Comment Form — SAR for Generator Verification (Project 2007-09)

Please use this form to submit comments on the SAR for Generator Verification. Comments must be submitted by **May 21, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.net with the words "**Generator Verification**" in the subject line. If you have questions, please contact David Taylor at david.taylor@nerc.net or by telephone at 609-651-5089.

Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Thad K. Ness	
Organization:	American Electric Power (AEP)	
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E-mail:	tkness@aep.com	
NERC Region		**Registered Ballot Body Segment**
☒ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☒ **RFC** ☐ **SERC** ☒ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
	☐	2 — RTOs and ISOs
	☐	3 — Load-serving Entities
	☐	4 — Transmission-dependent Utilities
	☒	5 — Electric Generators
	☒	6 — Electricity Brokers, Aggregators, and Marketers
	☐	7 — Large Electricity End Users
	☐	8 — Small Electricity End Users
	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☐	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information

The Generator Verification SAR calls for finalizing the last four Phase III & IV standards (subsequent to field testing) and calls for revising two of the Phase III & IV standards that were approved by the NERC Board of Trustees but not by FERC. All six standards need to conform to the latest version of the ERO Sanction Guidelines and Reliability Standards Development Procedure and all need to address FERC concerns identified in FERC Order 693. The standards associated with this SAR are:

PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments:

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments: None

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments: None

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: Please transmit to the Standard Drafting Team the following specific suggested revisions to MOD-025:
   Key changes relate to FERC's requirement that regional "fill-in-the-blank" standards be rewritten as North American standards; these and other recommended changes are provided below:

   A. Introduction

   1. Title:Verification of Generator [ ] Reactive Power Capabilities

   3. Purpose: To ensure that [ ] steady-state models used for assessing Bulk Electric System reliability reflect realistic/usable generator reactive power capabilities.

   B. Requirements

R1. The North American Electric Reliability Corporation (NERC) shall establish and maintain procedures to address verification of generator gross and net Reactive Power capability. These procedures shall include the following:

R1.5. Information to be reported to Regional Reliability Organization (RRO):

R1.5.1. Verified maximum gross and net Reactive Power capability (both lagging and leading) at Seasonal Real Power generating capabilities as reported in accordance with Reliability Standard MOD-024 Requirement 1.5.1. and at Minimum Real Power output levels of generators. Net capabilities should be reported at the low- and high-voltage terminals of generator step-up (GSU) transformers.

R1.5.3. Verified Real and Reactive Power of auxiliary loads fed from: (a) generator bus, and (b) transmission system bus (listed separately).

R1.5.5. System bus voltages (as scheduled and as verified), generator bus voltage and generator hydrogen pressure.

R1.5.6. In-service transformer tap setting and impedance (including base quantities).

R1.6. Requirement that sanity checks (or analysis) be used to ensure consistency/accuracy of reactive power capabilities obtained via measurement.

R2. The RRO shall provide [ ] generator gross and net Reactive Power capability verification and reporting procedures, and any changes to those procedures, to ...

R3. The Generator Owner shall follow NERC's procedures for verifying and reporting to RRO generator gross and net Reactive Power capabilities per R1.

C. Measures

M2. The RRO shall have written evidence that [ ] procedures...

M3. The Generator Owner shall have written evidence it provided verified information of its generator gross and net Reactive Power capabilities, consistent with NERC's procedures.

D. Compliance

This section should be revised to recognize that the procedures for generator Reactive Power capability verification will be written by NERC as a continent-wide standard. AEP recommends that AEP's Circular Letter OP-G-CL-011 (Reactive Capability Testing of Generators), developed over nearly two decades of testing experience and advocacy within the former ECAR region, be used as a reference in drafting this standard.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	John E. Sullivan	
Organization:	Ameren	
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E-mail:	JSullivan@ameren.com	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☐ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
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PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

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You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments: With regards to the scope of MOD-025, it should not be necessary to include a blanket requirement for verification of reactive power capability at multiple points for all generators. However, should a generator frequently have difficulty reaching its stated reactive power output, additional testing requirements for that generator would be indicated.

