Background Information

The Facility Ratings Standard Drafting Team (FR SDT) has been 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 693, and further explained in paragraph 76 of FERC’s “Order Denying Rehearing, Denying Clarification, Denying Reconsideration, and Denying Request for a Stay,” September 16, 2010. These concerns relate to ensuring broad situational awareness regarding the most limiting elements of Facilities.

In Order 693, FERC explained in paragraph 756:

“…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.”

And provided further direction in paragraph 771:

“…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.”

FERC later explained in paragraph 76 of its September 16, 2010 Order Denying Rehearing, Denying Clarification, Denying Reconsideration, and Denying Request for a Stay:

“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.”

On February 24, 2011, members of the FR SDT met with NERC and FERC staff to discuss the original directive from FERC Order 693 as well as the subsequent guidance issued in the September 16, 2010 Order.

**Reliability Objective Discussion:**

During the discussions on February 24, FERC staff clarified that the intent of the Order 693 directive was for reliability entities (as defined in the functional Model) to be able to take the 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. The directive was not intended to provide the System Operator with information 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.

As an example, assume that a Facility has only three pieces of equipment (see Diagram 1 below) and each piece of equipment has its own ‘time based’ Thermal Rating function. The continuous rating of the Facility would be ‘governed’ by the Equipment Rating of Equipment 3 (E3). However, for owners that define a shorter term rating, the Facility could safely operate at a rating ‘governed’ by the Equipment Rating of Equipment 2 (E2) for time less than the E2/3 crossover. Therefore, knowledge of the shorter term rating could assist the Operations Planning Engineer with a strategy to operate (real or contingency) above the established continuous rating, for a period of time, without violating the rating of any equipment of that Facility. For owners that define a very short term rating, an analogous example could be drawn with Equipment 1 and 2.

For this example, Requirement 8, Part 1 and its sub-parts requires a Transmission Owner (and the Generator Owner that must comply with Requirement R2) to provide two data points as scheduled by requesting entities.

- For the Continuous Rating: The Facility Rating (the Equipment Rating of E3) and identification of the most limiting equipment of the Facility (E3).
- For the Shorter Term Rating: The Facility Rating (the Equipment Rating for E2) and identification of the most limiting equipment of the Facility (E2).
For this example, Requirement 8, Part 2 and its sub-parts requires a Transmission Owner (and the Generator Owner that must comply with Requirement R2) to provide four data points upon request for a specific subset of Facilities.

- For the Continuous Rating: Identification of the existing next most limiting equipment of the Facility (E2) and its Equipment Rating.
- For the Shorter Term Rating: Identification of the existing next most limiting equipment of the Facility (E1) and its Equipment Rating.

Diagram 1 – Facility with Three Pieces of Equipment
Determination of Rating
For Different Periods of Time
You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree that the proposed Requirement R8 addresses the FERC Directive from Order 693, Paragraph 756? If not, please explain why not and if possible, provide an alternative that would be acceptable to you.

☐ Yes
☒ No

Comments: 8.2 should be deleted. What it requires goes beyond what is mandated in the FERC Directive. However, regarding the language in 8.2, major city, and load pocket must be defined. Those terms are vague, and subject to interpretation.

8.1.2 should be revised to read: Identity of the most limiting equipment of the Facilities applicable to each individual Normal and Emergency rating required to be provided.

2. Do you agree with the proposed Violation Risk Factor, Time Horizon and Violation Severity Levels for requirement R8? If not, please explain why not and if possible, provide an alternative that would be acceptable to you.

☐ Yes
☐ No

Comments:

3. Do you agree with the proposed Measure M8? If not, please explain why not and if possible, provide an alternative that would be acceptable to you.

☐ Yes
☐ No

Comments:

4. Do you agree with the proposed Implementation Plan for FAC-008-3, Facility Ratings? If not, please explain why not and if possible, provide an alternative that would be acceptable to you.

☐ Yes
☐ No

Comments:

5. If you have any other comments related to the FERC directive (paragraphs 756 and 771) and this Supplemental SAR that you have not already provided in response to the questions above, please provide them here.

Comments: