



**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
<p>Purpose Ensure that Disturbance Monitoring Equipment (DME) is installed and that Disturbance data is reported in accordance with regional requirements to facilitate analyses of events</p>	<p>Purpose The purpose of this reliability standard is to ensure that disturbance monitoring equipment is installed and that disturbance data is reported in accordance with regional requirements to facilitate analyses of events.</p>			
<p>Applicability 4.1. Transmission Owner. 4.2. Generator Owner.</p>	<p>Applicability This reliability standard applies to:</p> <ul style="list-style-type: none"> the legal owner of a transmission facility that owns disturbance monitoring equipment as identified in the list of <i>Disturbance Monitoring Equipment Locations</i> as required in requirement R1, as published by the ISO on the AESO website 	<p>The terms used to describe applicable entities in this reliability standard have been amended from the NERC version in order to correctly identify the applicable entities in Alberta and to align with terms included in the AESO <i>Consolidated Authoritative Documents Glossary</i>.</p>	<p>AltaLink</p> <ol style="list-style-type: none"> AltaLink recommends that a direct reference to the name of the document containing the list be included in this standard (e.g “ID# 2010-003RS” or “Disturbance Monitoring Equipment Locations”) for clarity. 	<ol style="list-style-type: none"> The AESO agrees with AltaLink’s comments and accordingly the applicability section has been amended in final proposed PRC-018-AB-1.

¹ Marked changes in this column indicate revisions since draft 2.1.

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	<p>and as amended from time to time by the ISO on notice to market participants;</p> <ul style="list-style-type: none"> the legal owner of a generating unit that owns disturbance monitoring equipment as identified in the list of <i>Disturbance Monitoring Equipment Locations</i> as required in requirement R1, as published by the ISO on the AESO website and as amended from time to time by the ISO on notice to market participants; the legal owner of an aggregated generating facility that owns disturbance monitoring equipment as identified in the list of <i>Disturbance Monitoring Equipment Locations</i> as required in requirement R1, as published by the ISO on the AESO website and as amended from time to time by the ISO on notice to market participants; and 		<p>ATCO Power</p> <p>2. As disturbance monitoring at output buses of generators is not useful for analyzing large-scale disturbances, and given that generating units are completely absent from the current list, ATCO Power suggests that “legal owner of generating a unit” be removed from the applicability section.</p> <p>An advantage of changing the applicability as suggested would include avoiding marketplace fairness questions resulting from some, but not all, generators being required to have disturbance monitoring equipment. This is because the disturbance equipment would be entirely within the ownership of regulated companies.</p> <p>If the ISO did require disturbance monitoring equipment at the output bus of a generator, then the ISO could assume reliability responsibility</p>	<p>2. The AESO disagrees with ATCO Power, as the definition of “generating unit” also includes “switch yards” and there may be a need at some point to install disturbance monitoring equipment at this type of facility. This applicability is also aligned with the NERC applicability. The requirement to install disturbance monitoring equipment will be determined by the AESO such that disturbance data can be reported.</p> <p>Cost recovery is outside of the scope of the development of the Alberta reliability standards.</p>

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	<ul style="list-style-type: none"> the ISO. 		<p>and independently contract with the affected generator for installation of the disturbance monitoring equipment.</p> <p>Capital Power</p> <p>3. Capital Power appreciates the opportunity to comment on the proposed reliability standard.</p> <p>In the applicability section, this standard only applies to legal owners that already own disturbance monitoring equipment, yet R3 applies to entities that do not yet own this equipment and that might receive notice from the ISO that this is required.</p>	<p>3. The AESO will update the disturbance monitoring locations list, as required, by adding new locations. Once amended, the updated version of the disturbance monitoring list in effect would then apply to the applicable market participant as of the effective date identified on the list.</p>
<p>Effective Date Phased in over four years after BOT adoption: Requirements 1 and 2: – 50% compliant two years after initial issuance of regional requirements per RELIABILITY STANDARD PRC-002</p>	<p>Effective Date October 1, 2012</p>	<p>The proposed effective date has been amended to October 1, 2012, to allow a reasonable amount of time for Alberta entities to implement proposed PRC-018-AB-1.</p>	<p>AltaLink</p> <p>4. AltaLink assumes this effective date is applicable to the list of locations already provided in ID# 2010-003RS and effective July 15, 2010 and not any new locations that may have been identified since then.</p>	<p>4. Proposed PRC-018-AB-1 will also apply to new installations of disturbance monitoring equipment that will be included on the disturbance monitoring locations list.</p>

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<p>Requirement 5.</p> <ul style="list-style-type: none"> – 75% compliant three years after initial issuance of regional requirements per reliability standard PRC-002 R5. – 100% compliant four years after initial issuance of regional requirements per reliability standard PRC-002 R5. <p>Requirements 3 through 6:</p> <ul style="list-style-type: none"> – 100% compliant six months after BOT adoption for already installed DME. – 100% compliant six months after installation for DMEs installed to meet Regional Reliability Organization requirements per reliability standard PRC-002 Requirements 1, 2 and 3. 			<p>5. In the new draft of Disturbance Monitoring Equipment Locations, the effective date for each location currently indicates June 14, 2011. This should be revised to be October 1, 2012 to be consistent with the effective date of this standard.</p> <p>6. Also, AltaLink believes the Empress 394S location is incorrect and should be Empress 163S,</p> <p>7. Lastly, this list is inconsistent with the list provided by the AESO titled “AESO WISP with Summary.pdf” regarding WECC’s list of sites regarding monitoring installations.</p>	<p>5. The AESO agrees with AltaLink and the effective dates in the table for Disturbance Monitoring Equipment Locations have been revised to October 12, 2012.</p> <p>6. The AESO agrees with AltaLink and the disturbance monitoring equipment location has been changed from Empress 394S to Empress 163S.</p> <p>7. The disturbance monitoring locations list has been developed based on WECC’s original requirements. In the future the AESO will consider adding additional locations.</p>
			<p>Capital Power</p> <p>8. If an entity was to be added at a later date, there is no mention of timeline for implementation requirements. While current owners listed in “Information</p>	<p>8. The AESO agrees with Capital Power that adequate implementation time should be provided to install disturbance monitoring equipment.</p>

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			<p>Document 2010-003RS – Disturbance Monitoring Equipment Locations” would receive until October 1, 2012 as the effective date, but there is no mention of ‘new’ participants.</p> <p>What timelines does the AESO propose for notifying entities that they are required to install disturbance monitoring equipment and for them to have it installed, operational, with maintenance and testing programs in place as noted in the requirements?</p> <p>Capital Power requests that the AESO provide further information to the entities and sufficient implementation time, so that entities can assess the level of impact should they be added to the list. Information needed would include a scope of requirements from the ISO, as entities need engineering time for evaluation of existing equipment, design,</p>	<p>Accordingly the AESO, with input from the affected market participant, will determine the effective date for new disturbance monitoring equipment locations in accordance with the amending procedures contained in the <i>Disturbance Monitoring Equipment Locations</i> document referenced in final proposed PRC-018-AB-1.</p>

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			<p>procurement, installation, and commissioning of any (or all) equipment to meet the scope of the requirements, and development time for maintenance, testing, and reporting procedures.</p> <p>TransAlta</p> <p>9. We note that PRC-023-AB-1 R4 specifically provides for an implementation period upon addition of facilities to the list. We recommend consistent treatment of any newly added disturbance monitoring equipment in the IESO list, the approach set out in PRC-023-AB-1 R4.</p>	<p>9. Please see AESO Reply 8 above.</p>
<p>R1 Each Transmission Owner and Generator Owner required to install DMEs by its Regional Reliability Organization (reliability standard PRC-002 Requirements 1-3) shall have DMEs installed that meet the following requirements:</p> <p>R1.1. Internal Clocks in DME</p>	<p>R1 The ISO must maintain and publish a list of all disturbance monitoring equipment that this reliability standard applies to which includes all disturbance monitoring equipment the WECC requires to be installed in Alberta.</p> <p>R2 Each legal owner of a</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R1 has been amended in proposed PRC-018-AB-1 to identify requirements of the responsible entities in Alberta and for clarity and consistency.</p>	<p>AltaLink</p> <p>10 Same as comment in Applicability section.</p> <p>ATCO Electric</p> <p>11. There are 2 reasons that make R2.2 not feasible:</p>	<p>10. Please see the AESO Reply 1 above.</p> <p>11. The AESO agrees with ATCO Electric's comment. Accordingly requirement R2.2 now (R3) has</p>

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<p>devices shall be synchronized to within 2 milliseconds or less of Universal Coordinated Time scale (UTC)</p> <p>R1.2. Recorded data from each Disturbance shall be retrievable for ten calendar days.</p>	<p>transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility that the ISO directs to install disturbance monitoring equipment must install such disturbance monitoring equipment that meets the following requirements: with internal clocks synchronized to within two (2) milliseconds or less of the Universal Coordinated Time scale.</p> <p>R2.1 internal clocks in disturbance monitoring equipment devices must be synchronized to within two (2) milliseconds or less of the Universal Coordinated Time scale; and</p> <p>R2.2 recorded disturbance data must be retrievable for at least ten (10) days.</p> <p>R3 The ISO must have recorded disturbance data available for retrieval for at least ten (10) days.</p>	<p>As well, reference to PRC-002 in Alberta requirement R2, as included in the NERC requirement, has been removed as these requirements apply to the Western Electricity Coordinating Council (“WECC”). The AESO will review new requirements as they are developed by WECC and consult appropriately with market participants at that time.</p> <p>Alberta requirement R2 has been added to proposed PRC-018-AB-1 to capture the Alberta requirements of a legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility.</p> <p>The ISO has assumed responsibility for Requirement R3, previously R2.2, as disturbance data is deleted from the DME when it has been retrieved by the ISO, therefore any requirements for retention of data needs to be the responsibility of the ISO.</p>	<p>1. AESO is in full control of Disturbance Monitoring Equipment (DME) <u>specifications</u> and setup in Alberta. DME owners can not prove any data storage capability.</p> <ul style="list-style-type: none"> • DME <u>specifications</u> call for DME models that have no memory for data storage. For example: Hathaway IDM 32/64 has 16Mb of memory. • AESO sets up DME in Alberta for continuous data streams only; i.e. no disturbance triggers. • DME data is temporarily stored in a personal computer (PC) at the substation. AESO is in control of a script file to regularly transfer data from the PC to AESO. The data file is deleted from the PC once it is transferred successfully to AESO. 	<p>now been assigned to the AESO in final proposed PRC-018-AB-1.</p>

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			<p>2. In the past, the storage data file was kept in the PC at the substation, even after it was transferred successfully to AESO. AESO no longer keeps the data file in the PC at the substation due to some problems/issues.</p>	
			<p>ATCO Power</p> <p>12. R2: Please provide details regarding the amount of notice that will be provided when the ISO directs the installation of disturbance monitoring equipment.</p> <p>13. If the AESO chooses not to follow the suggestion made in the applicability section, then please provide some details regarding cost recovery for those entities not under a regulated environment.</p>	<p>12. Please see AESO Reply 8 above.</p> <p>13. Cost recovery is outside of the scope of the development of the Alberta reliability standards.</p>

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			<p>Capital Power</p> <p>14. Capital Power suggests the following changes to avoid confusion.</p> <p>R1 The ISO must maintain and publish a list of all disturbance monitoring equipment applicable to this reliability standard.</p> <p>The list must include all disturbance monitoring equipment that WECC requires to be installed in Alberta.</p> <p>R2 Each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility directed by the ISO to install disturbance monitoring equipment, must install disturbance monitoring equipment that meets the following requirements:</p>	<p>14. The AESO disagrees with Capital Power’s comment as the AESO has drafted Alberta requirement R1 and R2 in accordance with its Authoritative Document drafting principles.</p>

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			<p>ENMAX</p> <p>15. R2.1 – requirement implies that an internal clock must be present in the device. Would it not be adequate to time sync the device with an external clock (IRIG-B) as long as the 2ms requirement is met? Suggestion is to remove the words “<i>internal clocks in</i>”.</p> <p>16. R2.2 – In almost all cases, disturbances will be stored in the devices and will be retrievable for at least 10 days. However, should there be multiple events during this time, there is a possibility that the buffer in the monitoring equipment will be overrun with data and some data will be lost</p>	<p>15. All disturbance monitoring equipment have internal clocks. These internal clocks must be synchronized such that disturbance records are correctly time stamped. The use of an external GPS clock providing an IRIG-B signal is the most practical approach to ensure the devices internal clock is within 2ms.</p> <p>16. Please see AESO Reply 11 above. As well, it is the AESO’s intention to regularly download disturbance records such that data is not lost.</p>

