



Stakeholder Comparison Comment Rationale Matrix

2010-08-17

AESO AUTHORITATIVE DOCUMENT PROCESS

Alberta Reliability Standard – MOD-024&025-AB-1 Verification of Generator Real and Reactive Power Capability

NOTE: The AESO is asking market participants to give an initial indication of their support for, or opposition to, the specific Alberta Reliability Standard variances to the NERC requirements referenced below. Such an initial indication assists in the AESO’s practical understanding of the receptivity of the industry to the proposed changes, and in that regard the AESO thanks, in advance, all market participants who choose to respond. With regard to the specific standard changes and their implications, such responses are without prejudice to the rights of market participants under the Act, any regulations, or related decisions of the Commission.

Date of Request for Comment [yyyy/mm/dd]: <u>2010/08/17</u> Period of Consultation [yyyy/mm/dd]: <u>2010/08/17</u> through <u>2010/09/17</u> Comments From: <u>TransCanada Energy Ltd. (“TransCanada”)</u> Date [yyyy/mm/dd]: <u>20100917</u>	Contact: <u>Chris Best</u> Phone: <u>403-920-2081</u> E-mail: <u>chris_best@transcanada.com</u>
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Listed below is the summary of changes for the proposed new, removed or amended sections of the standard. Please refer back to the Letter of Notice under the “Attachments to Letter of Notice” section to view the proposed content changes to the standard. Please double-click on the check box for either “Support” or “Oppose” and/or place your comments, reasons for position, and alternate proposals underneath (if any).

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>Purpose MOD-024 To ensure accurate information on generator gross and net Real Power capability is available for steady-state models used to assess Bulk Electric System reliability.</p> <p>MOD-025 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>Purpose The purpose of this reliability standard is to ensure accurate information on the gross real power, gross reactive power, net real power, and net reactive power capability of a generating unit or an aggregated generating facility is reported to the ISO.</p>	<p>The purpose of this reliability standard is to ensure the gross real power, gross reactive power, net real power and net reactive power capabilities are reported to the AESO. The maximum values of these capabilities are determined under the:</p> <ul style="list-style-type: none"> • AESO Generation and Load Interconnection Standard (http://www.aeso.ca/downloads/Generation_and_Load_Standard_Rev1.pdf), • AESO Wind Power Facility Technical Requirements http://www.aeso.ca/downloads/Wind_Power_Facility_Technical_Requirements_Revision0_signatures_JRF.pdf, • power purchase arrangements and/or • Application Guideline Generator Interconnection Requirements – Reactive Power http://www.aeso.ca/downloads/AESO_PPA_Reactive_Power_Guidelines.pdf . 		
Applicability	Applicability			