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,

- Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
- Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☐ Yes

☐ No

Comments:

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☐ No

   Comments:

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: MOD-026-1 and MOD-027-1: The existing language in R1.2 for each of these standards states that manufacturer data is one of the methods which can be utilized for verification of models and data. However, typical data for these types of models is generally not adequate to sufficiently characterize the models for use in system simulations.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Robert Ferguson	
Organization:	Amerren Services	
Telephone:	314-554-2944	
E-mail:	RFerguson	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☐ **RFC** ☒ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☐	1 — Transmission Owners
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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

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   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☐ Yes

   ☐ No

   Comments: At this point in time we cannot determine if there is a reliability related need to finalize these standards. The results of the field test by the 4 participating RROs will not be complete until late June 2007. The 4 RROs, in support of the NERC Field Test team, have spent significant resources in an attempt to implement procedures and subsequently carry out the draft Reliablity Standard requirements. Thus, in order to ensure proper consideration is given to the results of the field tests, the scope of the SAR should make it clear that the decision by the SDT to either refine / significantly revise / or delete these standards should be heavily weighted on the outcome of the field test. Recommend that the last sentence in the paragraph in the SAR on page SAR-3 under "Detailed Description" be modified to: "In addition, the SDT will consider and address all applicable FERC Orders, including Order 693, in addition to any modifications, deficiencies, and other items as found in the NERC Phase III-IV Planning Standard Field Tests, and in addition the following porposed changes for each of the six standards in this set of standards:"

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

Comments:

3. The scope of this project includes:
   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
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   - Addressing issues identified in FERC Order 693.

   Do you agree with this scope? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments: The scope of MOD-025 has been expanded beyond what is stated above. The changes to the four field test standards should be based on the field test results.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☒ Yes

   ☒ No

   Comments:

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance: none
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice: none
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Comments: The scope of MOD-024 and MOD-025 should not be expanded beyond the scope contained in the current version of these two standards. The results of the field test for the other 4 Draft Reliability Standards by the 4 participating RROs will not be complete until late June 2007. Thus, the scope of the SAR should make it clear that the decision by the SDT to either refine / significantly revise / or delete these standards should be heavily weighted on the outcome of the field test.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Rich Young	
Organization:	American Transmission Co.	
Telephone:	262-506-6825	
E-mail:	ryoung@atcllc.com	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☒ **MRO** ☐ **NPCC** ☒ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
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   ☐ Yes

   ☒ No

   Comments: Generator Operator should be included.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

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   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: The SAR includes language requiring the SDT to identify any generators that should be exempt from compliance. There are many standards both under this project and others (such as Project 2007-01) that need to consider applicability based on generator size and/or voltage. If these standards remain separate, this requirement will either force needless repetition of the same language in many standards, or there is a distinct possibility that differences will develop among the exemptions, making it very difficult for generator owners to know which of their generators are covered by which standards. I suggest there should be a global definition of minimum generator size to which all NERC Reliability Standards apply, much like the global definition of Bulk Electric System. To start the discussion let me suggest "generators with a net electrical output or 20 MW or greater, connected through a step-up transformer with a high voltage rating of 100 kV or higher."

   The wording in the third bullet point for MOD-024-1 and MOD-025-1 in the Detail Description should be changed from "Consider Requiring" to just "Require".

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	☐	6 — Electricity Brokers, Aggregators, and Marketers
	☐	7 — Large Electricity End Users
	☐	8 — Small Electricity End Users
	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☐	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name: Entergy - Fossil Operations;Nuclear; System Planning & Operations (Generation)

Lead Contact: Will Franklin

Contact Organization: Entergy System Planning and Operations

Contact Segment: 6

Contact Telephone: 281-297-3456

Contact E-mail: wfrankl@entergy.com

Additional Member Name	Additional Member Organization	Region*	Segment*
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Arthur Howell	Entergy Fossil Operations	SERC	5
Jules Guillot	Entergy Fossil Operations	SERC	5
Thomas Barnett	Entergy Nuclear	SERC	5

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information

The Generator Verification SAR calls for finalizing the last four Phase III & IV standards (subsequent to field testing) and calls for revising two of the Phase III & IV standards that were approved by the NERC Board of Trustees but not by FERC. All six standards need to conform to the latest version of the ERO Sanction Guidelines and Reliability Standards Development Procedure and all need to address FERC concerns identified in FERC Order 693. The standards associated with this SAR are:

PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☐ Yes
   ☒ No

   Comments: It is questionable whether there is a reliability related need for these standards. The field tests are not complete, but initial results show that PRC-024 and MOD-027 are difficult to perform, give questionable results, and may not be translated into better models or higher reliability. MOD-026 is also difficult to translate into better models or higher reliability.

