed FAC-008-2 was duplicative of the MOD-024 and MOD-025 standards. The Standard Drafting Team determined that the proposed FAC-008-2 standard was not duplicative with MOD-024 and MOD-025 because, at best, a single verification following what is required in MOD-024 and MOD-025 would be only a subset of what is required to comply with FAC-008-2. The purpose of FAC-008-2 is “to ensure Facility Ratings used in the reliable planning and operation of the Bulk Electric System are determined based on technically sound principles.” Prior to any generator being placed in service, “Facility Ratings” for a generator are required for Bulk Electric System planning.

Several commenters suggested that the standard should not be applicable to Generator Owners for various reasons, including because the requirements are vague and burdensome. However, the Standard Drafting Team determined that the standard should apply to Generator Owners, and Generator Owner members of the Standard Drafting Team were tasked with developing requirements that addressed the concerns expressed by stakeholders. As a result, the standard drafting team provided greater clarity regarding Generator Owner responsibilities and options for developing facility rating documentation in the proposed standard.

The Standard Drafting Team made clarifying revisions to the SAR and proposed standard based on stakeholder comments and posted them for a second comment period from August 10–September 9, 2009. There were 39 sets of comments, including comments from more than 90 different people from over 45 companies representing 9 of

the 10 Industry Segments. The majority of comments received concerned revisions to the requirements applicable to Generator Owners. The Standard Drafting Team made conforming and clarifying revisions to these requirements and determined that stakeholder consensus was achieved on the SAR and draft standard. The NERC Standards Committee approved the SAR at its November 2009 meeting moving the standard forward to balloting.

NERC posted the proposed FAC-008-2 standard for a 30-day pre-ballot review period from, December 7, 2009–January 12, 2010, during which time members of the registered ballot body were registered for the ballot pool. The initial ballot was conducted from January 12–22, 2010 with the following results:

Quorum: 89.16 percent

Approval: 75.16 percent

Because at least one negative ballot included a comment, a recirculation ballot was conducted. As part of the recirculation ballot process, the drafting team drafted and posted responses to voter comments from the initial ballot. The ballot pool approved the standard, with the voting statistics for the recirculation ballot listed below.

Quorum: 93.71 percent

Approval: 78.15 percent

The NERC Board of Trustees approved the FAC-008-2 Reliability Standard on May 12, 2010. However, a determination was made not to file this version of the Standard until the third FAC-008 directive could be addressed.

Supplemental SAR for Project 2009-06

On March 18, 2010, FERC issued an Order directing NERC to modify the standards development procedure so that NERC's Rules of Procedure allow it to comply with FERC directives to submit new or modified standards, even when the standard does not pass the ballot body. In the March 18, 2010 Order, NERC was also directed to submit a modification to the FAC-008 Reliability Standard complying with the directive in Order No. 693 related to identifying for each facility, the limiting component and, for critical facilities, the resulting increase in rating if that component is no longer limiting within 90 days after FERC issues an Order on NERC's compliance filing with a proposal to modify the standards development procedure.<sup>11</sup>

In response to FERC's March 18, 2010 directive, NERC presented a standard development plan to address the third directive that was approved by the Standards Committee at its January 13, 2011 meeting. The plan included the following:

- Request that volunteers from the Project 2009-06 – Facility Ratings standard drafting team review the previously developed requirement (R7 from the version of the standard that failed balloted in 2008) and the guidance provided by the Commission in the September 16, 2010 Order on FAC-008 and determine if the team can identify an equally efficient and effective method of achieving the intent of the unaddressed directive that will respond to the Commission's concerns.
- Post the requirement for a 30 day informal comment period and solicit comments on the proposed requirement as well as additional ideas for alternative requirements that provide an equally efficient and effective method of achieving the intent of the unaddressed directive (Complete posting by end of February)
- Post alternatives identified for a 15-day informal comment period (This comment period could be 30 days if the Commission has not yet issued its final Order on the December 23 Compliance Filing) (Complete posting by early April if posting is for 15 days; by end of April if for 30 days)
- Prepare a final draft of the best solution identified for a 30-day comment period with an initial ballot conducted during the last 10 days (This

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<sup>11</sup> See, Order No. 693 at P 756; *see also*, March 18 Order at P 29.

comment period could be 45 days if the Commission has not yet issued its final Order on the December 23 Compliance Filing) (Complete initial ballot by end of May if posting is for 30 days; by middle or end of June if posting is for 45 days)

The standard drafting team was tasked with creating a requirement to address a Supplemental SAR to address the reliability concerns related to Facility Ratings initially discussed in paragraphs 756 and 771 of FERC's Order No. 693, and further explained in Paragraph 76 of FERC's September 16 Order. These concerns relate to ensuring broad situational awareness regarding the most limiting equipment of Facilities.

