

Name (23 Responses)
Organization (23 Responses)
Group Name (14 Responses)
Lead Contact (14 Responses)
Contact Organization (14 Responses)
Question 1 (30 Responses)
Question 1 Comments (37 Responses)
Question 2 (33 Responses)
Question 2 Comments (37 Responses)
Question 3 (36 Responses)
Question 3 Comments (37 Responses)
Question 4 (14 Responses)
Question 4 Comments (37 Responses)

Scott Berry
Indiana Municipal Power Agency
No
This standard is an exercise in paperwork for Generator Owners and does not increase the reliability of the bulk power system. The standard seems to be intended more for transmission equipment rather than generators, which is evident when asking for Normal and Emergency Ratings of equipment (R2.4.2). Generators do not have emergency ratings that should be used for modeling purposes. The generator capability and verification of capability is covered by other standards (MOD-010, IRO-004, MOD-024, and MOD-025). Any generator temporary limitations will be taken into account for operational purposes by using TOP-002-2, requirement 3. There is no advantage to using a calculated facility rating for planning purposes when a real facility rating is available and certainly mandated by other standards. The main focus of a standard should be to increase the reliability of the bulk power system. The application of this standard to Generator Owners does not increase the reliability of the bulk power system. Therefore, we believe this standard should not apply to Generator Owners.
SERC Engineering Committee Planning Standards Subcommittee
Phillip R. Kleckley
South Carolina Electric & Gas
Yes
Yes
Yes
No Additional Comments
Greg Mason
Dynegy
Yes
No
The SDT received several negative comments from Generator Owners related to the provisions of R1.2 and R1.3. Regardless of whether the "radial facilities" that connect the generator to the grid are considered part of the generating facility or "transmission facilities", unit testing verifies that the rating of these "radial facilities" is greater than or equal to the tested capability of the unit and verifies that the tested rating of the generator is the most limiting element of these "radial facilities". The SAR should consider this issue.
Yes
No Additional Comments

PacifiCorp
Sandra Shaffer
PacifiCorp
Yes
No
<p>: NERC Standards MOD-024 and MOD-025 require verification of the real and reactive output capabilities of generating units. This verification is a determination of the Facility Rating. FAC-008-2 R1 requires the Generator Owner to have a methodology to determine the Facility Rating of its generating units and R5 requires the Generator Owner to perform the determination. Xcel Energy considers this a duplication of the requirements contained in MOD-024 and MOD-025. Another concern is the acceptability of the use of manufacturers' ratings and calculations in determining a Facility Rating. This would lead to a Rating that would, in most cases, be different than the Rating determined by MOD-024 and MOD-025 verification testing. Having two rating numbers can lead to confusion and would be detrimental to grid reliability. To point, one of the root causes of the widespread 1996 blackout in the WECC region was the use of manufacturers' ratings for generator reactive power to determine stability limits. This led to the development of NERC standards that have evolved into the current MOD-025. The FAC Standards Drafting Team previously justified the inclusion of Generator Owners as follows: Capability verification testing under a specific set of conditions is not the same as a Facility Rating – realizing that a generator's capability is a family of data. The approved definition for Facility Rating is: "The maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that does not violate the applicable equipment rating of any equipment comprising the facility." At best, a single verification by itself following what is required in MOD-024-1 and MOD-025-1 would be a subset of what is required in complying with FAC-008-2. FAC-008-2 covers associated transmission facilities owned by (or considered part of) the generator, as well as the peer review concepts and the requirement to provide the ratings to interested parties. Xcel Energy disagrees with this viewpoint. The equipment behind the prime mover is most often what determines the limits to the real power output of a generating facility. This is not part of the scope of the standard, so presenting a facility rating based strictly on the characteristics of the generator, transformer, buswork, and connection to a substation is of no apparent reliability value. Even the rating of planned facilities is normally based on the expected limits from the equipment behind the generator. In summary, Xcel Energy suggests that the SAR be modified to remove R1 and remove Generator Owners from R5 (except for transmission facilities that are owned by entities registered as Generator Owners but not as Transmission Owners).</p> <p>ISSUE #1: Clarification on the proposed FAC-008-2 standard for transmission and substation equipment should be provided. The definition of an Equipment Rating in NERC's glossary of terms is: "The maximum and minimum voltage, current, frequency, real and reactive power flows on individual equipment under steady state, short-circuit and transient conditions, as permitted or assigned by the equipment owner." FAC-008-2 requires that all facilities must include equipment ratings in the development of a facility rating. R2.1 includes the phrase 'Ratings of the Equipment'. We'd like clarification that the standard applies only to the ampacity portion of the Equipment Rating and not the full definition as noted above. The standard seems to be setup that way, but there are some questions related to the full definition of Equipment Rating and how it applies to the standard. Our facilities have always been constructed to conform to applicable IEEE and ANSI standards at the time of installation. If this doesn't cover the intent of the standard, would you please provide an example of ratings to be included for voltage, frequency, and transient conditions for a facility? An example would assist us in determining what is required to be reported, especially about the requirement of transient condition and duration. An example of what we've done to comply with FAC-009 is also attached for your review/comments. (It doesn't include the spreadsheets that combine T-Lines and Sub ratings.) In addition, the short circuit information is kept by all utilities in a separate databases and run periodically to address breakers short circuit ratings. Is it the intent of this standard to add these reports to this Facility Ratings data? ISSUE #2: The applicability of the proposed revisions to FAC-008 to older facilities is left open to interpretation in the current draft. Many transmission and generation facilities have been in service for years under ratings established at the time of construction—and documentation of the basis for those ratings may no longer be available. Requiring recreation of those ratings now, if that is what the drafting team expects, could impose tremendous costs on the industry to perform the record searches and field work that would be required to document the basis for specific ratings. The original drafting team for FAC-008 considered this issue when drafting the current standard. In response to a request to add the requirement that the methodology be . . . "consistent with and based on credible and recognized standards/criteria . . . ", the drafting team responded: "The Drafting Team did not adopt the change because there are many Facilities in place with ratings that were established many years ago and it would be very costly to go back and re-establish ratings based on a set of industry standards." The current proposal requires that the methodology identify how Equipment Rating standard(s) were used as well as how ratings provided by manufacturers were considered. For older facilities or facilities acquired from other entities, the basis for ratings may not have been well documented, or documented at all. Likewise, manufacturers ratings may no longer be available, and indeed, the manufacturer may no longer exist. These facilities have been operated for a number of years, presumably without problems. A narrow interpretation of Requirement 2.2 would force entities to collect voluminous information on facilities, at a tremendous cost. These costs (which could run into the 100's of millions—and potentially billions—of dollars industry-wide) would be borne by customers with potentially little, if any, demonstrable benefit to reliability. A clarification that this standard is not intended to require</p>

