

Stakeholder Comparison Comment Rationale Matrix

2011-09-27

AESO AUTHORITATIVE DOCUMENT PROCESS

Alberta Reliability Standard – Alberta PRC-018-AB-1 Draft 2.1 *Disturbance Monitoring Equipment Installation and Data Reporting*

Date of Request for Comment [yyyy/mm/dd]: 2011-09-27

Period of Consultation [yyyy/mm/dd]: 2011-09-27 through 2011-10-21

Comments From: ATCO Electric

Date [yyyy/mm/dd]: 2011/10/21

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**COMPARISON BETWEEN NERC PRC-018-1 AND CURRENT ALBERTA PRC-018-AB-1
DISTURBANCE MONITORING EQUIPMENT INSTALLATION AND DATA REPORTING**

NERC PRC-018-1	Alberta PRC-018-AB-1 Draft 2 (From previous consultation) ¹	Alberta PRC-018-AB-1 Draft 2.1 (Revised version for re-consultation)	Differences between Alberta 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>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"> • TFOs that own disturbance monitoring equipment as identified in the list as required in requirement R1, as published by the AESO on the AESO website, and as may be amended from time to time by the AESO on notice to market participants. • GFOs that own disturbance monitoring equipment as identified in the list as required in requirement R1, as published by the AESO 	<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 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 a generating unit that owns disturbance monitoring 	<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>		

¹ This column is informational only.

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	<p>on the AESO website, and as may be amended from time to time by the AESO on notice to market participants.</p> <ul style="list-style-type: none"> • ISO 	<p>equipment as identified in the list 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;</p> <ul style="list-style-type: none"> • the legal owner of an aggregated generating facility that owns disturbance monitoring equipment as identified in the list 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 • the ISO. 			
<p>Effective Date Phased in over four years after BOT adoption: Requirements 1 and 2:</p>	<p>Effective Date Ninety (90) days after the date of approval by the Commission.</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</p>		

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<ul style="list-style-type: none"> - 50% compliant two years after initial issuance of regional requirements per RELIABILITY STANDARD PRC-002 Requirement 5. - 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. 			implement proposed PRC-018-AB-1 Draft 2.1.		

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<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 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>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 TFO and GFO that is directed to install disturbance monitoring equipment by the ISO must install disturbance monitoring equipment that meet the following requirements:</p> <p>R2.1 Internal clocks in disturbance monitoring equipment devices must be synchronized to within two</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 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:</p> <p>R2.1 internal clocks in disturbance monitoring equipment devices must be synchronized to within two (2)</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 Draft 2.1 to identify requirements of the responsible entities in Alberta and for clarity and consistency.</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</p>	<p>There are 2 reasons that make R2.2 not feasible:</p> <p>1. AESO is in full control of Disturbance Monitoring Equipment (DME) specifications and setup in Alberta. DME owners can not prove any data storage capability.</p> <ul style="list-style-type: none"> • DME specifications 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 	

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	<p>milliseconds or less of the Coordinated Universal Time (UTC) scale.</p> <p>R2.2 Recorded disturbance data must be retrievable for at least ten (10) days.</p>	<p>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>been added to proposed PRC-018-AB-1 Draft 2.1 to capture the Alberta requirements of a legal owner of a transmission facility.</p>	<p>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> <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>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 Each TFO and GFO must install disturbance monitoring equipment as directed by the ISO.</p>	<p>R3 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 Draft 2.1 to identify the responsible entities in Alberta and for</p>	<p>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</p>	<p>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 install disturbance monitoring equipment</p>

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			<p>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>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 scale; and</p> <p>R2.2?</p> <p>”</p>	<p>must install such disturbance monitoring equipment</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</p>	<p>R4 Each TFO and GFO must maintain and report, within 30 days of the ISO’s request, the following data on the disturbance monitoring equipment:</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 and report, within thirty (30) days of the ISO’s request, the following data on the disturbance monitoring</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R3 has been amended in proposed PRC-018-AB-1 Draft 2.1 to identify the responsible entities in Alberta and for</p>		

