

**Comment Form — 2nd Posting of the draft ‘Determine Facility Ratings, System Operating Limits, and Transfer Capabilities’ Standard**

*Note — This form is to be used to comment on version 2 of the Determine Facility Ratings, System Operating Limits, and Transfer Capabilities Standard.*

*Comments will be accepted from December 1, 2003–January 21, 2004.*

**Please review the draft standard and answer the questions in the yellow boxes. Send completed comment forms to [sarcomm@nerc.com](mailto:sarcomm@nerc.com)**

*If you have questions, please call Tim Gallagher at 609-452-8060 or send a question to [timg@nerc.com](mailto:timg@nerc.com)*

**SAR Commenter Information (For Individual Commenters)**

Name	Khaqan Khan
Organization	Independent Electricity Market Operator
Industry Segment #	2
Telephone	(905) 855-6288
E-mail	<a href="mailto:khaqan.khan@theIMO.com">khaqan.khan@theIMO.com</a>

**Key to Industry Segment #'s:**

- 1 – Trans. Owners
- 2 – RTO's, ISO's, RRC's
- 3 – LSE's
- 4 – TDU's
- 5 - Generators
- 6 - Brokers, Aggregators, and Marketers
- 7 - Large Electricity End Users
- 8 - Small Electricity Users
- 9 - Federal, State, and Provincial Regulatory or other Govt. Entities



## Comment Form — 2nd Posting of the draft ‘Determine Facility Ratings, System Operating Limits, and Transfer Capabilities’ Standard

---

is now posted for a second round of industry review. Highlights of the changes made in response to industry comments:

- The table of expected performance used when determining System Operating Limits (Section 603) has been replaced with text in order to add greater clarity (Subsections 603(a)(3)(i)–(iv).
- In some cases, the levels of non-compliance have been re-ordered or clarified, as suggested by industry commenters.
- In some cases, the compliance monitoring process has been modified or clarified, as suggested by industry commenters.
- Additional definitions have been added in response to industry comments, such as: cascading outage, normal clearing, delayed clearing and performance-reset period.
- The numbering system used in the standard has been revised. Comments received in response to other standards indicated confusion with the previous numbering system.
- Minor clarifications have been made in various locations in response to industry comments, including capitalization of defined terms.

Changes were also made in the standard to conform to the recently approved version 2 of NERC’s Functional Model. Version 2 identified a few new functions, such as Transmission Planner, Generator Owner, and Planning Authority, which are associated with this standard. The drafting team is generally supportive of Version 2 of the Functional Model, but did notice some inappropriate or incomplete task descriptions in it. These deficiencies will be pointed out to the group responsible for the model so that the Model can be corrected. Notably:

- The Model incorrectly assumes that Reliability Authorities will only determine Interconnected Reliability Operating Limits (IROL). In the draft standard, Reliability Authorities are responsible for determining all System Operating Limits (SOL) in their area, not just the subset that are considered IROLs.
- The Model misunderstands the relationship between SOLs and IROLs. IROLs are a subset of SOLs.
- The Model does not recognize the role played by the Planning Authority and Transmission Planner in the determination of SOLs.

### **General Philosophy:**

The SDT addressed the three components of this draft standard in three sets of pairs: Facility Ratings (601, 602), System Operating Limits (603, 604), and Transfer Capabilities (605,606). In each of these pairs, the draft standard requires the development and availability of a “methodology” to determine the required quantities and secondly the application of this methodology in the establishment and communication of these values to the users of the values. These standards were developed assuming that the Facility Ratings, System Operating Limits and Transfer Capability values are to be provided to the user (e.g. those entities performing the reliability authority, planning authority, and transmission operator functions) on a schedule established by the *user*. The SDT endeavored to ensure that this draft standard would not require the determination of various values that had no identified user. For this reason, the user of the various values must request the specific values from the value provider (e.g. those entities performing the facility owner and planning authority functions) through the establishment of a schedule to supply the data.

### **Levels of Noncompliance:**

In the three ‘methodologies’ sections (601, 603, 605), the levels of noncompliance are based upon the availability and completeness of the documented procedures. In the three ‘communication’ sections (602,

## Comment Form — 2nd Posting of the draft ‘Determine Facility Ratings, System Operating Limits, and Transfer Capabilities’ Standard

---

603,605), the levels of noncompliance are based on the availability of the values *requested by the users* of the information and the consistency of these values with the documented methodologies.

### **Sanctions:**

The SDT believes that failure to comply with the three ‘methodologies’ sections (601, 603, 605) does not warrant monetary sanctions, since the methodologies themselves would not *directly* impact the ability to operate the transmission system. However the SDT feels that the issuance of Letters of Non-compliance to various officer level persons and oversight bodies will provide sufficient encouragement to promote compliance.