entities to recreate documentation or other information needed to justify historic ratings would provide certainty and would avoid the costly and time-consuming process of recreating lost data. Example-Requirements 2.1 and 2.2 be revised as follows to clearly address this issue: R2.1. The methodology used to establish the Ratings of the Equipment that comprises the Facility shall be consistent with at least one of the following: R2.1.1. Ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications such as nameplate rating. R2.1.2. 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). R2.1.3. A practice that has been verified by testing or engineering analysis R2.1.4. In the case of Equipment placed in service prior to the effective date of this requirement, readily available records or data or operational experience. R2.2. The underlying assumptions, design criteria, and methods used to determine the Equipment Ratings identified in R2.1 including identification of how each of the following were considered: R2.2.1. Equipment Rating standard(s) used in development of this methodology. R2.2.2. Ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications, if readily available. R2.2.3. Ambient conditions (for particular or average conditions or as they vary in real-time). If the intent of this requirement is to force entities to collect this information, then an extended implementation plan should be developed that will allow industry participants sufficient time to gather the required data before the revisions take effect.

Greg Rowland

Duke Energy

Yes

Yes

Yes

No Additional Comments

APS - Technical Projects Engineering

Douglas Selin

Arizona Public Service Co.

Yes

No

1.)The scope of Requirement R1 is overly broad and vague. A statement similar to R2.4.1 that narrows the scope down to specific pieces of equipment is needed for the generator data. Requirement R1 Specifies that the generator owner shall document the methodology determining the Facility Ratings of its generating unit facilities. However, it does not cite what specific generating unit facilities it is talking about (the generator? The exciter? The governor? The various fans, pumps, motors and auxiliaries that are all part of generating unit facilities?) Also, it is unclear exactly what ratings are being addressed (voltage, current, MW, MVAR, temperature, vibration)? There are so many breakers, transformers, motors, switches, etc in a generating facility that it would be impossible to document every single rating and how that rating was developed unless the scope of the ratings referred to in R1 is very focused. 2.) R1.1 indicates that the facility rating methodology should specify how it uses commissioning data in its methodology. Again, this is too vague unless specific identification of what equipment and what commissioning data is being addressed is included. There are so many systems that get commissioned in the generating plant that a vague requirement is impossible to comply with. 3.)It is not clear in the wording of FAC-008-2 exactly what type of rating is to be documented. Different entities use different ratings and those ratings don't necessarily agree because they are used for different purposes. Comments from our generation management discuss a generator rating reported on FERC Form 1 which is not necessarily the generator owner's nameplate rating on the generator. Unless the exact type of rating for the generator is defined by the Standard (FAC-008-2), the generator owners are left to choose what ever type of rating to use and the results are not consistent. One rating might be used to ensure that you never exceed equipment capability, while another rating might be used by someone else to define what the generator is normally capable of producing and those two ratings may be very different. 4.) Rule R1.2 includes performance history in the rating methodology but it can be shown that full load tests in the winter and/or summer corrected to standard conditions will give different results and will be different from the FERC Form 1 reported rating for the generator. This goes back to point #3 above that the generator portion is too vague. 5.) Inclusion of rules R1.3, R1.4, and R1.5 can also lead to different ratings depending on what the specific rating that is being desired. Is the intended rating actual demonstrated generator capability, theoretical generator capability, a rating that shouldn't be exceeded, exactly what?

No

1) With regard to R1.1 – The value of using commissioning data for older units is not understood. Actual operating performance today has no correlation with the commissioning data for a unit that is 20 – 50 years old. Commissioning data is primarily used to prove OEM guarantee of rated output at certain contract conditions and test results do not necessarily correspond to the generator owner's rating.

With regard to R1.2 – Performance history will most likely give different values from engineering analysis or rating verification. Unless the specific desired rating is defined, many different interpretations of the rating can be made (FERC Form 1, net demonstrated seasonal capability, maximum unit capability, etc).

Russell A. Noble

Cowlitz County PUD

Yes

Yes

Yes

No Additional Comments

Alan Gale

City of Tallahassee (TAL)

Yes

Yes

Yes

No Additional Comments

Mark Kuras

PJM

Yes

No

A full reconsideration of all aspects of the standard should be encouraged. We agree with the reproposal of the Standard with R7 removed because R7 has no reliability benefit.

Yes

Requirement R1 should be removed because similar requirements to determine a generator's real and reactive capability by verification exist in MOD-024 and MOD-025. Additionally MOD-010 requires submittal of generating unit capability to the Regional Council for modeling purposes.

Jianmei Chai

Consumers Energy Company

Many generation facilities have been in service for years under ratings established at the time of construction—and documentation of the basis for those ratings may no longer be available as required by R1. For older facilities or facilities acquired from other entities, the basis for ratings may not have been well documented, or documented at all. Likewise, manufacturers ratings may no longer be available, and indeed, the manufacturer may no longer exist. R1.4 - Further discussion/clarification of "Ambient conditions" needs to be contained in the Standard.

David Kiguel

Hydro One Networks Inc.

No

We believe that VRFs and VSLs are an integral part of a Standard and should be developed, commented and balloted with it. The SAR should have included these.

No

Please see response to question 1.

Yes

In the current version of the standard and in the proposed draft, Requirements R3 and R4 obligate TOs to subject their

rating calculation methodologies to inspection and review by their RC, TOP, TP or PC. While we agree that TOs could share this material, we do not consider that a technical review and obligation to respond to comments should take place. Ratings are the sole prerogative of the asset owners and the decision on how to manage the life cycle of their assets and how they are going to be operated cannot be taken away from them. The overriding principle is that asset owners must have the final say on the ratings of the equipment they own. In response to this very comment submitted in the past, the SDT has stated that the intent of the requirement is to subject the methodology to a "peer review." Our view is that if it is a peer review, such requirement does not belong in the standard.

Reliant Energy Inc and Gila River Power

Thomas J. Bradish

Reliant Energy Inc.

No

We appreciate the efforts of the drafting in stripping the questionable Requirement 7 from the revised Standard and posting for a new round of comments and re-ballot. We are disappointed however that the drafting team did not take this re-posting opportunity to correct the remaining fatal flaw in the Standard which is the inclusion of Generator Owner as an applicable entity. The flaw begins with the disconnect between the reliability of the Bulk Electric System and the stated Purpose of the standard which is, "To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on technically sound principles. A Facility Rating is essential for the determination of System Operating Limits." The flaw is transferring a rating methodology used for predominately static networked components of a transmission system and inappropriately applying the same basic methodology to generating facilities. The reliability of the BES is dependent upon the ability of generating facilities to delivery power to the system which is not equated to the electrical ratings of the components that make up the facility. A Facility Rating for a Generator that is derived from "ratings provided by equipment manufacturers" is not appropriate to use in the operation of the bulk electric system, and to do so presents a risk to the system. For operation of the bulk electric system, it will necessitate that a calculated Facility Rating for a generator would include any degradation to facility systems that would limit the output of the facility. However, such degradations tend to be maintenance related and transitory in nature in that they will be corrected. What is the usefulness of facility rating if it is based on a transitory limitation, especially for planning purposes? Such transitory limitations will be made known for operational purposes as mandated by TOP-002-2 Requirement 3. A calculated facility rating for generators should never be used for operational purposes as the real capability and not the calculated capability should be considered. There are other standards that mandate the reporting of generator capability. They are MOD-010 and IRO-004. A calculated facility rating for generators is not useful for planning purposes. One would assume that periodic applications of a calculated facility rating would account for long term or non-transitory changes to the capability of the facility. However, the units actual output at varying ambient conditions is captured in the TOP's energy management system (EMS). If the long term limitation is re-mediated then it would show up in the units actual output in the EMS. It will also be reported in real time to satisfy the requirements in IRO-004. These sources of facility rating would be more precise than a calculated rating. As these changes to capability are accounted for and reported, changes to planning models would logically follow. There is no benefit to using a calculated facility rating for planning purposes when a real facility rating is available and indeed mandated by other Standards. FAC-008-2 also references ambient conditions as a factor in facility rating methodology. Ambient conditions are inherently accounted for in capability tests and manufacturer ratings are certainly available to condition capability upon conditions like ambient temperature and humidity. This data is certainly available but it is a sheet or two from a vendor manual and not a facility rating methodology. FAC-008-2 is technically sound and essential for the planning and operation of the networked connection of static components transmission equipment but the requirements are misapplied and a threat to reliability when imposed and used to calculate a generator rating. That the Standard was intended for transmission equipment rather than generators is in part illustrated by Requirement 2.4.2 The scope of Ratings addressed shall include, as a minimum, both Normal and Emergency Ratings. Generating stations may have the ability to increase their output for a limited period of time but the Generators themselves do not have emergency ratings that should be used for modeling purposes by system planners. The conclusion is a calculated facility rating for a generator, when real facility capability data is available, is useless and dangerous for operating purposes, and simply useless for planning purposes. As radial components, no one is seriously questioning the ability of the elements of the generating stations to deliver power to the BES. However, generating owners are expending significant time, effort, and resources to acquire and develop documentation to meet the requirements of Facility Ratings for stations that have multiple decades of successful operation. Try to think of one disturbance or blackout that was traced to the facility rating documentation of a generating facility as the culprit. Yet the standard applies the same violation risk factors and penalties to the radial components of a small generating facility as it does to the networked components of the transmission grid. To date, the FAC-008-1 Standard is one in which generator owners are most vulnerable for non-compliance, in spite of the considerable efforts of the generator-owning industry to make sense of a set of requirements which make little sense, and which no operating entity is actually requesting of them. The individuals showing the most interest in Facility Rating documentation are the auditors or the RROs. The reason the standard it is so often violated is not because the industry is inattentive, but it is for documentation errors of successfully operating generating facilities that in reality are imposing no threat to the reliability of the Bulk Electric System. Not only are the standard requirements flawed in their application to generator owners, but the documentation

burden of proof, as it is being imposed, is unwarranted. Generator Owner applicability should be stripped from FAC-008-2 and any further reliability needs pursuant to generator performance and capability should be referred to the Generator Verification Project 2007-09. (Note on another point: Does anyone comprehend where the dividing line between R1 and R2 start and stop for generator owners and do the requirements of R.2 cover all of the same elements covered by R.1. This is very confusing and ambiguous.)

No Additional Comments

Southern Company

Jim Busbin

Southern Company Services

Yes

Yes

Yes

No Additional Comments

Kris Manchur

Manitoba Hydro

Yes

Yes

Yes

Manitoba Hydro does not agree with the Violation Risk Factors assigned to requirements R1 and R2. The requirement that the Transmission and Generator Owner each have a documented methodology for determining Facility Ratings should not be assigned a Medium VRF. Manitoba Hydro currently has a methodology that is used to determine Facility Ratings. If Manitoba Hydro does not clearly document this methodology, system reliability will not be negatively affected, as long as the appropriate ratings have been provided to the operators. Manitoba Hydro does not believe that lack of documentation or incomplete documentation rates a VSL of Severe, but would agree that a severe violation is warranted if limits are not provided. Therefore, there should not be any case of a Severe VSL associated with R1, R2, R3 or R4. A Severe Violation Severity Level should be limited to situations where rating data is not provided (ie. a violation of R6). The critical issue is that planners and operators of the electric system have rating data. How does the failure to make a Facility Ratings Methodology document available for inspection (a violation of R3) jeopardize the reliability of the system? The applicability of the proposed revisions to FAC-008 to older facilities is left open to interpretation in the current draft. Many transmission and generation facilities have been in service for years under ratings established at the time of construction—and documentation of the basis for those ratings may no longer be available. Requiring recreation of those ratings now, if that is what the drafting team expects, could impose tremendous costs on the industry to perform the record searches and field work that would be required to document the basis for specific ratings. The current proposal requires that the methodology identify how Equipment Rating standard(s) were used as well as how ratings provided by manufacturers were considered. For older facilities or facilities acquired from other entities, the basis for ratings may not have been well documented, or documented at all. Likewise, manufacturers ratings may no longer be available, and indeed, the manufacturer may no longer exist. These facilities have been operated for a number of years, presumably without problems. A narrow interpretation of Requirement 2.2 would force entities to collect voluminous information on facilities, at a tremendous cost. These costs would be borne by customers with potentially little, if any, demonstrable benefit to reliability. A clarification that this standard is not intended to require entities to recreate documentation or other information needed to justify historic ratings would provide certainty and would avoid the costly and time-consuming process of recreating lost data. Manitoba Hydro recommends that Requirements 2.1 and 2.2 be revised as follows to clearly address this issue: R2.1. The methodology used to establish the Ratings of the Equipment that comprises the Facility shall be consistent with at least one of the following: R2.1.1. Ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications such as nameplate rating. R2.1.2. One or more industry standards developed through an open process such as Institute of Electrical and Electronics Engineers (IEEE) or IEC. R2.1.3. A practice that has been verified by testing or engineering analysis R2.1.4. Available records, data or operational experience for Equipment placed in-service prior to the effective date that does not have a methodology consistent with R2.1.1, R2.2 or R2.1.3. R2.2. The underlying assumptions, design criteria, and methods used to determine the Equipment Ratings identified in R2.1 including identification of how each of the following were considered: R2.2.1. Equipment Rating standard(s) used in development of this methodology. R2.2.2. Ratings provided by equipment manufacturers or obtained from equipment manufacturer

specifications, if available. R2.2.3. Ambient conditions (for particular or average conditions or as they vary in real-time).
Steve Myers
ERCOT ISO
Yes
Yes
Yes
No Additional Comments
Dominion Resources Inc.
Jalal Babik
Dominion Resources Inc.
Yes
Yes
Yes
No Additional Comments
FirstEnergy
Sam Ciccone
FirstEnergy Corp.
Yes
Yes
Yes
FirstEnergy appreciates the efforts of the drafting team in developing this SAR as a result of industry objections to Requirement R7. We recognize that this requirement was included at the direction of FERC Order 693, but believe that this requirement did not add a reliability benefit. Without this requirement in the standard, the reliability goal as stated in the purpose statement, "To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on technically sound principles. A Facility Rating is essential for the determination of System Operating Limits.", is still maintained. When explaining the technical substantiation to FERC that this requirement does not add a reliability benefit and is outside the scope of the reliability standards arena, the SDT may offer that determination of the next most limiting equipment rating would be more efficiently and appropriately addressed in the transmission tariff and RTO market processes. The opinion of the drafting team and stakeholders is vitally important in the standards development process, and we applaud NERC staff and the Standards Committee for respecting these opinions and moving forward with this SAR.
Public Service Enterprise Group
Jeffrey P. Mueller
Public Service Electric and Gas Company
No
The SAR should specify deleting generators from this standard. Please see comments to Question 3, below.
No
The SAR (and Standard) should not apply to Generator Owners. Facility rating methodologies and listings of limiting components do not make sense for generators from an ensuring reliability standpoint. The capability of a generator determined through testing and/or generation data derived from actual operation is what accurately determines a generator's rating, and what both markets and system operators depend upon. The Public Service Enterprise Group companies wish to call NERC's attention to the many cogent and compelling points contained in the comments filed by the Electric Power Supply Association (EPSA) in this matter. EPSA correctly points out that generators should not be subject to FAC-008-2 as it is presently drafted and proposed for change in the SAR. For example, EPSA states that a

generator rating derived from manufacturer's equipment rating is not appropriate for use in the operation of the bulk electric system, and indeed presents a risk to the reliability of the BES as the correct rating of a generator can only be obtained by testing and/or actual operating experience. Even for planning purposes, FAC-008-2 is technically sound only for networked connection of static components of transmission equipment, and not for generators. Finally EPSA's conclusion that use of a calculated facility rating for a generator, where real facility capability data is available, is useless and dangerous for operating purposes, and simply useless for planning purposes is absolutely spot on.

No Additional Comments

Electric Power Supply Association

Jack Cashin

Electric Power Supply Association

Yes

No

We have questions regarding the applicability of the standard for generators. Please see response to question 3.

No

EPSA feels that the reliability objectives of Draft Standard FAC-008-2 are achieved even if Generators Owners or operators are not required to comply with the standard. The purpose of the standard is: "To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on technically sound principles. A Facility Rating is essential for the determination of System Operating Limits." System operators through the Energy Management System (EMS) have the needed information for operational purposes to operate the system in a reliable manner. Moreover, for operational purposes numerous other standards require that Generators provide updated capabilities for their units which would reflect ambient temperatures, upgrades or temporary degradations of any elements of the generator circuit, etc. Consequently, system operators and owners have an abundance of information at the ready to maintain reliability. The questions that need to be answered to determine if the applicability and purpose of the standard is being met are: 1. Are the values contemplated by the Standard's Facilities Rating Methodology needed above and beyond the current EMS system information to materially preserve reliability in the operating time frame; and, 2. Does the documentation of a Facilities Rating Methodology ensure reliability through the planning process and is the process under FAC-008 superior to that contained within existing standards MOD-024-1 and MOD-025-1? If it can be shown that reliability is bolstered in a material way making the answers of the two questions above an unequivocal, yes, and FAC-008-2 is necessary for Generator Owners to comply with, then EPSA suggests an alternative approach for moving forward with this standard. Previously EPSA members have experienced problems when standards have been developed for Transmission Owners or Operators but end up including Generator Owners or Operators. This was recognized at the recent NERC Board of Trustees meeting when the formation of a Task Force was approved to resolve generator and transmission facility interface issues. The formation of the Task Force demonstrates a need to better understand the physical, informational and ownership distinctions that exist at the generation and transmission interface. A standard FAC-008-1 is already identified as a standard that the task force will need to look at. In this Facilities Rating Standard R1.2 is particularly illustrative by calling for, among other things, an identification of the methodology by which an emergency rating for a generator is developed. Particularly for planning purposes (which is part of the purpose of this standard) such a rating would not exist. EPSA asserts that the most appropriate means to go forward with the Facility Ratings is to create separate standards for Generator Owner/Operators and Transmission Owner/Operators. In that way, the language of each standard can be appropriately targeted to deal with the facilities in question. We expect that the Generation and Transmission Interface Task Force can consider this issue and that the Facilities Ratings project should await the recommendations of the task force. If it is not possible for this project team to await the outcome of the Task Force, we would propose that the following should be considered as an alternative. In developing FAC-008-2, the Standard Drafting Team has gone some way to addressing the concerns raised above. In Requirement 1 (R1) which is applicable to generators only, the draft standard calls for Generator Owners to have a Facilities Rating Methodology for its generating unit that meets certain criteria. For R2, both Generator Owners and Transmission Owners are required to have a Facilities Rating Methodology. Under that requirement, R2.4 includes the previously mentioned emergency rating, but then excludes the generator. What is still lacking in the case of a Generator Owner however, is an appropriate clarification of the boundary between facilities included in R1 and those remaining to be covered by R2. In our opinion it is not just the generator itself that needs to develop its Facilities Rating Methodology differently, but all of the equipment on the generator side of the switchyard. We would agree that the equipment contained within the switchyard is analogous to equipment that might elsewhere be owned by Transmission Owners and can be treated, for the purposes of this standard, in a manner analogous to the treatment afforded Transmission Owners. Finally, if NERC does continue to include an obligation on generators in FAC-008-2, MOD-024-1 and MOD-025-1 should be reviewed to ensure that overlaps are eliminated.

