

| ARC TWG Assessment and Conversion of NERC FAC-001-0 to Alberta FAC-001-0 Facility Connection Requirements | | | |
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| Section | NERC FAC-001-0 | Alberta FAC-001-AB-0 | Reason for Difference ¹ |
| Purpose | To avoid adverse impacts on reliability, Transmission Owners must establish facility connection and performance requirements. | The purpose of this reliability standard is to avoid adverse impacts on reliability, Transmission Owners <u>the ISO must establish facility connection and performance requirements for facilities connecting to the AIES.</u> | Align the purpose with the contents of the reliability standard. |
| Applicability | Transmission Owner | Transmission Owner <u>This reliability standard applies to the ISO.</u> | Identified the responsible entity in Alberta. |
| Effective Date | April 1, 2005 | April 1, 2005 <u>12 approval by the 365 calendar days after the date of approval by the Commission.</u> | Identified when this standard becomes effective in Alberta. One year required to develop new interconnection standards. |
| Definitions | | <u>Italicized terms used in this reliability standard have the same meanings as set out in the Alberta reliability standards Glossary of Terms and Part 1 of the ISO Rules.²</u> | |
| Requirement | R1. The Transmission Owner shall document, maintain, and publish facility connection requirements to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organization, subregional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements. The Transmission Owner's facility connection requirements shall address connection requirements for: | R1. The Transmission Owner shall <u>ISO must</u> document transmission, maintain, and publish interconnection requirements to ensure comply with compliance with NERC Alberta all r <u>Reliability s</u> Standards, and applicable Regional Reliability Organization, subregional, Power Pool, and individual Transmission Owner <u>planning criteria and facility connection requirements.</u> The Transmission Owner's <u>ISO's</u> transmission interconnection | Added clarity to End-user facilities. Relationship with NWPP and WECC is managed by other contractual arrangements. |

¹ The following revisions have been made throughout this proposed reliability standard:

- Identified the responsible entities in Alberta.
- Applied a consistent writing style and added clarity.
- Changed passive terms such as "shall" to "must".

² Defined terms are not italicized in this document, but will appear in the Alberta Reliability Standards document when it is developed.

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| | <p>R1.1. Generation facilities, R1.2. Transmission facilities, R1.3. End-user facilities</p> | <p>requirements shall<u>must</u> address connection requirements for:</p> <p>R1.1. Generation-Generating units<u>facilities</u>, R1.2. Transmission facilities, R1.3. <u>Transmission connected end use customer's facilities</u> End-user facilities</p> | |
| Measure | <p>M1. The Transmission Owner shall make available (to its Compliance Monitor) for inspection evidence that it met all the requirements stated in Reliability Standard FAC-001-0_R1.</p> | <p>MR1. The Transmission Owner shall<u>ISO must make available (to its Compliance Monitor) to WECC for inspection evidence that it met all the requirements stated in Reliability Standard FAC-001-0_R1</u>R1 through R1.3.<u>The ISO transmission interconnection requirements includes requirements for generating units, transmission facilities and transmission connected end use customer facilities.</u></p> <p><u>The ISO transmission interconnection requirements include content</u>are consistent that is compliant and consistent with all reliability standards.</p> | <p>Develop measures specific to the requirement.</p> |
| Requirement | <p>R2. The Transmission Owner's facility connection requirements shall address, but are not limited to, the following items: R2.1. Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon: R2.1.1. Procedures for coordinated joint studies of new facilities and their impacts on</p> | <p>R2. The Transmission Owner's<u>ISO's</u> transmission interfacility<u>connection</u> requirements or project functional specification <u>shall</u> must address, but are<u>is</u> not limited to, the following items: R2.1. Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:</p> | <p>NERC R2.1 is replaced with ARS R3 below.</p> <p>Alberta Variance³: Requirements R2.1.1 and R2.1.2 for having procedures for coordinated joint studies and for notification of new or modified facilities are omitted from the Alberta reliability standard as the ISO performs these requirements</p> |