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes
   ☐ No

   Comments: However, there is no need increase the scope and test multiple points for MOD-025 for leading and lagging. This will not improve reliability or accurate modeling.

3. The scope of this project includes:

- Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
- Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
- Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☐ Yes

☒ No

Comments: The scope of MOD-025 has been expanded beyond what is stated above. The changes to the four field test standards should be based on the field test results up to and including their elimination if so recommended.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments:

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: MOD-24 & 25 should not be increased beyond their current scope. Multiple test points cost time and money, and increase the potential of plant trips, but do not improve reliability. The rest of the standards should be judged based on the results of the field test and significantly modified or eliminated if the field test show that they are

very difficult to perform, give questionable results or do not improve the reliability of the bulk power system.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Doug Hohlbaugh	
Organization:	FirstEnergy Corp	
Telephone:	330-384-4698	
E-mail:	hohlbaughdg@firstenergycorp.com	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☒ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
	☐	2 — RTOs and ISOs
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Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

Additional Member Name	Additional Member Organization	Region*	Segment*

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MOD-024 — Verification of Generator Gross and Net Real Power Capability

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MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

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You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments: The present legacy document ECAR Document 4 details the testing and is sufficient to cover the present accurary for a regional basis. The standards if spread to a national level will need to look at the difference between summer peaking regions and winter peaking. Presently the testing in RFC follows ECAR Document 4 which corrects the testing for average ambient conditions which is left up to the discretion of the testing personnel. The temperature conditions of the water inlet or ambient air needs to be defined.

3. The scope of this project includes:

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- Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
- Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments: The project should account for potential regional differences. See comment on question # 5 below.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: It is recommended that the SAR be written to include the Generator Operator entity. If the drafting team determines only the GO is applicable and that the GOP is not needed it can be removed. As stated above, the SDTs can reduce scope but not expand. The Generator Operator may have involvement in PRC-024.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance: Not aware of existing, but potential for regional differences exist.
   Comments: The fill-in-the-blank needs to take into account regional differences such as summer or winter peaking conditions. The standard needs to address the main factor in generation capacity which is inlet water temperatures on once through cooling units and ambient temperature and humidity on cooling towers and combustion turbines.

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments: Aware of none.

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Comments: On page SAR-3 under PRC-024-1, the bullet "Add requirement for the Transmission Owner and Generator Owner to coordinate protection systems" should be revised or removed. If it is included, it should be revised to specifically state what protection schemes are being coordinated via this standard. Otherwise it should be removed because the coordination of the transmission and generation protection is covered in PRC-001-1 R3 and R4.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
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Organization:	Hydro-Québec TransÉnergie	
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NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☒ **NPCC** ☐ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
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Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

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MOD-027 — Verification of Generator Unit Frequency Response

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You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments: It is our understanding and hope that the results of the recent field test will be considered during development of the Standards.

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and

- Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments:

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: Depending on the Requirements that are developed during the standard drafting phase, the Generator Operator may be an applicable entity.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance: Possible
   Comments: For Québec Interconnection, there might be some specific value for frequency range applicable for PRC-024 and PRC-019

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice: No
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: The industry should be provided the opportunity to comment on and provide suggestions for the periodicity and magnitude of the testing.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Ron Falsetti	
Organization:	IESO	
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E-mail:	ron.falsetti@ieso.ca	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☒ **NPCC** ☐ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☐	1 — Transmission Owners
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Group Name:

Lead Contact:

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Contact Telephone:

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Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

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You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

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   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
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   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☒ No

Comments: The SDT should consider the term characteristics during the review of the standards. The following is an example of:

-PRC-019-1

R2.1.2 & R2.1.5 - How to define characteristics? A common interpretation could be to define characteristics as the "setpoints" for the controllers. However, this does not appear to be the case as in other requirements they request "setpoints" as is shown in R2.1.6. MOD-026-1 appears to address this but refers to the excitation system functions.