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			<p>through no fault of the utility. R2.2 may need to be further qualified. E.g. Recorded disturbance data must be retrievable for the last x-number of events or x-number of most recent events.</p>	
			<p>TransCanada Energy</p> <p>17. TransCanada questions the need for the insertion of the new R1 at this location in the standard. This throws the numbering of all of the requirements out of alignment with the NERC version. This is a significant concern for entities with operations in multiple jurisdictions that are trying to develop enterprise applications to manage compliance and reporting. There does not seem to be a need for this requirement to be ahead of the other requirements and TransCanada suggests it could be moved to the bottom.</p>	<p>17. The AESO does not agree to TransCanada's suggested change. The AESO's current Alberta reliability standards drafting principles include that when; (i) a NERC/WECC requirement is applicable to two or more entities based on Alberta's division of responsibility within the Alberta reliability framework (i.e. data reporting to the WECC where a market participant must first provide information to the AESO who then provides such data to the WECC); or (ii) a NERC/WECC requirement contains two or more separate and distinct obligations; then the NERC/WECC requirement is split into two separate requirements</p>

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				which are kept within proximity to one another as they are related requirements.
<p>R2. The Transmission Owner and Generator Owner shall each install DMEs in accordance with its Regional Reliability Organization’s installation requirements (reliability standard PRC-002 Requirements 1 through 3).</p>	<p>R3 R4 Each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility must install disturbance monitoring equipment as directed by the ISO..</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R2 has been amended in proposed PRC-018-AB-1 to identify the responsible entities in Alberta and for clarity and consistency.</p> <p>As well, the AESO will review and implement, as appropriate, relevant requirements and standards that are developed by the WECC.</p>	<p>ATCO Electric</p> <p>18. R2 and R3 should be combined as</p> <p>“R2 Each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility must install disturbance monitoring equipment as directed by the ISO, And, the disturbance monitoring equipment must meet the following requirements:</p> <p>R2.1 internal clocks in disturbance monitoring equipment devices must be synchronized to within two (2) milliseconds or less of the Universal Coordinated Time</p>	<p>18. The AESO disagrees with ATCO Electric’s proposed change. One of the current Alberta reliability standards is to generally follow NERC’s requirements. Alberta requirement R2 is a technical requirement and Alberta requirement R3 deals with a direction to install disturbance monitoring equipment.</p>

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			<p>scale; and</p> <p>R2.2?</p>	
			<p>Capital Power</p> <p>19. As noted in the above comments, the applicability section of this standard only applies to legal owners that already own disturbance monitoring equipment, yet R3 applies to entities that do not yet own this equipment.</p>	<p>19. Please see AESO Reply 8 above.</p>
			<p>EDTI</p> <p>20. EDTI recommends that PRC-018-AB-1 include a timeframe for the installation of disturbance monitoring equipment. It is recommended that DME installation date determined by the ISO cannot be less than 1 year from the affected party being notified about the required DME installation.</p>	<p>20. Please see AESO Reply 8 above.</p>

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			<p>TransCanada Energy</p> <p>21. TransCanada questions the need for this requirement as R2 already requires this action and the existence of this R3 creates an opportunity for double jeopardy. This is further evidenced by MR2.1 and MR 2.2 being almost the same as MR3.</p>	<p>21. Please see AESO Reply 18 above.</p>
<p>R3. The Transmission Owner and Generator Owner shall each maintain, and report to its Regional Reliability Organization on request, the following data on the DMEs installed to meet that region's installation requirements (reliability standard PRC-002 Requirements 1.1, 2.1 and 3.1):</p> <p>R3.1. Type of DME (sequence of event recorder, fault recorder, or dynamic disturbance recorder).</p> <p>R3.2. Make and model of equipment.</p>	<p>R4 R5 Each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility must maintain and report, within thirty (30) days of the ISO's request, the following data information on the disturbance monitoring equipment:</p> <p>R4R5.1 type of disturbance monitoring equipment;</p> <p>R4R5.2 make and model of</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R3 was divided into Alberta requirements R5 and R6 for legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility to report to the AESO and for the AESO to report to the WECC.</p> <p>Alberta Variance²: NERC requirement R3 has been amended in proposed PRC-018-AB-1 to add a</p>	<p>Capital Power</p> <p>22. Capital Power suggests the following changes to avoid confusion.</p> <p>R4 Each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility must maintain the following data on the disturbance monitoring equipment and report it within thirty (30) days of an ISO request.</p>	<p>22. The AESO agrees with Capital Power's proposed change, and accordingly, Alberta requirement R4 has been amended in final proposed PRC-018-AB-1.</p>