³ An Alberta Variance is a change from the US Reliability Standard that the AESO has determined is material.
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| | <p>the interconnected transmission systems.</p> <p>R2.1.2. Procedures for notification of new or modified facilities to others (those responsible for the reliability of the interconnected transmission systems) as soon as feasible.</p> <p>R2.1.3. Voltage level and MW and MVAR capacity or demand at point of connection.</p> <p>R2.1.4. Breaker duty and surge protection.</p> <p>R2.1.5. System protection and coordination.</p> <p>R2.1.6. Metering and telecommunications.</p> <p>R2.1.7. Grounding and safety issues.</p> <p>R2.1.8. Insulation and insulation coordination.</p> <p>R2.1.9. Voltage, Reactive Power, and power factor control.</p> <p>R2.1.10. Power quality impacts.</p> <p>R2.1.11. Equipment Ratings.</p> <p>R2.1.12. Synchronizing of facilities.</p> <p>R2.1.13. Maintenance coordination.</p> <p>R2.1.14. Operational issues (abnormal frequency and voltages).</p> <p>R2.1.15. Inspection requirements for existing or new facilities.</p> <p>R2.1.16. Communications and procedures during normal and emergency operating conditions.</p> | <p>R2.1.1. Procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems.</p> <p>R2.1.2. Procedures for notification of new or modified facilities to others (those responsible for the reliability of the interconnected transmission systems) as soon as feasible.</p> <p>R2.1.3. Voltage level and MW and MVAR capacity or demand at point of connection.</p> <p>R2.21.4. Breaker duty and surge protection.</p> <p>R2.31.5. System protection and coordination.</p> <p>R2.41.6. Metering and telecommunications.</p> <p>R2.51.7. Grounding and safety issues.</p> <p>R2.61.8. Insulation and insulation coordination.</p> <p>R2.71.9. Voltage, reactive power, and power factor control.</p> <p>R2.81.10. Power quality impacts.</p> <p>R2.91.11. Equipment ratings.</p> <p>R2.10.12. Synchronizing of facilities.</p> <p>R2.11.13. Maintenance coordination.</p> <p>R2.121.14. Operational issues (abnormal frequency and voltages).</p> <p>R2.131.15. Inspection requirements for existing or new facilities.</p> <p>R2.141.16. Communications and procedures during normal and emergency operating conditions.</p> <p><u>R3. The ISO's must assess the long term implications to the AIES of any facility to be connected to it.</u></p> <p><u>R3. The ISO must provide a written plan to achieve the required system performance</u></p> | <p>when preparing a Needs Document as mandated in the Alberta Transmission Regulation.</p> <p>R3 – Provided specific reference to ISO documents where this consideration is documented.</p> |

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| | | <u>throughout the planning horizon.</u> | |
| Measure | M2. The Transmission Owner shall make available (to its Compliance Monitor) for inspection evidence that it met all requirements stated in Reliability Standard FAC-001-0_R2. | <p>MR2. The Transmission Owner shall ISO must make available (to its Compliance Monitor) WECC for inspection, by the WECC, evidence that it met all requirements stated in Reliability Standard FAC-001-0_R2 through R2.1.16.</p> <p><u>MR2. The ISO transmission interconnection requirements or project functional specifications contain information addressing each item identified in R2.</u></p> <p><u>MR3. The assessment made in R3 is included in either the transmission interconnection requirements or project functional specification.</u></p> | Developed measures specific to the requirement. |
| Requirement | R3. The Transmission Owner shall maintain and update its facility connection requirements as required. The Transmission Owner shall make documentation of these requirements available to the users of the transmission system, the Regional Reliability Organization, and NERC on request (five business days). | R3R4. The Transmission Owner ISO must shall maintain and update as required and post on its website its transmission interconnection requirements-its facility connection requirements as required. The Transmission Owner shall make documentation of these requirements available to the users of the transmission | Alberta Variance⁴: The requirement to provide documentation of facility connection requirements to NERC was omitted from the Alberta reliability standard as the ISO only reports this information to the WECC. |

⁴ An Alberta Variance is a change from the US Reliability Standard that the AESO has determined is material.
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| | | <p>system, the Regional Reliability Organization, and NERC on request (five business days).</p> | |
| Measure | <p>M3. The Transmission Owner shall make available (to its Compliance Monitor) for inspection evidence that it met all the requirements stated in Reliability Standard FAC-001-0_R3.</p> | <p>MR3. The Transmission Owner shall <u>ISO</u> must make available (to its Compliance Monitor) to <u>WECC</u> for inspection evidence that it met all the requirements stated in Reliability Standard FAC-001-0_R3</p> <p>MR4. The <u>ISO</u> transmission interconnection requirements are posted on its website.</p> <p><u>A revision history for the ISO transmission interconnection requirements standard shows that updates were made for each change to Alberta reliability standards, WECC and NWPP planning criteria applicable to Alberta as appropriate.</u></p> <p><u>Changes to the ISO transmission interconnection requirements are completed within 12 months of the Commission approving a change in the reliability standards.</u></p> | <p>Developed measures specific to the requirement.</p> |
| Compliance | | | <p>There is no compliance section currently proposed in the Alberta Reliability Standards.</p> <p>A compliance program will be developed at a later date for Alberta Reliability Standards that recognizes the compliance monitoring and</p> |

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| | | | enforcement structure in Alberta. This approach is deemed consistent with the existing ISO Rules. |
| Regional Differences | | | Not applicable in Alberta |

Proposed Terms for the Alberta Reliability Standard Glossary:

”transmission connected_end--use customer” means an entity purchasing electricity for their own use that are connected to the AIES at a high voltage level above 25 kV.

”demand means”:

- The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time.
- The rate at which electric energy is being used by the demand customer.

”surge” means a transient variation of current, voltage, or power flow in an electric circuit or across an electric system.

Existing Defined Terms Used in this Standard:

(As included in the ISO Rules Definitions or Alberta Reliability Standards Glossary)

- rating^{*}
- reliability standard
- Commission
- ISO
- Western Electricity Coordinating Council (WECC)
- Northwest Power Pool (NWPP)
- day
- transmission facility
- MW
- MVAR
- reactive power

^{*} Term appears in the Alberta Reliability Standards Glossary of Terms – April 2009 rules cycle.
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