In other words, the terms "characteristics" and "setpoints/settings" are presented in the requirements without clearly clarifying the meaning of the terms. “Characteristic” could mean something like a Generator capability curve (or any operating curve for that matter or nomograms) where the operations are defined by a “bounded region of operation” as such and is kind of “analog” in nature. “Setpoint/Setting” on the other hand could be something like a Generator Under-frequency trip setting where there are “set-points” for tripping – kind of “digital” in nature. Is this what the SDT means by these terms. Please clarify.

As the standards are reviewed, there are specific questions that need to be addressed such as:

MOD-025-1

R1.5.3 - Is this individual loads, or is this an overall value for the total auxiliary loads running at full station output?

Also, What will define the need to revisit this when equipment changes occur?

In addition, the SDT should consider additional field tests for all the changes associated with the revised standard.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can “reduce” but cannot “expand” this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☒ Yes

   ☒ No

Comments: We agree that the list covers all the reliability functions that are listed in the existing standards. However, in view of the expected industry debate on this issue, it may be prudent to add Generator Operator to the list in the event that any of the six standards should be revised to hold Generator Operators responsible for any tasks.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

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   Comments:

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NERC Region		**Registered Ballot Body Segment**
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Group Comments (Complete this page if comments are from a group.)

Group Name: IRC Standards Review Committee

Lead Contact: Charles Yeung

Contact Organization: SPP

Contact Segment: 2

Contact Telephone: 832-724-6142

Contact E-mail: cyeung@spp.org

Additional Member Name	Additional Member Organization	Region*	Segment*
Jim Castle	NYISO	NPCC	2
Alicia Daugherty	PJM	RFC	2
Ron Falsetti	IESO	NPCC	2
Matt Goldberg	ISO-NE	NPCC	2
Brent Kingsford	CAISO	WECC	2
Anita Lee	AESO	WECC	2
Steve Myers	ERCOT	ERCOT	2
William Phillips	MISO	RFC	2

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PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☒ No

Comments: The SDT should consider the term characteristics during the review of the standards. Sections below are identified as locations for clarification.
-PRC-019-1
R2.1.2 & R2.1.5 - How to define characteristics? A common interpretation would be define characteristics as the "setpoints" for the controllers. However, this does not appear to be the case as in other requirements they request "setpoints" as is shown in R2.1.6. MOD-026-1 appears to address this but refers to the excitation system functions. What is meant by characterisitics, if the characteristics are not defined as the setpoint?

As the standards are reviewed, there are specific questions that need to be addressed such as:
MOD-025-1
R1.5.3 - Is this individual loads, or is this an overall value for the total auxiliary loads running at full station output?

Also, What will define the need to revisit this when equipment changes occur?

The SDT should also identify a date for compliance for each of the requirements and measures. Here are a few examples:

-MOD-024-1
M1 & M3 - Will need to prescribed a date for compliance

-MOD-026-1
M3 - Will need to prescribed a date for compliance

-MOD-027-1
M1 & M3 - Will need to prescribed a date for compliance

In addition the SDT should consider additional field tests for all the changes associated with the revised standard. Also careful consideration needs to be provided to the implementation plans.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can “reduce” but cannot “expand” this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

☒ Yes

☒ No

Comments: The SDT should consider applicability to Generator Operators who will be required to actually perform the tests.

The SDT should also review the applicablity of this SAR to the Reliability Coordinator. It is unclear at this time what role the RC will have in requirements associated with this standard.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: There is a reliability need for this SAR, but the Industry must be allowed to comment on the periodicity of the tests. There should be justification for annual testing requirements, since some characteristics do not change appreciably over time.

Comment Form — SAR for Generator Verification (Project 2007-09)

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Kathleen Goodman	
Organization:	ISO New England	
Telephone:	(413) 535-4111	
E-mail:	(413) 535-4343	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☒ **NPCC** ☐ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☐	1 — Transmission Owners
	☒	2 — RTOs and ISOs
	☐	3 — Load-serving Entities
	☐	4 — Transmission-dependent Utilities
	☐	5 — Electric Generators
	☐	6 — Electricity Brokers, Aggregators, and Marketers
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	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☐	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

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PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☒ No

Comments: The SDT should consider the term characteristics during the review of the standards. The following is an example of:
-PRC-019-1
R2.1.2 & R2.1.5 - How to define characteristics? A common interpretation would be define characteristics as the "setpoints" for the controllers. However, this does not appear to be the case as in other requirements they request "setpoints" as is shown in R2.1.6. MOD-026-1 appears to address this but refers to the excitation system functions. What is meant by characterisitics, if the characteristics are not defined as the setpoint?