² An Alberta variance is a change from the US Reliability Standard that the AESO has determined is material.

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<p>R3.3. Installation location.</p> <p>R3.4. Operational status.</p> <p>R3.5. Date last tested.</p> <p>R3.6. Monitored elements, such as transmission circuit, bus section, etc.</p> <p>R3.7. Monitored devices, such as circuit breaker, disconnect status, alarms, etc.</p> <p>R3.8. Monitored electrical quantities, such as voltage, current, etc.</p>	<p>disturbance monitoring equipment;</p> <p>R4R5.3 installation location;</p> <p>R4R5.4 operational status;</p> <p>R4R5.5 date last tested;</p> <p>R4R5.6 monitored elements which may include transmission circuit and bus section;</p> <p>R4R5.7 monitored devices which may include circuit breaker, disconnect status and alarms; and</p> <p>R4R5.8 monitored electrical quantities, which may include voltage and current.</p>	<p>time period by which data on disturbance monitoring equipment is to be submitted to the AESO. This was included to add clarity and to make Alberta requirement R5 measurable.</p>	<p>23. Capital Power suggests the following changes to avoid confusion.</p> <p>R4.8 monitored electrical quantities, which may include voltage and current.</p>	<p>23. The AESO agrees with Capital Power’s proposed change, and accordingly, has amended Alberta requirement R4.8 (now R5.8 in final proposed PRC-018-AB-1).</p>
<p>Refer to NERC requirement R3</p>	<p>R5-R6 The ISO must provide the <u>data-information</u> received from the legal owner of a transmission facility, legal owner of a</p>	<p><input checked="" type="checkbox"/> New <input type="checkbox"/> Amended <input type="checkbox"/> Deleted</p>	<p>Capital Power</p> <p>24. Capital Power is concerned that with a compliance deadline of 45 days the AESO</p>	<p>24. It is the AESO’s view that the time periods set forth in requirements R4 (now R5) and</p>

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	<p>generating unit and legal owner of an aggregated generating facility in requirement R5⁴ to the WECC within forty-five (45) days of the WECC's written request.</p>	<p>Alberta Variance³: New Alberta requirement R6 has been added in proposed PRC-018-AB-1 to include a time period by which data on disturbance monitoring equipment is to be submitted to the WECC. This was included to add clarity and to make Alberta requirement R6 measurable.</p>	<p>may be holding itself and Alberta entities to a difficult level of compliance if the AESO receives the request from WECC during a self-certification cycle or audit.</p> <hr/> <p>TransCanada Energy</p> <p>25. TransCanada questions the need for the insertion of the new R5 at this location in the standard. This throws the numbering of all of the subsequent requirements out of alignment with the NERC version. This is a significant concern for entities with operations in multiple jurisdictions that are trying to develop enterprise applications to manage compliance and reporting. There does not seem to be a need for this requirement to be ahead of the other requirements and TransCanada suggests it</p>	<p>R5 (now R6) are reasonable given the nature of the information being requested.</p> <hr/> <p>25. Please see AESO Reply 17 above.</p>

³ An Alberta variance is a change from the US Reliability Standard that the AESO has determined is material