The unavailability of Facility Rating *values*, System Operating Limit *values* and to a lesser extent, Transfer Capability *values* will have a real and detrimental impact on the real time reliability of the transmission system as well as the validity of transmission plans for future transmission system additions. Therefore, the three ‘communication’ sections (602, 604, 606) include monetary sanctions for repeated and/or significant noncompliance as per the sanction table. The SDT believes that nominal, fixed dollar sanctions are appropriate in these cases. The application of ‘per MW’ variable sanctions would be inappropriate for these infractions compared to the consequences of violating the requirements of the standard. While the SDT realizes that a minor omission of a requested value could result in sanction, the SDT also believes that graduated sanctions based upon the level of ‘completeness’ of the data received by the users are impractical. The SDT is of the opinion that not all values have equal importance to the reliability of the transmission system, and therefore, sanctions based upon ‘percentage of requested data received’ (perhaps omitting values of specific critical limitations) would be arbitrary. Additionally, formulating levels to include completeness and importance would result in a cumbersome and complex matrix in itself.

### **Relationship with “Operate Within Interconnected Reliability Operating Limits” Standard:**

The SDT suggests that this draft standard be reviewed in concert with the “Operate Within IROL” draft standard. The Facility Ratings, System Operating Limits, and Transfer Capabilities draft standard requires the availability and usability of these data. The Operate Within Limits standard addresses the use of a subset of these values in real time operation. The SDT believes that the definitions developed in conjunction with this standard do not prohibit the stratification, or sub-classification, of the requested data (Facility Ratings, System Operating Limits, Transfer Capabilities) for specific uses or users. The intent and purpose of this standard, however, is to identify *all* system operating limits and not to differentiate them based upon the impacts of violating them.

The “Operate Within IROL” standard will be balloted in December.

1. Requirement 603 has been rewritten to clarify and amplify the material contained in the table present in the earlier version of this draft standard. The underlying requirements in that table were not modified.

Is it clear that system limits may have to be adjusted during long term outages to reflect the requirement that load shedding and/or system reconfiguration will not be permitted for a first contingency on any generator, transmission circuit or transformer except when such an element is part of a single circuit radial connection?

For example, if a large 345 kV transformer is damaged and cannot be replaced for several months, the system limits would need to be re-established with the base condition including the transformer outage. Any subsequent outages would be considered n-1 contingencies and must meet the requirements in 603.

Yes

No

Comments

*It is not clear in Standard 603 that system limits may have to be adjusted during long term outages to reflect the requirement that load shedding and/or system reconfiguration will not be permitted for a first contingency on any generator, transmission circuit or transformer except when such an element is part of a single circuit radial connection.*

*Additionally, the IMO has some fundamental concerns with Standard 603.*

*Firstly, while the standard 603 promotes a post performance criteria that must be observed, there is no clear methodology or practice identified for the establishment of System Operating Limits. For example, Standard 601 (a)(3) identifies industry rating practices or other standards (IEEE, ANSI, CSA etc) to provide for a consistent methodology to be used in the establishment of ratings across the industry.*

*It is the IMO's position that a consistent methodology or acceptable industry practices should be identified 603(a)(4) to recognize the acceptable and critical assumptions and methods for addressing items (i to v) when satisfying the post performance criteria in Standard 603(a)(3). This should ensure the methodology used by one RA to determine System Operating Limits (and IROL) do not place another RA's jurisdictions at risk.*

*With regards to 603(a)(4), the methodology must also address the scope of assumptions, i.e. the assumptions must be wide enough to recognize electrical performance, not just owner or jurisdictional territory.*

*These comments can be equally applied to the methodologies for 605.*

*Secondly, it is not clear that System Operating Limits (SOL) need to be recalculated as the system topology changes anywhere in Requirement 603 or its associated measures.*

*To make it clear, the IMO believes a statement, similar to the one used in the Operate Within IROL Requirement 201 Measure 1.i should be included so that there is no mistake with respect to the requirement to revise SOL's as topology changes. (201.b.1.i states, "the RA shall have evidence that it reviews and updates the list of facilities to reflect changes in*

*system topology").*

*The example above, leads one to believe that SOLs only need to be recalculated where the outage is of an extended nature. While this may be true for a base set of limits for the planning time frame, in fact all SOLs (and IROLs) need to be constantly reviewed and revised (or have the training and tools available to establish safe operating postures following a contingency) to reflect the real-time system configuration. If this action is not taken, the RA or other authority will not be able to respect T<sub>v</sub>, as stated in Standard 200.*

*Therefore this requirement should not only identify a need to revise the SOL, but should also indicate the timeliness of updates to cover both the planning and the real-time determination of SOLs (and IROL).*

*The IMO is not advocating that the "Authorities" operators have SOLs available to them for all the possible configurations. Rather the IMO believes that these operators should have the capability (Tools and / or Training) at their disposal to identify and deal with unforeseen circumstances or conditions where they are no longer operating within the boundaries of the studied limits.*

*As a minimum, the operators should have at their disposal a base set of limits that include N-1 configurations, along with identifying the following:*

- *The boundary conditions for which the published limits are applicable,*
- *The critical contingency that drive the applicable limit and*
- *An understanding of what the associated limit is designed to protect the system against (i.e. transient stability, voltage decline etc)*

**2. Do you see a need for contingencies known in the current NERC Planning Standards as "Level C contingencies", such as breaker failure, double circuit loss and bipole block, to be examined to ensure that system cascading, instability and uncontrolled separation do not result at system transfers consistent with the limits developed using this methodology?**