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R1.5.3 - Is this individual loads, or is this an overall value for the total auxiliary loads running at full station output?

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M1 & M3 - Will need to prescribed a date for compliance

-MOD-026-1
M3 - Will need to prescribed a date for compliance

-MOD-027-1
M1 & M3 - Will need to prescribed a date for compliance

In addition the SDT should consider additional field tests for all the changes associated with the revised standard. Also careful consideration needs to be provided to the implementation plans.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can “reduce” but cannot “expand” this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

☒ Yes

☒ No

Comments: ISO New England asked the SDT to consider appliability to Generator Operators who will be required to actually perform the tests.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: There is a reliability need for this SAR, but the Industry must be allowed to comment on the periodicity and magnitude of the tests. There should be justification for annual testing since characteristics do not change appreciably over time.

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Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		**Registered Ballot Body Segment**
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	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☒	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name: MRO NSRS

Lead Contact: Pam Oreschnick

Contact Organization: Xcel Energy

Contact Segment: 10

Contact Telephone: 612-337-2376

Contact E-mail: pamela.j.oreschnick@xcelenergy.com

Additional Member Name	Additional Member Organization	Region*	Segment*
Carol Gerou	Minnesota Power	MRO	10
Joe Knight	Great River Energy	MRO	10
Dave Rudolph	Basin Electric Power Cooperative	MRO	10
Mike Brytowski	Midwest Reliability Organization	MRO	10
27 Additional MRO Members	Companies not named above	MRO	10

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1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

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   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

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   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments:

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: Under Draft PRC-024-1 on the SAR form, the fourth bullet says "Add a requirement for the Transmission Owner and Generator Owner to coordinate protection systems". This is already required and measured under PRC-001-1, and should therefore not be added as a requirement in PRC-024-1.

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E-mail:		
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	☐	3 — Load-serving Entities
	☐	4 — Transmission-dependent Utilities
	☐	5 — Electric Generators
	☐	6 — Electricity Brokers, Aggregators, and Marketers
	☐	7 — Large Electricity End Users
	☐	8 — Small Electricity End Users
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	☒	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name: NPCC CP9 Reliability Standards Working Group

Lead Contact: Guy V. Zito

Contact Organization: Northeast Power Coordinating Council

Contact Segment: 10

Contact Telephone: 212-840-100

Contact E-mail: gzito@npcc.org

Additional Member Name	Additional Member Organization	Region*	Segment*
Roger Champagne	HydroQuebec TransEnergie	NPCC	1
David Kiguel	Hydro One Networks	NPCC	1
Don Nelson	MA PUC	NPCC	9
Mike Gopinathan	Northeast Utilities	NPCC	1
Ralph Rufrano	New York Power Authority	NPCC	1
Mike Rinalli	National Grid US	NPCC	1
Randy Macdonald	New Brunswick System Operator	NPCC	2
Kathleen Goodman	ISO-New England	NPCC	2
Bill Shemley	ISO-New England	NPCC	2
Ed Thompson	Con-Edison	NPCC	1
Al Adamson	New York State Reliability Council	NPCC	10
Guy Zito	NPCC	NPCC	10
Greg Campoli	New York ISO	NPCC	2

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   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments: It is our understanding and hope that the results of the recent field test will be considered during development of the Standards.

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

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- Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments: The SDT should consider additional field tests for all the changes associated with the revised standard.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: Depending on the Requirements that are developed during the standard drafting phase, the Generator Operator may be an applicable entity.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance: No
   Comments: Within the Québec Interconnection, there might be some specific value for frequency range applicable for PRC-024 and PRC-019 and this should be allowed for in the standard drafting phase.

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice: No
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: The industry should be provided the opportunity to comment on and provide suggestions for the periodicity and magnitude of the testing.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:	Richard Kafka	
Organization:	Pepco Hodlings, Inc. - PHI	
Telephone:	301-469-5274	
E-mail:	rjkafka@pepcoholdings.com	
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☒ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
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MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments:

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: Generator Operator should be added.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments:

Comment Form — SAR for Generator Verification (Project 2007-09)

Please use this form to submit comments on the SAR for Generator Verification. Comments must be submitted by **May 21, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.net with the words "**Generator Verification**" in the subject line. If you have questions, please contact David Taylor at david.taylor@nerc.net or by telephone at 609-651-5089.

Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☐ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☐	1 — Transmission Owners
	☐	2 — RTOs and ISOs
	☐	3 — Load-serving Entities
	☐	4 — Transmission-dependent Utilities
	☐	5 — Electric Generators
	☐	6 — Electricity Brokers, Aggregators, and Marketers
	☐	7 — Large Electricity End Users
	☐	8 — Small Electricity End Users
	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☐	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name: Public Service Commission of South Carolina

Lead Contact: Phil Riley

Contact Organization: Public Service Commission of South Carolina

Contact Segment: 9

Contact Telephone: 803-896-5154

Contact E-mail: philip.riley@psc.sc.gov

Additional Member Name	Additional Member Organization	Region*	Segment*
Mignon L. Clyburn	Public Service Commission of SC	SERC	9
Elizabeth B. "Lib" Fleming	Public Service Commission of SC	SERC	9
G. O'Neal Hamilton	Public Service Commission of SC	SERC	9
John E. "Butch" Howard	Public Service Commission of SC	SERC	9
Randy Mitchell	Public Service Commission of SC	SERC	9
C. Robert "Bob" Moseley	Public Service Commission of SC	SERC	9
David A. Wright	Public Service Commission of SC	SERC	9

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information

The Generator Verification SAR calls for finalizing the last four Phase III & IV standards (subsequent to field testing) and calls for revising two of the Phase III & IV standards that were approved by the NERC Board of Trustees but not by FERC. All six standards need to conform to the latest version of the ERO Sanction Guidelines and Reliability Standards Development Procedure and all need to address FERC concerns identified in FERC Order 693. The standards associated with this SAR are:

PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

   Comments:

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

Do you agree with this scope? If not, please explain in the comment area.

☒ Yes

☐ No

Comments:

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☒ Yes

   ☐ No

   Comments:

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance:
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice:
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments:

Comment Form — SAR for Generator Verification (Project 2007-09)

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☐ **RFC** ☐ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☐	1 — Transmission Owners
	☐	2 — RTOs and ISOs
	☐	3 — Load-serving Entities
	☐	4 — Transmission-dependent Utilities
	☐	5 — Electric Generators
	☐	6 — Electricity Brokers, Aggregators, and Marketers
	☐	7 — Large Electricity End Users
	☐	8 — Small Electricity End Users
	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☐	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name: SERC: Generator Standards Field Test Task Force

Lead Contact: **Lee Taylor**

Contact Organization: **Task Force Chairman**

Contact Segment: **Region**

Contact Telephone: 205-257-7467

Contact E-mail: **ltaylor@southernco.com**

Additional Member Name	Additional Member Organization	Region*	Segment*
John Loftis	Dominion Virginia Power	**SERC**	**1**
Larry Whanger	Dominion Virginia Power	**SERC**	**5**
Art Howell	Entergy	SERC	5
Stan Jaskot	Entergy	SERC	5
Pat Longshore	SCE&G	SERC	5
Pat Huntley	SERC Reliability Corp.	SERC	10
Lee Taylor	Southern Company Services, Inc.	SERC	1
Tom Higgins	Southern Company Services, Inc.	SERC	5
David Williams	US Army Corps of Engineers	SERC	9

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information

The Generator Verification SAR calls for finalizing the last four Phase III & IV standards (subsequent to field testing) and calls for revising two of the Phase III & IV standards that were approved by the NERC Board of Trustees but not by FERC. All six standards need to conform to the latest version of the ERO Sanction Guidelines and Reliability Standards Development Procedure and all need to address FERC concerns identified in FERC Order 693. The standards associated with this SAR are:

PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☐ Yes

   ☐ No

   Comments: At this point in time we cannot determine if there is a reliability related need to finalize these standards. The results of the field test by the 4 participating RROs will not be complete until late June 2007. The 4 RROs, in support of the NERC Field Test team, have spent significant resources in an attempt to implement procedures and subsequently carry out the draft Reliablity Standard requirements. Thus, in order to ensure proper consideration is given to the results of the field tests, the scope of the SAR should make it clear that the decision by the SDT to either refine / significantly revise / or delete these standards should be heavily weighted on the outcome of the field test. Recommend that the last sentence in the paragraph in the SAR on page SAR-3 under "Detailed Description" be modified to: "In addition, the SDT will consider and address all applicable FERC Orders, including Order 693, in addition to any modifications, deficiencies, and other items as found in the NERC Phase III-IV Planning Standard Field Tests, and in addition the following porposed changes for each of the six standards in this set of standards:"

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

   ☒ Yes

   ☐ No

Comments: However, the scope statement for MOD-025 includes increased scope: (scope creep to require expanded verification to include multiple operating points). The scope of this standard needs to be restricted to that of the current version!