No Additional Comments

James H. Sorrels, Jr.

American Electric Power

Yes
No
The limited scope of the SAR does not take advantage of the opportunity for continuous improvement. There are areas in the standard where additional clarity is necessary and the standard could also be more explicit as to applicability of requirements.
Yes
AEP has identified a few areas for the SDT to consider as the team reviews the scope and content of the current draft standard. Other stakeholders will likely have issues as well that warrant expanding the scope of the SAR. For example, we believe that it should be the responsibility of the owner to provide ratings. In the case where generators own facilities that could be considered transmission facilities, the generator should be able to defer to the 'host' transmission owner to determine ratings for transmission equipment owned by the associated generator (provided the 'host' transmission owner agrees). This arrangement could be addressed administratively by letter of understanding. Also, there seems to have been an omission by not including performance history in part of R2, as performance history is included in R1. The ratings documentation for some older facilities may not be available and there may also not be an effective manner in which to obtain such documentation. However, performance history may well provide the necessary support for the existing ratings.
Kirit Shah
Ameren
Yes
Yes
Yes
As responded to questions above, we agree with the scope and applicability of the SAR and do not see any issues in meeting the requirements. However, we believe that SDT's response up front to the following two questions would provide further clarification, consistency and possibly would avoid future interpretation requests: 1) R1 requires to "consider" five sub-requirements, R1.1 through R1.5. What does "consider" mean? For example, assuming that data/information is available for R1.2 through R1.5, but the commissioning data is not available for a 50+ years old generator. Would a statement to that effect be adequate to meet "consideration" criteria for R1.1? If not, could you provide any guidance for such cases? 2) Since R1 and R2 both apply to generating facilities, (a) How far "out" from the generator should the R1 requirements apply? Specifically, do the iso-phase bus duct, GSU transformer, GSU disconnect switches, synchronizing breaker, any other facility up to the interconnection point belong in (i) R1, (ii) R2, (iii) some of them belong in R1 and some of them in R2, or (iv) does not matter as long as they are covered either in R1 and R2? (b) Do the R2 requirements "start" where the R1 requirements "end"? Can you please provide guidance and/or examples to ensure that GO continues to meet R1 and R2 requirements on a consistent basis
Catherine Koch
Puget Sound Energy
Yes
Yes
Yes
PSE requests clarity of R6 as it relates to the words "as scheduled by such requesting entities" and the added time horizon of Same-day Operations and Real time Operations. Same-day Operations would imply that an entity needs to provide facility ratings within a required timeframe of a day and Real Time Operations would imply that an entity needs to provide facility rating within one hour or less to preserve the reliability of the bulk electric system. We recognize that the words were in the previous version, but find the addition of the time horizon to create confusion and question.
Dale Fredrickson
Wisconsin Electric Power Company dba We Energies
Yes
Yes
No

There are no explicit requirements given to allow the Generator Owner to determine which generating facilities are subject to the proposed standard. Does it apply to generators above 20 MVA single and 75 MVA aggregate connected to the BES ?

1. Section B, R1: Generating Unit Facilities: the Violation Risk Factor is listed as MEDIUM. We maintain the VSL should be revised to LOWER to reflect the fact that generators are radial elements which do not have the potential to limit area power flows like transmission lines do. 2. Section D, Compliance, 2. Violation Severity Levels: Similar to the comments for R1 above, the Violation Severity Levels for R1.1 through R1.5 should be lower than shown in the draft. The maximum level for generating facilities should be changed from SEVERE to MODERATE to adequately distinguish between a radial generator and a network transmission line.

Allegheny Energy Supply Company, LLC

Robert Loy

Allegheny Energy

Yes

Yes

Yes

We believe that "Generator Owner" should be removed from the applicability of this reliability standard. Including generation facilities in this standard does not increase the reliability of the bulk electric system. Requiring generator owners to comply with FAC-008-02 will only expose the generators to additional compliance burden without any reliability benefit. FAC-008-2 is technically sound and essential for the planning and operation of the networked connection of static components transmission equipment. However, a calculated facility rating for generators should never be used for operational or planning purposes, as the real capability and not the calculated capability should be considered. The following standards mandate the reporting of generator capability: FAC 001 – Facility Connection Requirements FAC 002 – Coordination of Plans for New Facilities MOD 011 – Steady-state Data Requirements and Reporting Procedures MOD 024 – Verification of Generator Gross and Net Real Power Capability MOD 025 - Verification of Generator Gross and Net Reactive Power Capability TOP 002 – Normal Operations Planning The verification of the key generator ratings (real and reactive) as required by Standards MOD-024 & MOD-025 is by far more relevant to BES reliability than documenting the generating facility ratings methodology. FAC 008-02 should not duplicate the above mentioned or any other applicable standards. Multiple standards should not exist in parallel to accomplish what would ultimately be the same end result.