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<p>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>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>R4.1 Type of disturbance monitoring equipment, sequence of event recorder, fault recorder or dynamic disturbance recorder.</p> <p>R4.2 Make and model of disturbance monitoring equipment.</p> <p>R4.3 Installation location.</p> <p>R4.4 Operational status.</p> <p>R4.5 Date last tested.</p> <p>R4.6 Monitored elements which may include, without limitation, transmission circuit and bus section.</p> <p>R4.7 Monitored devices which may include, without limitation, circuit breaker, disconnect status and alarms.</p>	<p>equipment:</p> <p>R4.1 type of disturbance monitoring equipment;</p> <p>R4.2 make and model of disturbance monitoring equipment;</p> <p>R4.3 installation location;</p> <p>R4.4 operational status;</p> <p>R4.5 date last tested;</p> <p>R4.6 monitored elements which may include transmission circuit and bus section;</p> <p>R4.7 monitored devices which may include circuit breaker, disconnect status and alarms; and</p>	<p>clarity and consistency.</p> <p>As well, NERC requirement R3 was divided into Alberta requirements R4 and R5 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 (please refer to R5 in the Alberta reliability standard below).</p> <p>²Alberta Variance: NERC requirement R3 has been amended in proposed PRC-018-AB-1 Draft 2.1 to add a 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 R3 measurable.</p>		

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

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R3.8. Monitored electrical quantities, such as voltage, current, etc.	R4.8 Monitored electrical quantities which may include, without limitation, voltage and current.	R4.8 monitored electrical quantities which may include voltage and current.			
Refer to NERC requirement R3	R5 The ISO must provide the data received from the TFOs and GFOs in requirement R4 to the WECC within 45 days of the WECC's request.	R5 The ISO must provide the data received from the legal owner of a transmission facility, legal owner of a generating unit and legal owner of an aggregated generating facility in requirement R4 to the WECC within forty-five (45) days of the WECC's written request.	<input checked="" type="checkbox"/> New <input type="checkbox"/> Amended <input type="checkbox"/> Deleted ³ Alberta Variance: New Alberta requirement R5 has been added in proposed PRC-018-AB-1 Draft 2.1 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 R5 measurable.		
R4. The Transmission Owner and Generator Owner shall each provide	R6 Each TFO and GFO must provide all disturbance data recorded by disturbance	R6 Each legal owner of a transmission facility, legal owner of a generating unit	<input type="checkbox"/> New <input checked="" type="checkbox"/> Amended	See R2.2 comments: AESO keeps all monitoring and disturbance data. DME	

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<p>Disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements (reliability standard PRC-002 Requirement 4).</p>	<p>monitoring equipment to the ISO within 30 days of a request.</p> <p>R7 The ISO must provide disturbance data recorded by a GFO's or TFO's disturbance monitoring equipment to the WECC within 60 days of WECC's request.</p>	<p>and legal owner of an aggregated generating facility must provide all disturbance data recorded by disturbance monitoring equipment to the ISO within thirty (30) days of the ISO's written request.</p> <p>R7 The ISO must provide 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"/> Deleted</p> <p>NERC requirement R4 has been divided into Alberta requirements R6 and R7 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>⁴Alberta Variance: NERC requirement R4 has been amended in proposed PRC-018-AB-1 Draft 2.1 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 requirement R4 measurable.</p>	<p>owners do not have any data to provide to AESO.</p>	

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<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 The ISO must archive all data recorded by disturbance monitoring equipment for all WECC or ISO identified events for at least three years.</p>	<p>R8 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 Draft 2.1 for clarity and consistency.</p>		
<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>R9 Each TFO and GFO that is directed by the ISO to have disturbance monitoring equipment must implement a maintenance and testing program for disturbance monitoring equipment that includes:</p> <p>R9.1 Maintenance and testing intervals and their basis.</p>	<p>R9 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>R9.1 maintenance and testing intervals and their basis; and</p>	<p><input type="checkbox"/> New <input checked="" type="checkbox"/> Amended <input type="checkbox"/> Deleted</p> <p>NERC requirement R9 amended in proposed PRC-018-AB-1 Draft 2.1 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</p>		

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<p>R6.2. Summary of maintenance and testing procedures.</p>	<p>R9.2 Summary of maintenance and testing procedures</p>	<p>R9.2 a summary of maintenance and testing procedures.</p>	<p>added to Alberta requirement R9 in proposed PRC-018-AB-1 Draft 2.1.</p>		
<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 A list exists that identifies all disturbance monitoring equipment according to requirement R1.</p> <p>MR2 Measures for this requirement are identified in the sub-measures below:</p> <p>MR2.1 Confirmation exists that the disturbance monitoring equipment is synchronized as specified in requirement R2.1.</p>	<p>MR1 Evidence of maintaining and publishing a list as required in requirement R1. Evidence may include a list published on the AESO's website that identifies the issue date, version, and revision history.</p> <p>MR2 The measures for requirement R2 are identified in the sub-measures below.</p> <p>MR2.1 Evidence of installing disturbance monitoring equipment as required in requirement R2.1 exists. Evidence may include for each installed disturbance monitoring equipment a manufacturer's equipment specification identifying that the disturbance monitoring</p>			