In Paragraph 76 of FERC's September 16 Order, FERC stated that: In order to determine facility ratings, entities must identify the most limiting component that comprises the facility, based on a validated methodology that considers the specific characteristics and ratings of all of the components to determine their limits for a range of ambient conditions, including if and for what duration these limits can be exceeded. This is, in part, because the limiting element upon which a facility rating is based can change under different operating conditions. For example, an underground high voltage cable may be the limiting element for continuous ratings, but a disconnect switch may be the limiting element for a four-hour emergency rating. With heavy power flows from generators through critical facilities to load, contingency conditions could reveal a thermal overload above the normal rating of the first limiting component of one of these facilities. However, that component also likely has a documented short time rating that could sustain the overload. If the second-most limiting component does not afford much increase in rating above the first, and its overload can result in the unintended removal of the facility from service (i.e., a relay or other protection system component that trips a facility out of service due to the overload), the prior identification of this second limiting component could alter the mitigation plans and avoid relay operations that trip facilities out-of-service, and thus potentially prevent a cascading event.

Based on FERC's clarification in the September 16 Order, it became clear to the standard drafting team that the intent of the Order No. 693 directive was for reliability entities (as defined in the NERC Functional Model<sup>12</sup>) to be able to take rating information and prepare Operating Plans or Planning Assessments prior to Real-time which could allow for better situational awareness and improved reliability of the bulk electric system.

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<sup>12</sup> The NERC Functional Model is available at: <http://www.nerc.com/page.php?cid=2|247|108>.

The directive is not intended for the System Operator to change Ratings in Real-time, but rather to have operating plans, processes or procedures in place for implementation for the limited subset of Facilities, when requested, whose thermal ratings cause (1) an IROL; (2) a limitation of TTC; (3) an impediment to generation deliverability; or (4) an impediment to service to major cities or load pockets.

Each Transmission Owner and Generator Owner is required to have a valid rating methodology (under the requirements of FAC-008-1), each having somewhat unique, inherent assumptions. Transmission Owners and Generator Owners define ratings (Normal and Emergency) for some time period at a loading level for each Facility, and the most limiting piece of equipment determines the Rating of the Facility for that time period. Some owners may elect to define the “Emergency Rating” or “shorter term rating” as an 8-hour rating, others may elect to use a 4-hour rating, and some a 1-hour rating or some other value.

In the proposed revisions to the FAC-008-2 standard, the standard drafting team revised Requirement R7 to only apply to the Generator Owner and only require that the entity report its Facility Ratings to requesting entities. The Facility Ratings requirements for the Transmission Owner were addressed separately in Requirement R8. In Requirement R8, the Transmission Owner is required to report Facility Ratings and identify the most limiting piece of equipment for all Facilities as requested (Requirement 8, Part 8.1). The Transmission Owner is required to provide, to a requesting entity, Facility Ratings and identify the next most limiting piece of equipment as well as its Equipment Rating for Facilities with Thermal Ratings that the requester has identified as:

1. having an Interconnection Reliability Operating Limit (IROL);

2. limiting Total Transfer Capability (TTC);
3. impeding generator deliverability; or
4. impeding service to a major city or load pocket.

The Supplemental SAR and associated Standard were posted for a concurrent 45 day comment period and initial ballot from March 17, 2011 through May 2, 2011.

Members of the registered ballot body were registered for the ballot pool during the first 30 days of this posting. The Initial Ballot was conducted between April 21, 2011 and May 2, 2011. The voting statistics for the initial ballot are included below, and the Ballot Results Web page provides a link to the detailed results:

Quorum: 86.01 %

Approval: 48.74 %

Because at least one negative ballot included a comment, a second (or recirculation) ballot was conducted. As part of the recirculation ballot process, the standard drafting team drafted and posted responses to voter comments. In an effort to address balloters' concerns with the proposed requirements, the drafting team made revisions to the Standard.

