

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: To ensure 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.</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>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 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 Electric System.</p> <p>4.2.2 Synchronous condenser greater than 20 MVA (gross nameplate rating) directly connected to the Bulk Electric System.</p> <p>4.2.3 Generating plant/Facility greater than 75 MVA (gross aggregate nameplate rating) directly connected to the Bulk Electric System.</p>
<p>R1. The Regional Reliability Organization</p>	<p>Regional applicability is</p>	<p>Requirements R1, R2 and R3 defines the verification and data</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>shall establish and maintain procedures to address verification of generator gross and net Reactive Power capability. These procedures shall include the following:</p>	<p>eliminated and functional entity responsibility is defined</p> <p>Verification, including reporting, is addressed throughout proposed Standard.</p>	<p>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> <ul style="list-style-type: none"> 4.2.1 Individual generating unit greater than 20 MVA (gross nameplate rating) directly connected to the Bulk Electric System. 4.2.2 Synchronous condenser greater than 20 MVA (gross nameplate rating) directly connected to the Bulk Electric System. 4.2.3 Generating plant/Facility greater than 75 MVA (gross aggregate nameplate rating) directly connected to the Bulk Electric System.

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>R1.2. Criteria for reporting generating unit auxiliary loads.</p>	<p>R1 references Attachment 1. 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 Reactive Power capability of its applicable Facilities as follows: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]</p> <p>2.1. Verify <u>units in accordance with Attachment 1, (i)</u> the Reactive Power capability of its generating units and shall verify (ii) 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> the date the data is selected for verification using historical operational data.</p>
<p>R1.3. Acceptable methods for model and data verification, including any applicable conditions under which the data should be verified. Such methods can include use of manufacturer data,</p>	<p>Requirements R2 and R3, reference Attachment 1. Section 2 of Attachment 1 prescribes the details of how the verification should be</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 <u>units in accordance with Attachment 1, (i)</u> the Reactive Power capability of its generating units and</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>commissioning data, performance tracking, and testing, etc.</p>	<p>performed.</p>	<p>shall verify (ii) 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> the date the data is selected for verification using historical operational data</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>R1.4. Periodicity and schedule of model and data verification and reporting.</p>	<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 <u>units in accordance with Attachment 1, (i)</u> the Reactive Power capability of its generating units and shall verify (ii) 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> 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>

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>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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> 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 limitations, such as generator terminal voltage limitations, shorted rotor turns, etc.</p> <p>R1.5.3 Verified Reactive Power of</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, <u>units in accordance with Attachment 1, (i)</u> the Reactive Power capability of its generating units and shall verify (ii) 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> the date the data is selected for verification using historical operational data.</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>Auxiliary loads.</p> <p>R1.5.4. Method of verification, including date and conditions.</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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> 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 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</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 <u>units in accordance with Attachment 1, (i)</u> the Reactive Power capability of its generating units and shall verify <u>(ii)</u> 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</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
approval.		<p>containing the same information as identified in Attachment 2) to its Transmission Planner within 90 calendar days of either (i) the date the data is recorded for a staged test or (ii) 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 (i) the date the data is recorded for a staged test or (ii) the date the data is selected for 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	Regional Reliability Organization applicability is eliminated and functional entity responsibility is defined	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]

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>generating capability per R1.</p>	<p>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>2.1. Verify <u>units in accordance with Attachment 1, (i)</u> the Reactive Power capability of its generating units and shall verify (ii) 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> 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 <u>(i)</u> the date the data is recorded for a staged test or <u>(ii)</u> 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