

Project 2007-09 Generator Verification MOD-025-1 DRAFT Mapping Document

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
<p>1. Number: MOD-025-1</p>	<p>Proposed standard will cover MOD-025-1 content and will include requirements from MOD-024-1.</p>	<p>1. Number: MOD-025-2</p>
<p>2. Title: Verification of Generator Gross and Net Reactive Power Capability</p>	<p>Data Reporting has been added to reflect related requirements in the proposed Standard. Real has been added to include requirements from MOD-024-1.</p>	<p>2. Title: Verification and Data Reporting of Generator Real and Reactive Power Capability and Synchronous Condenser Reactive Power Capability</p>
<p>3. Purpose: To ensure accurate information on generator gross and net Reactive Power capability is available for steady-state models used to assess Bulk Electric System reliability.</p>	<p>The Purpose has been modified to ensure that planning entities have accurate generator Real and Reactive Power capability data.</p>	<p>3. Purpose: <u>To ensure net accurate information on generator gross and net Real and Reactive Power capability and synchronous condenser Reactive Power capability is available for planning models used to assess Bulk Electric System (BES) reliability.</u>To require applicable entities verify generator Real and Reactive Power capability and Synchronous Condenser Reactive</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		Power Capability and to supply capability data to planning entities data for assessing Bulk Electric System (BES) reliability.
<p>4. Applicability:</p> <p>4.1. Regional Reliability Organization.</p> <p>4.2. Generation Owner.</p>	<p>Regional Reliability Organization applicability is eliminated and functional entity responsibility is defined. Facility Applicability has been added.</p>	<p>4. Applicability:</p> <p>4.1 Functional entities</p> <p>4.1.1 Generator Owner</p> <p>4.1.2 Transmission Owner with that owns synchronous condenser</p> <p>4.2 Facilities:</p> <p>For the purpose of this standard, the term, “applicable Facility” shall mean any one of the following:</p> <p>4.2.1 Individual generating unit greater than 20 MVA (gross nameplate rating) directly connected to the bulk power system<u>Bulk Electric System</u>.</p> <p>4.2.2 Synchronous condenser greater than 20 MVA (gross nameplate rating) directly connected to the <u>Bulk Electric System</u>bulk power system.</p> <p>4.2.3 Generating plant/Facility greater than 75 MVA (gross aggregate nameplate rating)</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		directly connected to the <u>Bulk Electric System</u> bulk power system .
<p>R1. The Regional Reliability Organization shall establish and maintain procedures to address verification of generator gross and net Reactive Power capability. These procedures shall include the following:</p>	<p>Regional applicability is eliminated and functional entity responsibility is defined</p> <p>Verification, including reporting, is addressed throughout proposed Standard.</p>	<p>Requirements R1, R2 and R3 defines the verification and data reporting previously addressed by regional procedures. These requirements are detailed in the following mapping.</p>
<p>R1.1. Generating unit exemption criteria including documentation of those units that are exempt from a portion or all of these procedures.</p>	<p>Exemption criteria are addressed by Section 4.2, Applicability, which follows the Registry Criteria.</p>	<p>4.2 Facilities:</p> <p>For the purpose of this standard, the term, “applicable Facility” shall mean any one of the following:</p> <p>4.2.1 Individual generating unit greater than 20 MVA (gross nameplate rating) directly connected to the <u>Bulk Electric System</u>bulk power system.</p> <p>4.2.2 Synchronous condenser greater than 20 MVA (gross nameplate rating) directly connected to the <u>Bulk Electric System</u>bulk</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2		
Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		<p>power system.</p> <p>4.2.3 Generating plant/Facility greater than 75 MVA (gross aggregate nameplate rating) directly connected to the <u>Bulk Electric System</u>bulk power system.</p>
<p>R1.2. Criteria for reporting generating unit auxiliary loads.</p>	<p>R1 references Attachment 1.</p> <p>Attachment 1, Section 4 refers to Attachment 2, which is a reporting form or the basis for developing a more specialized form that provides all the auxiliary information required by the Standard.</p> <p>Attachment 1, section 4.1 allows engineering estimates in those situations where metering to measure a reactive load is not installed.</p>	<p>R2. Each Generator Owner shall provide its Transmission Planner with verification of the <u>Reactive</u> Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify the Reactive Power capability of its generating units and shall verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>2.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data.</p>
<p>R1.3. Acceptable methods for model</p>	<p>Requirements R2 and R3,</p>	<p>R2. Each Generator Owner shall provide its Transmission</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