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

   Do you agree with this scope? If not, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: The scope of MOD-025 has been expanded beyond what is stated above. The changes to the four field test standards should be based on the field test results up to and including their elimination if so recommended.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: The Generator Operator should be added to the list of possible applicable functional entities on page 6 of the SAR.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance: none
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice: none
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: The scope of MOD-024 and MOD-025 should not be expanded beyond the scope contained in the current version of these two standards. The results of the field test for the other 4 Draft Reliability Standards by the 4 participating RROs will not be complete until late June 2007. Thus, the scope of the SAR should make it clear that the decision by the SDT to either refine / significantly revise / or delete these standards should be heavily weighted on the outcome of the field test.

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Individual Commenter Information **(Complete this page for comments from one organization or individual.)**		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		**Registered Ballot Body Segment**
☐ **ERCOT** ☐ **FRCC** ☐ **MRO** ☐ **NPCC** ☐ **RFC** ☒ **SERC** ☐ **SPP** ☐ **WECC** ☐ **NA – Not Applicable**	☒	1 — Transmission Owners
	☐	2 — RTOs and ISOs
	☒	3 — Load-serving Entities
	☐	4 — Transmission-dependent Utilities
	☐	5 — Electric Generators
	☐	6 — Electricity Brokers, Aggregators, and Marketers
	☐	7 — Large Electricity End Users
	☐	8 — Small Electricity End Users
	☐	9 — Federal, State, Provincial Regulatory or other Government Entities
	☐	10 — Regional Reliability Organizations and Regional Entities

Group Comments (Complete this page if comments are from a group.)

Group Name: Southern Company - Transmission

Lead Contact: Jim Busbin

Contact Organization: Southern Company Services, Inc.

Contact Segment: 1

Contact Telephone: 205-257-6357

Contact E-mail: jybusbin@southernco.com

Additional Member Name	Additional Member Organization	Region*	Segment*
Marc Butts	Southern Company Services, Inc.	SERC	1
J. T. Wood	Southern Company Services, Inc.	SERC	1
Roman Carter	Southern Company Services, Inc.	SERC	1
Keith Calhoun	Southern Company Services, Inc.	SERC	1
Terry Crawley	Southern Company Services, Inc.	SERC	5
Tom Higgins	Southern Company Services, Inc.	SERC	5
John Ciza	Southern Company Services, Inc.	SERC	6

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information

The Generator Verification SAR calls for finalizing the last four Phase III & IV standards (subsequent to field testing) and calls for revising two of the Phase III & IV standards that were approved by the NERC Board of Trustees but not by FERC. All six standards need to conform to the latest version of the ERO Sanction Guidelines and Reliability Standards Development Procedure and all need to address FERC concerns identified in FERC Order 693. The standards associated with this SAR are:

PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024 — Generator Performance During Frequency and Voltage Excursions

MOD-024 — Verification of Generator Gross and Net Real Power Capability

MOD-025 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026 —Verification of Models and Data for Generator Excitation System Functions

MOD-027 — Verification of Generator Unit Frequency Response

The SAR drafting team would like to receive comments on this SAR. Please review the SAR, answer the questions on the following pages, and e-mail the form to sarcomm@nerc.net with the subject "**Generator Verification**" by **May 21, 2007**.

You do not have to answer all questions.