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	<p>MR2.2 Confirmation exists that the disturbance monitoring equipment stores disturbance data as specified in requirement R2.2.</p>	<p>equipment's internal clock is synchronized in accordance with R2.1.</p> <p>MR2.2 Evidence of installing disturbance monitoring equipment as required in requirement R2.2 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 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</p>	<p>MR3 Confirmation exists that disturbance monitoring equipment has been installed as specified in requirement R3</p>	<p>MR3 Evidence of installing disturbance monitoring equipment as required in requirement R3 exists. Evidence may include documentation of the installation of the disturbance monitoring equipment.</p>			

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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>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>MR4 Confirmation exists that data is maintained and is provided as specified in requirement R4.</p> <p>MR4.1 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.1</p> <p>MR4.2 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.2</p> <p>MR4.3 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.3</p>	<p>MR4 Evidence of maintaining and reporting data as required in requirement R4 exists. Evidence may include email or mail to the appropriate ISO recipient that identifies data submitted.</p>			

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	<p>MR4.4 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.4.</p> <p>MR4.5 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.5.</p> <p>MR4.6 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.6</p> <p>MR4.7 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.7.</p> <p>MR4.8 Data is complete and accurate for each disturbance monitoring equipment device as specified in requirement R4.8.</p>				

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	<p>MR5 Confirmation exists that data is provided as specified in requirement R5</p>	<p>MR5 Evidence of providing data as required in requirement R5 exists. Evidence may include email or mail to the appropriate WECC recipient that identifies data submitted.</p>			
<p>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</p>	<p>MR6 Confirmation exists that disturbance data is provided as specified in requirement R6.</p> <p>MR7 Confirmation exists that data is provided as specified in requirement R7.</p>	<p>MR6 Evidence of providing data as required in requirement R5 exists. Evidence may include email or mail to the appropriate ISO recipient that identifies data submitted.</p> <p>MR7 Evidence of providing data as required in requirement R7 exists. Evidence may include email or mail to appropriate WECC recipient that identifies data submitted.</p>			

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	<p>MR8 Confirmation exists that the ISO archived all data recorded by disturbance monitoring equipment for all WECC and ISO identified events as specified in requirement R8.</p>	<p>MR8 Evidence of archiving data as required in requirement R8 exists. Evidence may include dated archived data files.</p>			
	<p>MR9 Confirmation exists that a written maintenance and testing program was implemented as specified in requirement R9.</p> <p>MR9.1 Interval information is included as specified in requirement R9.1.</p> <p>MR9.2 A summary as specified in requirement R9.2 exists and includes clear and detailed procedures.</p>	<p>MR9 The measures for requirement R9 are identified in the sub-measures below.</p> <p>MR9.1 Evidence of developing, implementing and maintaining a maintenance and testing program as required by requirement R9.1 exists. Evidence may include a documented maintenance and testing program that includes the provision as required in requirement R9.1.</p> <p>MR9.2 Evidence of developing, implementing and maintaining a maintenance and testing program as required by requirement R9.2 exists. Evidence may include maintenance and testing</p>			

**COMPARISON BETWEEN NERC PRC-018-1 AND CURRENT ALBERTA PRC-018-AB-1
DISTURBANCE MONITORING EQUIPMENT INSTALLATION AND DATA REPORTING**

NERC PRC-018-1	Alberta PRC-018-AB-1 Draft 2 (From previous consultation) ¹	Alberta PRC-018-AB-1 Draft 2.1 (Revised version for re-consultation)	Differences between Alberta PRC-018-AB-1 Draft 2.1 and NERC PRC-018-1	New Stakeholder Comments (Insert comments here)	AESO Replies
		records showing the test date, type of test, what was tested and test results.			
Compliance To view the compliance section D of the NERC reliability standard follow this link: http://www.nerc.com/files/PRC-018-1.pdf			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		
Regional Differences None identified.	Regional Differences None identified.	Regional Differences None identified.			

New Definitions	Stakeholder Comments (Insert comments here)	AESO Replies
The AESO is consulting separately on the following new Alberta Reliability Standard definition: a) disturbance monitoring equipment.		

New Definitions	Stakeholder Comments (Insert comments here)	AESO Replies
To view the consultation documents for the definition please visit the AESO website at www.aeso.ca and follow the path - Rules & Standards > Alberta Reliability Standards > Proposed Alberta Reliability Standards.		