Alice Murdock

Xcel Energy

No

Xcel Energy suggests that the SAR be modified to remove R1 and remove Generator Owners from R5 (except for transmission facilities that are owned by entities registered as Generator Owners but not as Transmission Owners). See details in our response to question 3.

No

NERC Standards MOD-024 and MOD-025 require verification of the real and reactive output capabilities of generating units.* This verification is a determination of the Facility Rating. FAC-008-2 R1 requires the Generator Owner to have a methodology to determine the Facility Rating of its generating units and R5 requires the Generator Owner to perform the determination. Xcel Energy considers this a duplication of the requirements contained in MOD-024 and MOD-025. Another concern is the acceptability of the use of manufacturers' ratings and calculations in determining a Facility Rating. This would lead to a Rating that would, in most cases, be different than the Rating determined by MOD-024 and MOD-025 verification testing. Having two rating numbers can lead to confusion and would be detrimental to grid reliability. To point, one of the root causes of the widespread 1996 blackout in the WECC region was the use of manufacturers' ratings for generator reactive power to determine stability limits. This led to the development of NERC standards that have evolved into the current MOD-025. The FAC Standards Drafting Team previously justified the inclusion of Generator Owners as follows: Capability verification testing under a specific set of conditions is not the same as a Facility Rating – realizing that a generator's capability is a family of data. The approved definition for Facility Rating is: "The maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that does not violate the applicable equipment rating of any equipment comprising the facility." At best, a single verification by itself following what is required in MOD-024-1 and MOD-025-1 would be a subset of what is required in complying with FAC-008-2. FAC-008-2 covers associated transmission facilities owned by (or considered part of) the generator, as well as the peer review concepts and the requirement to provide the ratings to interested parties. Xcel Energy disagrees with this viewpoint. The equipment behind the prime mover is most often what determines the limits to the real power output of a generating facility. This is not part of the scope of the standard, so presenting a facility rating based strictly on the characteristics of the generator, transformer, buswork, and connection to a substation is of no apparent reliability value. Even the rating of planned facilities is normally based on the expected limits from the

equipment behind the generator. In summary, Xcel Energy suggests that the SAR be modified to remove R1 and remove Generator Owners from R5 (except for transmission facilities that are owned by entities registered as Generator Owners but not as Transmission Owners). *Additionally, we recognize that FERC has not approved MOD-024-1 or MOD-025-1. However, we feel strongly that developing duplicative requirements is not the correct solution. Therefore, we would recommend that either MOD-024-1 & MOD-025-1 be repealed, or FAC-008-2 needs to make accommodations for their existence.

ISSUE #1: Xcel Energy is requesting clarification on the proposed FAC-008-2 standard for transmission and substation equipment. The definition of an Equipment Rating in NERC's glossary of terms is: "The maximum and minimum voltage, current, frequency, real and reactive power flows on individual equipment under steady state, short-circuit and transient conditions, as permitted or assigned by the equipment owner." FAC-008-2 requires that all facilities must include equipment ratings in the development of a facility rating. R2.1 includes the phrase 'Ratings of the Equipment'. We'd like clarification that the standard applies only to the ampacity portion of the Equipment Rating and not the full definition as noted above. The standard seems to be setup that way, but internally we've had some questions related to the full definition of Equipment Rating and how it applies to the standard. Our facilities have always been constructed to conform to applicable IEEE and ANSI standards at the time of installation. If this doesn't cover the intent of the standard, would you please provide an example of ratings to be included for voltage, frequency, and transient conditions for a facility? An example would assist us in determining what is required to be reported, especially about the requirement of transient condition and duration. An example of what we've done to comply with FAC-009 is also attached for your review/comments. (It doesn't include the spreadsheets that combine T-Lines and Sub ratings.) In addition, the short circuit information is kept by all utilities in a separate database (CAPE, ASPEN, etc.) and ran periodically to address breakers short circuit ratings. Is it the intent of this standard to add these reports to this Facility Ratings data? ISSUE #2: The applicability of the proposed revisions to FAC-008 to older facilities is left open to interpretation in the current draft. Many transmission and generation facilities have been in service for years under ratings established at the time of construction—and documentation of the basis for those ratings may no longer be available. Requiring recreation of those ratings now, if that is what the drafting team expects, could impose tremendous costs on the industry to perform the record searches and field work that would be required to document the basis for specific ratings. The original drafting team for FAC-008 considered this issue when drafting the current standard. In response to a request to add the requirement that the methodology be . . . "consistent with and based on credible and recognized standards/criteria . . .", the drafting team responded: "The Drafting Team did not adopt the change because there are many Facilities in place with ratings that were established many years ago and it would be very costly to go back and re-establish ratings based on a set of industry standards." The current proposal requires that the methodology identify how Equipment Rating standard(s) were used as well as how ratings provided by manufacturers were considered. For older facilities or facilities acquired from other entities, the basis for ratings may not have been well documented, or documented at all. Likewise, manufacturers ratings may no longer be available, and indeed, the manufacturer may no longer exist. These facilities have been operated for a number of years, presumably without problems. A narrow interpretation of Requirement 2.2 would force entities to collect voluminous information on facilities, at a tremendous cost. These costs (which Xcel Energy anticipates could run into the 100's of millions—and potentially billions—of dollars industry-wide) would be borne by customers with potentially little, if any, demonstrable benefit to reliability. A clarification that this standard is not intended to require entities to recreate documentation or other information needed to justify historic ratings would provide certainty and would avoid the costly and time-consuming process of recreating lost data. Xcel Energy recommends that Requirements 2.1 and 2.2 be revised as follows to clearly address this issue: R2.1. The methodology used to establish the Ratings of the Equipment that comprises the Facility shall be consistent with at least one of the following: R2.1.1. Ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications such as nameplate rating. R2.1.2. 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). R2.1.3. A practice that has been verified by testing or engineering analysis R2.1.4. In the case of Equipment placed in service prior to the effective date of this requirement, readily available records or data or operational experience. R2.2. The underlying assumptions, design criteria, and methods used to determine the Equipment Ratings identified in R2.1 including identification of how each of the following were considered: R2.2.1. Equipment Rating standard(s) used in development of this methodology. R2.2.2. Ratings provided by equipment manufacturers or obtained from equipment manufacturer specifications, if readily available. R2.2.3. Ambient conditions (for particular or average conditions or as they vary in real-time). If the intent of this requirement is to force entities to collect this information, then an extended implementation plan should be developed that will allow industry participants sufficient time to gather the required data before the revisions take effect.