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			could be moved to the bottom.	
<p>R4. The Transmission Owner and Generator Owner shall each provide Disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization’s requirements (reliability standard PRC-002 Requirement 4).</p>	<p>R6-R7 If the ISO is unable to directly access disturbance data, then each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility must provide all available disturbance data recorded by disturbance monitoring equipment to the ISO within thirty-fourty-five (4530) days of the ISO’s written request.</p> <p>R7-R8 The ISO must provide all available disturbance data recorded by the disturbance monitoring equipment of a legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility to the WECC within sixty (60) days of the WECC’s written request.</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R4 has been divided into Alberta requirements R7 and R8 such that legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility provide disturbance data to the AESO and for the AESO to provide disturbance data to the WECC.</p> <p>Alberta requirement R7 was revised from version 2.1 to take into consideration the method normally used to retrieve disturbance data. Only during abnormal circumstances would R7 need to be followed.</p> <p>Also provided clarity that the disturbance data to be provided is</p>	<p>AltaLink</p> <p>26. If the AESO accesses the data directly, without intervention from AltaLink, how will AltaLink satisfy the requirement that data has been provided within 30 days of the request? Also, would the AESO make any requests if the AESO can access the data without AltaLink intervention? The current configuration of this data access is such that when the AESO accesses the data from AltaLink’s server, the data is no longer retained by AltaLink.</p> <p>ATCO Electric</p> <p>27. See R2.2 comments: AESO keeps all monitoring and disturbance data. DME owners do not have any data to provide to AESO.</p>	<p>26. The AESO only anticipates using Alberta requirement R7 upon an extended communication failure, and accordingly, has amended Alberta requirement R6 (now R7) in final proposed PRC-018-AB-1.</p> <p>27. Please see AESO Reply 11 above.</p>

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
		<p>that which is available.</p> <p>Alberta Variance⁴: NERC requirement R4 has been amended in proposed PRC-018-AB-1 to add a time period by which disturbance data recorded by disturbance monitoring equipment is to be submitted to the AESO and to the WECC. This was included to add clarity and to make Alberta requirements R7 and R8 measurable.</p>	<p>Capital Power</p> <p>28. Capital Power is concerned that with a compliance deadline of 30 days the AESO may be holding the Alberta entities to a difficult level of compliance if the AESO receives the request for data occurs during a self-certification cycle or audit.</p>	<p>28. The AESO agrees with Capital Power's comments, and accordingly, has amended Alberta requirement R6 (now R7) in final proposed PRC-018-AB-1.</p>
			<p>ENMAX</p> <p>29. R6 - This may conflict with R.2.2. Since the data may only be retrievable for 10 days from the occurrence of an event, the AESO must submit a data request within this 10 day period. Without acknowledging the 10 day window, there is an increased possibility that the data relevant to the occurrence may be lost.</p>	<p>29. Please see AESO Reply 11 above.</p> <p>As well, Alberta requirement R6 (now R7) has been amended in final proposed PRC-018-AB-1 to specify that it only applies under certain conditions as identified in the requirement.</p>

⁴ An Alberta variance is a change from the US Reliability Standard that the AESO has determined is material.

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
			<p>TransCanada Energy</p> <p>30. TransCanada questions the need for the insertion of the new R6 at this location in the standard. This throws the numbering of all of the subsequent requirements out of alignment with the NERC version. This is a significant concern for entities with operations in multiple jurisdictions that are trying to develop enterprise applications to manage compliance and reporting. There does not seem to be a need for this requirement to be ahead of the other requirements and TransCanada suggests it could be moved to the bottom.</p>	<p>30. Please see AESO Reply 17 above.</p>
<p>R5. The Transmission Owner and Generator Owner shall each archive all data recorded by DMEs for Regional Reliability Organization-identified events for at least three years.</p>	<p>R8-R9 The ISO must archive all data recorded by disturbance monitoring equipment for all WECC or ISO identified events for at least three (3) years.</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R8 amended in proposed PRC-018-AB-1 for clarity and consistency.</p>		

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
<p>R6. Each Transmission Owner and Generator Owner that is required by its Regional Reliability Organization to have DMEs shall have a maintenance and testing program for those DMEs that includes:</p> <p>R6.1. Maintenance and testing intervals and their basis.</p> <p>R6.2. Summary of maintenance and testing procedures.</p>	<p>R9-R10 Each legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility that the ISO directs to have disturbance monitoring equipment must develop, implement and maintain a maintenance and testing program for disturbance monitoring equipment that includes:</p> <p>R9R10.1 maintenance and testing intervals and their basis; and</p> <p>R9R10.2 a summary of maintenance and testing procedures.</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>Alberta requirement R10 amended in proposed PRC-018-AB-1 for clarity and consistency.</p> <p>⁵Alberta Variance: NERC requirement R6 states that entities must “have” a maintenance and testing program for disturbance monitoring equipment. For clarity, “develop, maintain and implement” has been added to Alberta requirement R10 in proposed PRC-018-AB-1.</p>		

⁵ An Alberta variance is a change from the US Reliability Standard that the AESO has determined is material.