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>MOD-024 4.1. Regional Reliability Organization. 4.2. Generation Owner.</p> <p>MOD-025 4.1. Regional Reliability Organization. 4.2. Generation Owner.</p>	<p>This reliability standard applies to:</p> <ul style="list-style-type: none"> the legal owner of a generating unit with a maximum authorized real power rating of 9 MW or greater and which is directly connected to the transmission system; the legal owner of an aggregated generating facility with a maximum authorized real power rating of 18 MW or greater and which is directly connected to the transmission system; and the ISO. 	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>Alberta Variance: As a result of the similarity and commonality of the subject matter requirements and measures of NERC standards MOD-024-1 and MOD-025-1, they have been combined into one Alberta reliability standard MOD-024&025-AB-1.</p> <p>The value of 9 MW was selected as it equals 10 MVA @ .9 pf. and 10 MVA is the value referred to in the WECC (WSCC) document <i>Synchronous Machine Reactive Capability Verification</i> dated November 25, 1996 http://www.wecc.biz/library/WECC%20Documents/Documents%20for%20Generators/Generator%20Testing%20Program/Synchronous%20Machine%20Reactive%20Limits%20Verification.pdf and the 18 MW (20 MVA) is the value referred to in the WECC <i>Generating Unit Model Validation Policy</i> http://www.wecc.biz/library/WECC%20Documents/Documents%20for%20Generators/Generator%20Testing%20Program/Synchronous%20Machine%20Reactive%20Limits%20Verification.pdf</p>	<p><input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
		<p>http://www.aeso.ca/Documents/Forms/AllItems.aspx?RootFolder=%2flibrary%2fWECC%20Documents%2fDocuments%20for%20Generators%2fGenerator%20Testing%20Program&FolderCTID=0x012000278A29140A43884799CB122F821DFD01&View=%7bAF8E6257%2d3EB9%2d4A21%2d8853%2d6477737956B4%7d "GTTF 2006-05 Generating Unit Model Validation Policy.pdf" for aggregated generating facilities.</p>		
<p>Effective Date MOD-024 Requirement 1 and Requirement 2 — April 1, 2006. Requirement 3 — January 1, 2007.</p> <p>MOD-025 Requirement 1 and Requirement 2 — January 1, 2007 Requirement 3: January 1, 2008 — 1st 20% compliant January 1, 2009 — 2nd 20% compliant January 1, 2010 — 3rd 20% compliant January 1, 2011 — 4th 20% compliant January 1, 2012 — 5th 20%</p>	<p>Effective Date Ninety (90) days after the date the Commission approves it.</p>	<p>The AESO is using the WECC <i>Generator Testing Policy Implementation</i> http://www.wecc.biz/library/WECC%20Documents/Documents%20for%20Generators/Generator%20Testing%20Program/Generator%20Testing%20Policy%20Implementation%202006-10-27.pdf as the basis for implementing this reliability standard. The following is an excerpt from the WECC Generator Testing Policy Implementation dated 2006-10-27:</p> <p><i>Issue 2: A large number of Generator Owners, who complied with the original baseline test requirement, are required to perform model re-</i></p>	<p><input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
compliant		<p><i>validation. Many of the Owners have multiple generating facilities. From resource management standpoint, the Owners should be allowed to spread generator re-validation over a five-year period. Many Generator Owners are in the midst of the equipment replacement programs. It makes sense to coordinate the re-validation efforts with the respective replacement programs, as well as maintenance cycles. On the other hand, WECC should have the authority to accept or reject the re-validation schedule proposed by the Generator Owners.</i></p> <p><i>Generator Owners that have complied with the baseline test requirements (as defined in section B.1.2 of the Policy) shall provide to WECC staff, by December 31, 2006, a schedule to perform model re-validation (as defined in section B.1.3 of the Policy). The Generator Owner should coordinate the schedule with the appropriate Transmission Planner(s). The Generator Owner will be considered compliant with the Policy as long as the initial model re-validation is completed within 5 years from December 31, 2006.</i></p>		

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>MOD-024 R1. The Regional Reliability Organization shall establish and maintain procedures to address verification of generator gross and net Real Power capability. These procedures shall include the following:</p> <p>MOD-024 R1.1. Generating unit exemption criteria including documentation of those units that are exempt from a portion or all of these procedures.</p> <p>MOD-024 R1.2. Criteria for reporting generating unit auxiliary loads.</p> <p>MOD-024 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, commissioning data, performance tracking, and testing, etc.</p> <p>MOD-024 R1.4. Periodicity and schedule of model and data verification and reporting.</p> <p>MOD-024 R1.5. Information to be</p>		<p><input type="checkbox"/> New <input type="checkbox"/> Amended <input checked="" type="checkbox"/> Deleted</p> <p>Alberta Variance: NERC requirement R1 and it's sub-requirements of MOD-024 and MOD-025 is a WECC responsibility and does not apply to any entities in Alberta.</p>	<p><input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>verified and reported:</p> <p>MOD-024 R1.5.1. Seasonal gross and net Real Power generating capabilities.</p> <p>MOD-024 R1.5.2. Real power requirements of auxiliary loads.</p> <p>MOD-024 R1.5.3. Method of verification, including date and conditions.</p> <p>MOD-025 R1.5.4. Method of verification, including date and conditions.</p> <p>MOD-025 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>MOD-025 R1.1. Generating unit exemption criteria including documentation of those units that are exempt from a portion or all of these procedures.</p> <p>MOD-025 R1.2. Criteria for reporting generating unit auxiliary loads.</p> <p>MOD-025 R1.3. Acceptable methods for model and data verification,</p>				