<p>and data verification, including any applicable conditions under which the data should be verified. Such methods can include use of manufacturer data, commissioning data, performance tracking, and testing, etc.</p>	<p>reference Attachment 1. Section 2 of Attachment 1 prescribes the details of how the verification should be performed.</p>	<p>Planner with verification of the Reactive Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify the Reactive Power capability of its generating units and shall verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>2.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data.</p> <p>R3. Each Transmission Owner shall provide its Transmission Planner with verification of the Reactive Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>3.1. Verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>3.2. Submit a completed Attachment 2 (or a form</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2		
Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data
R1.4. Periodicity and schedule of model and data verification and reporting.	<p>Requirements R2 and R3, reference Attachment 1.</p> <p>Section 5 of Attachment 1 details the periodicity.</p>	<p>R2. Each Generator Owner shall provide its Transmission Planner with verification of the Reactive Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify the Reactive Power capability of its generating units and shall verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>2.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data.</p> <p>R3. Each Transmission Owner shall provide its Transmission Planner with verification of the Reactive</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2		
Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		<p>Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>3.1. Verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>3.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data</p>
<p>R1.5. Information to be verified and reported:</p> <p>R1.5.1. Seasonal gross and net Reactive Power generating capabilities while at the Seasonal Real Power generating capability as reported in accordance with MOD-024-2.</p> <p>R1.5.2. Verified Reactive Power</p>	<p>Requirements R2 and R3, reference Attachment 1.</p> <p>Section 3 of Attachment 1 details the data to be recorded during the verification.</p>	<p>R2. Each Generator Owner shall provide its Transmission Planner with verification of the Reactive Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify the Reactive Power capability of its generating units and shall verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>2.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
<p>limitations, such as generator terminal voltage limitations, shorted rotor turns, etc.</p> <p>R1.5.3 Verified Reactive Power of Auxiliary loads.</p> <p>R1.5.4. Method of verification, including date and conditions.</p>		<p>calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data.</p> <p>R3. Each Transmission Owner shall provide its Transmission Planner with verification of the Reactive! Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>3.1. Verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>3.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data</p>
<p>R2. The Regional Reliability Organization shall provide its generator gross and net Reactive Power capability verification and reporting procedures, and any changes to</p>	<p>Regional Reliability Organization applicability is eliminated and functional entity responsibility is defined in R2 and R3.</p>	<p>R2. Each Generator Owner shall provide its Transmission Planner with verification of the Reactive! Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify the Reactive Power capability of its generating</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
<p>those procedures, to the Generator Owners, Generator Operators, Transmission Operators, Planning Authorities, and Transmission Planners affected by the procedure within 30 calendar days of the approval.</p>		<p>units and shall verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>2.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data.</p> <p>R3. Each Transmission Owner shall provide its Transmission Planner with verification of the Reactive Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>3.1. Verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>3.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2		
Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		verification using historical operational data
<p>R3. The Generator Owner shall follow its Regional Reliability Organization’s procedures for verifying and reporting its Reactive Power generating capability per R1.</p>	<p>Regional Reliability Organization applicability is eliminated and functional entity responsibility is defined in R2 and R3.</p> <p>The Transmission Owner has been added to include synchronous condensers that are under the control of the TO.</p>	<p>R2. Each Generator Owner shall provide its Transmission Planner with verification of the Real-ReactivePower capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify the Reactive Power capability of its generating units and shall verify the Reactive Power capability of its synchronous condenser units in accordance with Attachment 1.</p> <p>2.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data.</p> <p>R3. Each Transmission Owner shall provide its Transmission Planner with verification of the ReactivePower capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>3.1. Verify the Reactive Power capability of its synchronous</p>

MOD-025-1 Mapping to Proposed NERC Reliability Standard MOD-025-2

Standard MOD-025-1 NERC Board Approved	Comment	Proposed Standard MOD-025-2
		<p>condenser units in accordance with Attachment 1.</p> <p>3.2. Submit a completed Attachment 2 (or a form containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either the date the data is recorded for a staged test or the date the data is selected for verification using historical operational data</p>