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
<p>M1. The Transmission Owner and Generator Owner shall each have evidence that DMEs it is required to have meet the functional requirements specified in Requirement 1 and are installed in accordance with its associated Regional Reliability Organization’s requirements (R2).</p>	<p>MR1 Evidence of maintaining and publishing a list as required in requirement R1 <u>exists</u>. Evidence may include a list published on the AESO’s website that identifies the <u>issue-effective</u> date, version, and revision history.</p> <p>MR2 The measures for requirement R2 are identified in the sub-measures below.</p> <p>MR2.4 Evidence of <u>having installing internal clocks in the installed disturbance monitoring equipment synchronized</u> as required in requirement R2.4 exists. Evidence may include for each installed disturbance monitoring equipment a manufacturer’s equipment specification identifying that the disturbance monitoring equipment’s internal clock is synchronized in accordance with R2.4.</p> <p>MR32.2 Evidence of <u>installing having recorded disturbance data available for retrieval disturbance</u></p>		<p>TransAlta</p> <p>31. We do not understand what is intended by “evidence of installing disturbance monitoring equipment as required in requirement R2.1 exists”. It appears to be asking for the evidence of installing equipment. Yet R2.1 is specific to the synchronization. Question – Is the measure asking for evidence of installation, in such case, what evidence would look like; or the evidence of specification, which seems to be explained in the second sentence MR2.1 We have same question for MR2.2</p>	<p>31. The AESO has clarified the language used in both Alberta requirement R2.1 (now R2) and measure MR2.1 (now MR2 in final proposed PRC-018-AB-1.</p> <p>Please see AESO Reply 11 above.</p>

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
	<p>monitoring equipment as required in requirement R2.23 exists. Evidence may include for each installed disturbance monitoring equipment a manufacturer's equipment specification identifying that recorded data from each disturbance is retrievable from the disturbance monitoring equipment disturbance records in accordance with R2.2</p>			
<p>M2. The Transmission Owner and Generator Owner shall each maintain the data listed in Requirements 3.1 through 3.8 for the DMEs installed to meet its Regional Reliability Organization's DME installation requirements.</p> <p>M2.1 The Transmission Owner and Generator Owner shall each have evidence it provided this DME data to its Regional Reliability Organization within 30 calendar days of a request</p>	<p>MR43 Evidence of installing disturbance monitoring equipment as required in requirement R3-R4 exists. Evidence may include documentation of the installation of the disturbance monitoring equipment.</p>			

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
<p>M3. The Transmission Owner and Generator Owner shall each have evidence it retained and provided recorded Disturbance data to entities in accordance with its associated Regional Reliability Organization’s Disturbance data reporting requirements. (R4 R5)</p>	<p>MR54 Evidence of maintaining and reporting data information as required in requirement R4-R5 exists. Evidence may include email or mail to the appropriate ISO recipient that identifies data information submitted.</p>		<p>TransAlta</p> <p>32. Question: what would evidence of “maintaining” look like? The second sentence only talks about the evidence of reporting.</p>	<p>32. The AESO has deleted the word “maintain” from Alberta requirement R4 (now R5) and measure MR4 (now MR5) in final proposed PRC-018-AB-1.</p>
			<p>TransCanada Energy</p> <p>33. TCE questions the inclusion of “Evidence may include email or mail to the appropriate ISO recipient that identifies data submitted.” in this measure. The NERC measure does not include details on potential evidence. Also the permissiveness but not definiteness of this statement does not assist an entity nor compliance personnel in determining specifically what can and cannot be considered evidence.</p> <p>This comment can be extended to the remaining</p>	<p>33. Entities may choose to provide any type of evidence they deem appropriate to prove compliance to a requirement. Email or mail are examples of the types of evidence which may be provided to the compliance monitor.</p>

**COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1
Disturbance Monitoring Equipment Installation and Data Reporting**

NERC PRC-018-1	Final proposed PRC-018-AB-1¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
			measures which include “Evidence may include...” statements.	
	MR65 Evidence of providing data as required in requirement R5-R6 exists. Evidence may include email or mail to the appropriate WECC recipient that identifies data submitted.			
M4. Each Transmission Owner and Generator Owner that is required to install DMEs to meet its Regional Reliability Organization’s DME installation requirements, shall have an associated DME maintenance and testing program as defined in Requirement 6	MR76 Evidence of providing data as required in requirement R75 exists. Evidence may include email or mail to the appropriate ISO recipient that identifies data submitted. MR87 Evidence of providing data as required in requirement R7-R8 exists. Evidence may include email		AltaLink 34. Same as comment in R4. ENMAX 35. MR6 – typo, reference should be made to R6 not R5.	34. Please see the AESO Reply 26. 35. The reference in the measure has been amended to the correct reference in final proposed PRC-018-AB-1.

COMPARISON BETWEEN NERC PRC-018-1 AND PRC-018-AB-1 Disturbance Monitoring Equipment Installation and Data Reporting				
NERC PRC-018-1	Final proposed PRC-018-AB-1 ¹	Reason for differences between PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
	or mail to appropriate WECC recipient that identifies data submitted.		EDTI 36. MR6 should refer to requirement R6, not R5.	36. The reference in the measure has been amended to the correct reference in final proposed PRC-018-AB-1.
			TransAlta 37. For MR6, “requirement R5” should be “requirement R6”	37. The reference in the measure has been amended to the correct reference in final proposed PRC-018-AB-1.
	MR98 Evidence of archiving data as required in requirement R8-R9 exists. Evidence may include dated archived data files.			
	MR109 The measures for requirement R9 are identified in the sub-measures below. Evidence of developing, implementing and maintaining a maintenance and testing program as required in requirement R10 exists. Evidence	Note: MR10 was amended from the draft 2.1 version to include evidence of developing, implementing and maintaining a maintenance and testing program. This evidence was included as part of measure MR10.2 in draft 2.1, but more appropriately	TransAlta 38. For MR9.1 Question: “evidence of developing, implementing and maintaining...” what would the evidence of “developing” look	38. Sufficient evidence for developing a maintenance and testing program would be the documented program itself. Please see clarifying

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	<p><u>may include a documented maintenance and testing program, maintenance and testing records showing the test date, type of test, what was tested and test results.</u></p> <p>MR109.1 Evidence of developing, implementing and maintaining a maintenance and testing program as required <u>by-in</u> requirement R9R10.1 exists. Evidence may include a documented maintenance and testing program that includes the provision as required in requirement R9R10.1.</p> <p>MR109.2 Evidence of developing, implementing and maintaining a maintenance and testing program as required <u>by-in</u> requirement R9R10.2 exists. Evidence may include maintenance and testing records showing the test date, type of test, what was tested and test results. Evidence may include a <u>documented maintenance and testing program that includes the provision as required in requirement R10.2.</u></p>	<p>belongs in measure MR10.</p> <p>Note: Measure MR10.2 was amended from the draft 2.1 version to better align with requirement R10.2.</p>	<p>like? The second sentence only refers to the evidence of program documentation. R9.2 requires a summary of maintenance and testing procedures while MR9.2 is asking for the testing records, The maintenance and testing procedures are procedures per se, but the records show that the test was executed.</p>	<p>amendments in final proposed PRC-018-AB-1.</p>

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<p>Compliance To view the compliance section D of the NERC reliability standard follow this link: http://www.nerc.com/files/PRC-018-1.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>Regional Differences None identified.</p>			

New Definitions	Stakeholder Comments (Insert comments here)	AESO Replies
<p>The AESO consulted separately on the following new Alberta Reliability Standard definition:</p> <p>a) disturbance monitoring equipment.</p> <p>Please click here to view the AESO's reply to stakeholder comments received on this defined term.</p>		