Many commenters expressed concerns with the language of the new Requirement R8 and its parts and subparts. The three main concerns received during the recirculation ballot were:

1. Clarify which entities could request the information identified in Requirement R8;
2. Clarify that the information requested is limited to thermal ratings; and
3. Respond to terms identified in the Commission's order, including "generator deliverability," "major city," and "load pocket."

In addressing the concern regarding which entities could request the information identified in Requirement R8, the standard drafting team revised the requirement to provide more clarity around the entities that may request the information contained in the requirement. The drafting team intended for impacted entities responsible for power system reliability to be able to request this information to better plan and operate their systems. The language was modified to better reflect this intent and to more closely mirror the language of the FERC directive.

Regarding the concern that the standard drafting team respond to the terms identified in FERC's order, including "generator deliverability," "major city," and "load pocket, the standard drafting team revised the term "a major city or load pocket" to "a major load center." Power engineers and operators will be qualified to make the judgment of what a major load center is relative to the power system they manage rather than having to judge the relative demographics of which cities in North America constitute "major cities." Regarding the notion of load pocket, this is not a universally understood and applied concept across all North American and Canadian power systems and is a term more parochial to market areas indicating that certain generators may have market power and the ability to control pricing because they are critical to reliability (*i.e.*, "must run" in market areas). This is not a universal issue, nor is it a universal notion across North America. Operators and Planners should not have to define "load pocket."

Additionally, the proposed Part 8.2 of the standard did not intend for requesters to ask for Ratings information for every Facility of another entity, but only those Facilities which are impacted by one of the four stated conditions, which they have presumably determined through studies or actual operational data. This will provide better guidance



with respect to “major load centers” because the impacted entity will make the determination through studies and request the ratings information for facilities under its authority. The Standard Drafting Team chose this specific language because the entities listed do not necessarily own Facilities. That is, the Reliability Coordinator does not necessarily own assets, but has reliability authority over certain Facilities; the Planning Coordinator or Transmission Planner do not own assets but have planning authority over a set of Facilities; the Transmission Operator does not necessarily own assets but has operational authority over those Facilities; and the Transmission Owner owns its Facilities and has authority over those Facilities.

The third part of the third directive from Order No. 693 required that the standard address “an impediment to service in major load cities or load pockets.”<sup>13</sup> However, based on the comments received and the standard drafting team’s determination of how best to address this in the proposed Requirement R8, the language that was ultimately included in the standard was: “an impediment to service to a major load center” because this was, in the minds of stakeholders, easier to define and easier to meet the intent of the directive.

The clarifying revisions to the proposed Requirement R8 made by the standard drafting team are as follows:

8.2 Within 30 calendar days (or a later date if specified by the requester), for any requested Facility with a Thermal Rating that **limits the use of Facilities under the requester’s authority by causing the requester has identified as having any of the following: 1) A an Interconnection Reliability Operating Limit, 2) A limitation ~~ing~~ of Total Transfer Capability, 3) An impediment ~~ng~~ to generator deliverability, or 4) An impediment to ~~impeding~~ service to a major ~~city or~~ load center pocket:**

8.2.1 Identity of the existing next most limiting equipment of the Facility

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<sup>13</sup> Order No. 693 at P 756.

8.2.2 The ~~Equipment~~ Thermal Rating for the next most limiting equipment identified in Requirement R8, Part 8.2.1

The team also corrected some typographical errors in the Measures and made some minor revisions to the VSLs to bring them into closer alignment with the exact language of the associated requirement.

The recirculation ballot took place from May 12, 2011 to May 23, 2011. Voting statistics for the recirculation ballot are included below, and the Ballot Results Web page provides a link to the detailed results:

Quorum: 91.25%

Approval: 78.92%

The NERC Board of Trustees approved the FAC-008-3 Reliability Standard on May 24, 2011.

Respectfully submitted,

/s/ Holly A. Hawkins

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## **EXHIBITS A - F**

(Available on the NERC Website at  
[http://www.nerc.com/fileUploads/File/Filings/Attachments\\_FAC-008-3.pdf](http://www.nerc.com/fileUploads/File/Filings/Attachments_FAC-008-3.pdf))