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

1. The field test from the Phase III & IV project included PRC-019, PRC-024, MOD-026, and MOD-027. The field testing has shown that requirements can be developed and incorporated into standards for the following:

   - Generator excitation system verification (MOD-026)
   - Generator frequency response verification (MOD-027)
   - Expectations for generators to remain connected during specified voltage and frequency excursions (PRC-024)
   - Coordination of generator voltage regulator controls and limit functions with generator capabilities and protective relays (PRC-019)

   Finalizing these standards will require significant changes that are outside the scope of the original Phase III & IV SARs, which is why the draft standards have been included in the scope of this new SAR. Do you agree that there is a reliability-related need to finalize these standards? If not, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: We are in agreement with the comments made by the SERC Generator Standards Field Test Task Force to this question. To re-state their comments here, "At this point we cannot determine if there is a reliability related need to finalize these standards. The results of the field test by the 4 participating RROs will not be complete until late June 2007. The 4 RROs, in support of the NERC Field Test team, have spent significant resources in an attempt to implement procedures and subsequently carry out the draft Reliability Standard requirements. Thus, in order to ensure proper consideration is given to the results of the field tests, the scope of the SAR should make it clear that the decision by the SDT to either refine, significantly revise or delete these standards should be heavily weighted on the outcome of the field test. (We) Recommend that the last sentence in the paragraph in the SAR on page SAR-3 under "Detailed Description" be modified to: ""In addition, the SDT will consider and address all applicable FERC Orders, including Order 693, in addition to any modifications, deficiencies, and other items as found in the NERC Phase III-IV Planning Standard Field Tests, and in addition the following proposed changes for each of the six standards in this set of standards:"

2. Two of the standards (MOD-024 and MOD-025) associated with this SAR had already been approved by the NERC Board of Trustees, but are "pending" with FERC because they include "fill-in-the-blank" requirements assigned to the Regional Reliability Organization. These standards must be revised to remove the fill-in-the-blank characteristics before they can become mandatory and enforceable. The intent of MOD-024 and MOD-025 is to ensure that accurate information on generator gross and net real and reactive power capability is available for the steady-state models used to assess bulk electric system reliability.

   To be enforceable, these standards need to be revised. Do you agree that there is a reliability-related need to revise these standards to support accurate modeling?

☐ Yes

☒ No

Comments: The scope statement for both of these standards includes increases in their scope -- MOD-024 now reflects increased demonstration requirements and MOD-025 scope has crept to require expanded verification to include multiple operating points. The scope of these two standards should to be restricted to that of the current versions.

3. The scope of this project includes:

   - Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Sanction Guidelines,
   - Replacing the fill-in-the-blank requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners, or operators of the bulk power system, and
   - Addressing issues identified in FERC Order 693.

   Do you agree with this scope? If not, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: We are essentially in agreement with the three bullet points included in this question (and project); however, we are not in agreement with the scope of the SAR, specifically as it relates to MOD-024 and MOD-025. The scope of MOD-024 and MOD-025 have both been expanded beyond what is stated in the bullet points of this question. As we point out in our response to Question #2, MOD-024 now reflects increased demonstration requirements and MOD-025 scope has expanded (crept) to require expanded verification to include multiple operating points. The changes to the other four standards (PRC-019, PRC-024, MOD-026 and MOD-027) should be based on the field test results up to, and including, their elimination, if so recommended.

4. Page 6 of the SAR identifies a list of reliability functions that may be assigned responsibility for requirements in the set of standards addressed by this SAR. (At this point additional industry debate is needed on which function or functions will be assigned responsibility for the requirements currently assigned to the RRO — and that debate is expected to take place during standard drafting as the requirements are refined. Note that the standard drafting team can "reduce" but cannot "expand" this list of responsible reliability functions during standard drafting.) Do you agree with the list of proposed applicable functional entities? If you feel that the list should be modified, please explain in the comment area.

   ☐ Yes

   ☒ No

   Comments: The list of possible applicable functional entities found on page 6 of the SAR should include Generator Operators. It seems to us that generator testing involving real and reactive power quantites will not be possible without the inclusion of this functional entity.

5. If you are aware of any regional variances that will be needed as a result of this project, please identify the Regional Variance:

   Regional Variance: None.
   Comments:

6. If you are aware of any business practice that will be needed or that will need to be modified as a result of this project, please identify the business practice:

   Business Practice: None.
   Comments:

7. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

   Comments: The scope of MOD-024 and MOD-025 should not be expanded beyond the scope contained in the current version of these two standards. As for the other four standards; PRC-019, PRC-024, MOD-026 and MOD-027, the timing of the subject SAR appears to be premature since the field testing is not complete.