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

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NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>including any applicable conditions under which the data should be verified. Such methods can include use of commissioning data, performance tracking, engineering analysis, testing, etc.</p> <p>MOD-025 R1.4. Periodicity and schedule of model and data verification and reporting.</p> <p>MOD-025 R1.5. Information to be reported:</p> <p>MOD-025 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.</p> <p>MOD-025 R1.5.2. Verified Reactive Power limitations, such as generator terminal voltage limitations, shorted rotor turns, etc.</p> <p>MOD-025 R1.5.3. Verified Reactive Power of auxiliary loads.</p> <p>MOD-025 R1.5.4. Method of verification, including date and conditions.</p>				
<p>MOD-024 R2. The Regional Reliability Organization shall provide</p>		<input type="checkbox"/> New	<input type="checkbox"/> Support <input type="checkbox"/> Support with language	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>its generator gross and net Real 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 approval.</p> <p>MOD-025 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 approval.</p>		<p><input type="checkbox"/> Amended <input checked="" type="checkbox"/> Deleted</p> <p>Alberta Variance: NERC requirement R2 of MOD-024 and MOD-025 is a WECC responsibility and does not apply to any entities in Alberta.</p>	<p>suggestions <input type="checkbox"/> Oppose</p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	
<p>MOD-024 R3. The Generator Owner shall follow its Regional Reliability Organization's procedures for verifying and reporting its gross and net Real Power generating capability per R1.</p> <p>MOD-025 R3. The Generator Owner shall follow its Regional Reliability</p>	<p>R1 Each legal owner must comply with the procedures the ISO may publish on the AESO website, and as may be amended from time to time by the AESO on notice to market participants, for verifying and reporting generating capability for:</p> <ul style="list-style-type: none"> • gross real power • gross reactive power 	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R3 has been split into R1, R1.1 and R2 to clarify that the procedures that must be complied with are those published by</p>	<p><input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p>Throughout this standard the term "legal owner and market participant" has been used, presumably in reference to the</p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>Organization's procedures for verifying and reporting its gross and net Reactive Power generating capability per R1.</p>	<ul style="list-style-type: none"> • net real power and • net reactive power <p>except as contemplated in requirement R1.1.</p> <p>R1.1 In the absence of a published ISO procedure, each legal owner must comply with the policies and procedures the WECC publishes for verifying and reporting generating capability for:</p> <ul style="list-style-type: none"> • gross real power • gross reactive power • net real power and • net reactive power <p>R2 Any ISO procedures published as contemplated in requirement R1 must be equal to or more stringent than the procedures the WECC publishes.</p>	<p>the AESO or by the WECC.</p> <p>The Alberta Reliability Standards section of the AESO website, and in particular the section that contains this reliability standard, will contain reference to related external documents, including WECC documents.</p> <p>The AESO currently does not have any procedures as contemplated in MOD-024&025-AB requirement R1 and requirement R2. Below are applicable WECC procedures that apply pursuant to R1.1 of this reliability standard:</p> <ol style="list-style-type: none"> 1. "Synchronous Machine Reactive Limits Verification"... http://www.wecc.biz/library/WECC%20Documents/Documents%20for%20Generators/Generator%20Testing%20Program/Synchronous%20Machine%20Reactive%20Limits%20Verification.pdf 2. "Facility Data Requirements" document. Access this document by following this link: http://www.wecc.biz/library/WECC%20Documents/Forms/AllItems.aspx? 	<p>entities defined in the applicability section. This is unclear and could lead to confusion in interpreting these requirements in the future. TransCanada suggests defining the entities as "applicable entities" in the applicability section and then utilizing that term in the requirements and measures.</p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

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NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
		<p>RootFolder=%2flibrary%2fWECC%20Documents%2fDocuments%20for%20Generators%2fGenerator%20Testing%20Program&FolderCTID=&View=%7bAF8E6257%2d3EB9%2d4A21%2d8853%2d6477737956B4%7d</p> <p>And then open the following folders and documents:</p> <ul style="list-style-type: none"> • “2006 Generator Test Policy” folder • “2006 Generator Test Program” folder • “GTTF_2005_12_Generating_Facility_Data Requirements.pdf” file 		
<p>MOD-024 M1. The Regional Reliability Organization shall have available for inspection the procedures for the verification and reporting of generator gross and net Real Power capability in accordance with R1.</p> <p>MOD-025 M1. The Regional Reliability Organization shall have available for inspection the procedures for the verification and reporting of generator gross and net Reactive Power capability in</p>		<p><input type="checkbox"/> New <input type="checkbox"/> Amended <input checked="" type="checkbox"/> Deleted</p> <p>Deleted to align with the removal of NERC R1.</p>	<p><input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