Rick White

Northeast Utilities

Yes

Yes

Yes

No Additional Comments

Richard Kafka
Pepco Holdings, Inc.
Yes
Yes
Yes
No Additional Comments
Bonneville Power Administration
Denise Koehn
Transmission Reliability Program
Yes
Yes
Yes
BPA is in support of the SAR/standard as written.
Michael Sonnelitter
FPL Energy
No
It is the opinion of FPL Energy (a.k.a. NextEra Energy Resources) that the proposed standard should not be applicable to the Generator Owner (GO). We base this opinion on the fact that there are other standards currently in place (i.e. MOD-010/011, MOD-024/025, etc...) that require the same, and in some cases more detailed information, regarding Facility Ratings and Capabilities as is being proposed in FAC-008-2. This duplication of information seems to be an unnecessary burden placed on the Generator Owners. In addition, FERC Order 693 in the discussion on FAC-008-02 identifies that the standard creates ambiguity in terms of acceptable forms of compliance for Generators. Therefore, we respectfully request that the SAR team remove the Generator Owner applicability requirements from FAC-008-2 at this time.
Edward Davis
Entergy Services, Inc
Yes
Yes
Yes
No Additional Comments
Dan Rochester
Independent Electricity System Operator
Yes
Yes
Yes
The IESO would like to reiterate two of its previous comments (on R4 and R5) which we feel have not been

satisfactorily addressed by the SDT. Our previous comments on R4: We do not think this rises to the level of a reliability standard. This is an administrative process. Further, the TO and the GO own their facilities and they provide these facilities for the GOP and TOP and other applicable entities to operate. The ratings they determine provide the upper bound that their facilities may be operated to, and hence should be decided totally at their own discretion. We do not believe other entities have the right to challenge the methods used or the level of the rating determined by the facility owners. Any such challenges, even applicable, should be addressed in the agreements among the owners and the users and outside of the reliability standard process. We suggest that this requirement be removed. The SDT's Response: The intent of R4 is to provide peer review. This is an important concept in ensuring the technical accuracy of the rating methodology. Peers are more likely to have detailed knowledge of methodologies than auditors – and finding errors or questionable practices before the use of an unsound methodology results in inappropriate ratings is better than the alternative – which is to discover incorrect ratings during a system disturbance IESO's view is that this response does not recognize that the decision authority rests solely with the facility owners (as so indicated by the SDT in its response to our comments on R5, as detailed below). Providing a response to comments on the rating is an administrative procedure that does not contribute to reliability whatsoever. We request the SDT to re-consider our comment and proposal to drop this requirement. Our previous comments on R5: R5 holds the facility owners responsible for determining the ratings for their solely and jointly owned facilities. The standard is silent on which methodology to use and how ratings of jointly owned facilities are determined. For example, there is no requirement on which method to choose among joint owners if their methods are different, and on using the more conservative of the two ratings where different. This needs to be provided. SDT's Response R5 – the Facility Owner needs to have the final say on how its Facilities are rated as this is an economically-based decision. This response does not address which facility owner, among the joint owners, has the final say. Further, while the rating itself may be a commercially-based decision, the decision on which method to choose from among those provided by the joint owners to develop the final rating is not specified in the requirement, which can lead to confusing ratings to the users and operators of jointly own facilities and result in adverse impact on reliability. We urge the SDT to consider strengthening R5 to fill this void.

Vlad Stanisic

OPG

No

REQUIREMENT R1 DOES NOT ADDRESS THE DIRECTIVES. Directive 1: (document underlying assumptions and methods used to determine normal and emergency facility ratings) - There is no requirement to document underlying assumptions - There is no mention of normal and emergency ratings Directive 2: (develop facility ratings consistent with industry standards developed through an open, transparent and validated process) - Only one sub-requirement refers to industry standards. Even that one does not specifically call for consistency with "industry standards developed through an open, transparent and validated process". R1 calls for methodology that must identify how all 5 sub-requirements were "considered". This is ambiguous to start with since the sub-requirements are essentially mutually exclusive. There seems to be no correlation between R1 and directive (2)

No

The proposed SAR and the standard eliminate only one of the contentious requirements identified during previous stakeholders' reviews and do not take into account a number of other issues. One of the most contested, second only to R7, has been applicability of FAC008-02 to GOs. Further comments on this are provided in the question on applicability. Other issues include: - The requirements R1, R2 are burdened with a comprehensive set of sub-requirements that tend to be confusing, mutually exclusive or superfluous. The distinction between facility and equipment ratings is blurred. It is not clear whether it is necessary to document methodologies for each major element of a generating facility (boiler, turbine, generator, auxiliaries). There is also ambiguity about the scope; R1 talks about generating unit Facilities, R2 about other solely and jointly owned Facilities? Main output transformers and other HV connection equipment of a generating station may be subject to R1 or R2, depending on the equipment location, etc. - The requirements R3, R4 relate to peer review of Facility Ratings Methodologies (not the actual facility ratings?). The need for these requirements has been questioned by the RCs, PCs, TOPs, TPs (represented through ISO/RTO Council). These entities, although given the right to review GOs and TOs facility ratings methodology, recognize futility of such an exercise. During previous comment periods, the Council acknowledged that facility ratings methodology and the ratings were up to GOs and TOs discretion and cannot be challenged by other entities. They pointed out that any disagreements with respect to the ratings should be addressed outside the NERCs reliability standards process.