Yes

No

Comments

*The Current NERC Policy 2 A section 1.1 states: " Multiple outages of a credible nature, as specified by Regional policy, shall also be examined and, when practical, the CONTROL AREAS shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from these multiple outages."*

*The spirit of this statement should be embodied in this standard to ensure that as a minimum, assessments are made of conditions and circumstances where there may be a need to respect multiple contingencies they are respected.*

***The IMO believes that as a minimum, there are attributes of the NPCC policy with respect to multiple element coverage that can be beneficial to the interconnection.***

*For example, for unexplained automatic operations, it may be prudent to operate to a higher level of security (i.e. operate to SOLs that include multiple outages) until the cause of the outage has been positively identified.*

3. NPCC has requested a Regional Difference in this section. Are there any other Regions who require a Difference, in light of the revisions to this section?

Yes

No

Comments

4. The drafting team made every effort to respond to industry comments received during the first posting of this proposed standard. The standard was modified in response to these comments in many cases. If the team’s response did not properly respond to your comment, please let us know in the space below.

Comments

*Yes- the drafting team made efforts to provide response*

5. Do you agree with that Planning Authorities and Transmission Planners play a role in the development of System Operating Limits?

Yes

No

*While the IMO recognizes that in some jurisdictions, the Planning Authorities, the Transmission Planners and Transmission Operator play a role in the development of SOL (and also IROL). It must be clear and unambiguously identified in this set of Standards that only one function i.e., the Reliability Authority is responsible for the final product.*

**Emphasis:** *The RA should be responsible for the SOLs that are used in real-time operation and for near-term operation.*

*Without a single entity being responsible for the development of "limits" it is entirely conceivable that the results of various studies required for the development of SOL (and IROLs) may not reflect current system configuration. Hence there is a risk of incomplete or incorrect limit coverage.*

*Additionally, the use of a single entity ensures a more consistent application of the development methodology, the distribution of limits and lastly, application of the limits being assessed in both the planning and real-time periods.*

**Since IROLs (which are a subset of SOLs) are the responsibility of the RA to identify, monitor, analyze and take actions on (Standard 201, 202, 203 and 204) it is the IMO's position that this responsibility to ensure System Operating Limits are derived should rest with the RA.**

*The above comments are also applicable to 603 (a) and 604 (a).*

*This thought process is consistent with Requirement 1 and the associated Principles*

**Comment Form — 2nd Posting of the draft ‘Determine Facility Ratings, System Operating Limits, and Transfer Capabilities’ Standard**

*(Requirements for establishing and Communicating Limits) contained in the OLD-TF Report accepted by NERC:OC in March of 2003.*

*Additionally some of the comments NERC received in the balloting of Standard 200 indicate concerns over lack of coordination. In one submission, it was stated "There must be an express provision stating that Reliability Authorities have authority over all entities with facilities or operating within the RA's footprint" (PSEG). In this case the reference was to prevent instances of exceeding an IROL but the principle should be equally applied to the Derivation and Identification of the SOL (and hence IROL).*

**6. Please enter any other comments you have regarding this standard in the space below.**

**(1) The IMO is concerned about an apparent lack of coordination between Standard 200 and Standard 600.**

*The backgrounder for this comment form correctly identifies that IROLs are a subset of SOLs. The backgrounder goes further to state that the intent of this standard " is to identify all system operating limits and not to differentiate them based upon the impacts of violating them".*

*While, this may be true, the statement raises a coordination issue between this Standard 600 and Standard 200.*

*For example Standard 201 requires the RA to identify IROL Facilities, however it makes no reference on what "Function" has the requirement to determine / derive the IROL Limit. Therefore, Standard 600 must define the need to determine when a limit has a wide area impact.*

*As a first step, Standard 603(4) should include a requirement to describe the methodology used to determine the local and wide spread impact used to determine whether a limit is an SOL or an IROL.*

**(2) While Standard 602(a) (2) and 604(a)(2) and the associated measure identify a schedule for the transfer of Limits and Transfer Capability, the standard must recognize the need to provide the Ratings, Limits (SOL and IROL) and Transfer Capability to the required entities that must implement them in a timely manner. Having the best ratings or limits does not ensure the reliability of the system if they are not available to the appropriate authorities on the timeline required for their specific application. Based on the comments in # 5 above, the Reliability Authority should provide the limits to those who require them. Also it is not clear of the context of the word "associated" in 604 (2a).**

***The following comments are offered with regards to Compliance Monitoring Process.***

**(3) *There is a need to define the entity responsible for the role of a compliance monitor. Would it be NERC, the Region, the Reliability Authority or Control area or all.***

**(4) *The Sanction Matrix needs clear instructions on how to interpret the two sanction tables outlined at the end of the standard 600.***

**(5) *There is no clear process or mode defined in standard 602(d) for the Compliance Monitor to verify Facility Ratings.***

**Note: The IMO also agrees with the comments submitted by ISO/RTO Standards Review Committee (SRC) of the ISO/RTO Council (IRC)**