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NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
accordance with R1.				
<p>MOD-024 M2. The Regional Reliability Organization shall have evidence that its procedures, and any revisions to those procedures, for verification and reporting of generator gross and net Real Power capability were provided to affected Generator Owners, Generator Operators, Transmission Operators, Planning Authorities, and Transmission Planners within 30 calendar days of approval.</p> <p>MOD-025 M2. The Regional Reliability Organization shall have evidence that its procedures, and any revisions to these procedures, for verification and reporting of generator gross and net Reactive Power capability were provided to affected Generator Owners, Generator Operators, Transmission Operators, Planning Authorities, and Transmission Planners within 30 calendar days of approval.</p>		<p><input type="checkbox"/> New <input type="checkbox"/> Amended <input checked="" type="checkbox"/> Deleted</p> <p>Deleted to align with the removal of NERC R2.</p>	<p><input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	
<p>MOD-024 M3. The Generator Owner shall have evidence it provided verified information of its generator gross and net Real Power capability, consistent with that Regional Reliability Organization's procedures.</p>	<p>MR1 Confirmation exists that the legal owner has complied with procedures as specified in requirement R1.</p> <p>MR1.1 Evidence exists that each</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>Amended to align with requirement</p>	<p><input type="checkbox"/> Support <input checked="" type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose</p> <p>There is no reason to make the</p>	

COMPARISON BETWEEN NERC MOD-024-1 AND MOD-025-1 AND ALBERTA MOD-024&025-AB-1

Verification of Generator Real and Reactive Power Capability

NERC MOD-024-1 and MOD-025-1	Alberta MOD-024&025-AB-1	AESO Reason for Difference	Stakeholder Comments	AESO Replies
<p>MOD-025 M3. The Generator Owner shall have evidence it provided verified information of its generator gross and net Reactive Power capability, consistent with that Regional Reliability Organization's procedures.</p>	<p>legal owner has complied with the policies and procedures the WECC publishes within 5 years from December 31, 2006.</p> <p>MR2 Where ISO procedures exist as specified in requirement R2, those procedures are equal to or more stringent than the procedures for such verification and reporting the WECC publishes.</p>	<p>R1 and its sub-requirements and R2 of this reliability standard.</p>	<p>Alberta measure (MR1) more stringent than the NERC measure by requiring "confirmation" instead of "evidence". TransCanada recommends that "confirmation" be changed back to "evidence".</p> <p>There is no reason to stipulate when MR1.1 must be complied with. TransCanada recommends that this should either be in the Effective Date section of the standard or within the policies and procedures WECC publishes. Therefore, TransCanada recommends removing the phrase "within 5 years from December 31, 2006" from MR1.1.</p>	
<p>Compliance To view the compliance section D of the NERC reliability standard follow this link: http://www.nerc.com/files/MOD-024-1.pdf http://www.nerc.com/files/MOD-025-1.pdf</p>		<p>The Alberta reliability standards do not contain a compliance section. Compliance with all Alberta reliability standards is completed in accordance with the Alberta Reliability Standards Compliance Monitoring Program, available on the AESO website at: http://www.aeso.ca/loadsettlement/17189.html.</p>		
<p>Regional Differences None identified.</p>	<p>None identified.</p>	<p>Not applicable in Alberta</p>		

Definitions	Comments	Rationale and/or Alternate Proposal
<p>(a) New</p> <p>“gross reactive power” means:</p> <ul style="list-style-type: none"> (i) for aggregated generating facilities with one or more collector busses, the sum of reactive power measurements at those collector busses; (ii) for aggregated generating facilities without a collector bus, a reactive power measurement at the generator terminal for each generating unit; or (iii) for a generating unit that is not part of an aggregated generating facility, the reactive power measurement at the generator terminal. <p>“net real power” means for an aggregated generating facility or a generating unit, the sum of real power measurements at the high voltage side of all step-up transformers directly connected to the transmission system.</p>	<p> <input type="checkbox"/> Support <input type="checkbox"/> Support with language suggestions <input type="checkbox"/> Oppose </p> <p><i>Insert comments, reason for position, and alternate proposal (if any).</i></p>	
<p>(b) Removals</p> <p>N/A</p>		
<p>(c) Amendments</p> <p>N/A</p>		