No

THERE IS NO RELIABILITY NEED FOR FAC 008-02 TO BE APPLICABLE TO GENERATOR OWNERS: * VARIOUS STANDARDS ALREADY ADDRESS CRITICAL ASPECTS OF GENERATION FACILITY RATINGS AND ARE SUFFICIENT FOR RELIABLE PLANNING AND OPERATION OF THE BES FAC 001 – Facility Connection Requirements FAC 002 – Coordination of Plans for New Facilities MOD 011 – Steady-state Data Requirements and Reporting Procedures MOD 024 – Verification of Generator Gross and Net Real Power Capability MOD 025 - Verification of Generator Gross and Net Reactive Power Capability TOP 002 – Normal Operations Planning These standards address connection and performance requirements, consistency of modeling data and reporting procedures, information exchange process for operations planning including notifications of short-term deratings, verification of generator capabilities. FAC 008-02 should not duplicate the above mentioned or any other applicable standards. Multiple standards should not exist in parallel to accomplish what would ultimately be the same end result. * ENSURING THE QUALITY OF FACILITY RATINGS INFORMATION THROUGH VERIFICATION IS SUPERIOR TO

DOCUMENTING THE FACILITY RATING METHODOLOGY AS REQUIRED BY FAC 008-02 The verification of the key generator ratings (MW, MX) as required by Standards MOD-024 & MOD-025 is by far more efficient and relevant to BES reliability than documenting the generating facility ratings methodology. As several entities noted during previous comment periods, documenting the methodology as per FAC-008-02, would be just an administrative nuisance with little substance. Worth noting is that FERC order 693 (March 2007) acknowledges the relevance of MOD-024, 025 and directs the ERO (ie FRSDT) to consider them during the standard's development process. * FAC 008-02 WOULD NOT ADD VALUE TO THE CURRENT PRACTICES FOR DETERMINING GENERATOR FACILITY RATINGS Requiring generator owners to comply with the proposed FAC-008-02 will just expose the generators and auditors to additional compliance burden without any reliability benefit. The design of generating facilities and determination of Facility Ratings is a complex, yet mature, process involving coordinated effort of GOs, Equipment suppliers (vendors), Engineering and Consulting firms. It is in GOs ultimate interest to design their facilities such that applicable equipment warranties and life expectancy are not jeopardized. At the same time, the GOs have intrinsic goal to optimize utilization of their facilities within the given regulatory framework. All this influences the determination of Generating Facility Ratings. In practical terms, there is no point requesting the GOs to document these established processes and engineering practices, including the details, as required by FAC-008-02.

References related to major system disturbances, including the NERC's 2003 Blackout Report, do not indicate GENERATING Facility Rating Methodologies as a source of problems. On the other hand, NERC's 2003 Blackout report, recommendation 13c, talks about the need to evaluate TRANSMISSION facility rating methodologies and sharing of consistent ratings information. This was driven by cases where planners and operators from different areas used different ratings for the same facility (ie. HV transmission lines). This implies that the main focus of FAC 008-02 should be on major TRANSMISSION facilities.

NPCC RSC

Guy Zito

NPCC Regional Standards Committee

Yes

No

NPCC understands that this comment period is aimed specifically at the removal of requirement R7 from the failed ballot and we agree with this modification; however we have additional comments regarding the scope of this standard which are included as comments in response to Question 4.

Yes

Various existing standards already address critical aspects of Generation Facility ratings and are sufficient for the reliable planning and operation requirements of the BES. Included among these are: FAC001-Facility Connection Requirements FAC002-Coordination of Plans for New Facilities MOD011-Steady-state Data Requirements and Reporting Procedures MOD024-Verification of Generator Gross and Net Real Power Capability MOD025-Verification of Generator Gross and Net Reactive Power Capability TOP002-Normal Operations Planning These existing standards currently address connection and performance requirements, consistency of modeling data and reporting procedures, information exchange process for operations planning including notifications of short term de-ratings, and verification of generator facility capabilities. Standards should not exist in parallel and FAC-008-02 should not duplicate requirements as they pertain to generation facilities.

Roger Champagne

Hydro-Québec TransÉnergie (HQT)

Yes

Yes

Yes

Various existing standards address critical aspects of Generation Facility ratings and could be sufficient for the reliable planning and operation requirements of the BES. Included among these are: FAC001-Facility Connection Requirements FAC002-Coordination of Plans for New Facilities MOD011-Steady-state Data Requirements and Reporting Procedures MOD024-Verification of Generator Gross and Net Real Power Capability MOD025-Verification of Generator Gross and Net Reactive Power Capability TOP002-Normal Operations Planning These existing standards currently address connection and performance requirements, consistency of modeling data and reporting procedures, information exchange process for operations planning including notifications of short term de-ratings, and verification of generator facility capabilities. These standards and FAC-008-02 should be reviewed eventually to eliminate duplication of requirements.

Jason Shaver

American Transmission Company

Yes
Yes
Yes
FERC has the ability, through its market oversight authority, to require the reporting of the limiting component and the theoretical increase in rating of the limiting component is disregarded.
MRO NERC STandards Review Subcommittee
Michael Brytowski
MRO
Yes
Yes
Yes
FAC-008-2 requires that all facilities must include equipment ratings in the development of a facility rating. R2.1 includes the phrase 'Ratings of the Equipment', the NSRS would like to have clarification of this term. Is it a type-o, should it state "Equipment Rating"
Kansas City Power & Light
Tim Hinken
Kansas City Power & Light
Yes
We agree with the Drafting Team regarding the deletion of the previously proposed requirement R7.
Yes
Yes
R1 is fundamentally a duplication of the requirements contained in standards MOD-024-1 and MOD-025-1 for determination and verification of generator real and reactive capabilities. Any additional requirements language that may be deemed necessary to establish the methodology for generator power capabilities should be directed there. This would also require the removal of M1 and the VSL's for R1 in this proposed standard. In addition, for either generating stations or transmission stations, there can be equipment that is of such an age as there is no nameplate information, no historical record of establishment of an equipment rating with the owner or the manufacturer, and/or the manufacturer of the equipment no longer exists to obtain rating data. It is recommended the Drafting Team consider this in the requirements for FAC-008-2. Especially consider revising R6 in the proposed standard. R2.2 requires an explanation for how each of the possible methods utilized to establish equipment ratings could be used. This does not contribute to maintaining the reliability of the BES. There are hundreds of different pieces of equipment in the field. It is recommended to remove the sub-requirements of R2.2 and to delete, "including identification of how each of the following were considered:", from requirement R2.2.