



Date of Request for Comment: <u>January 31, 2019</u>		
Period of Consultation: <u>January 31, 2019</u> through <u>February 15, 2019</u>		
Alberta Reliability Standard	Market Participant Comments and/or Alternative Proposal	AESO Replies
<p><b>Amended</b></p> <p>The AESO is seeking comments from market participants with regard to the following matters:</p> <ol style="list-style-type: none"> <li>Are there any requirements contained in proposed amended PRC-005-AB1-6 that are not clearly articulated? If yes, please indicate the specific section of proposed amended PRC-005-AB1-6, describe the concern and suggest alternative language.</li> <li>Please provide any additional comments regarding proposed Amended PRC-005-AB1-6.</li> </ol> <p>2. Applicability:</p> <p>2.1 This <b>reliability standard</b> applies to:</p> <p>(a) the <b>legal owner</b> of a <b>transmission facility</b>; that:</p> <p>(i) is part of the bulk electric system, excluding a transformer that does not have its primary terminal and at least one secondary terminal energized at 100 kV or higher; or</p> <p>(ii) is material to this <b>reliability standard</b></p>	<p><b>Altalink Management Ltd. (“AML”)</b></p> <ol style="list-style-type: none"> <li>For section 2.1 (a) (i): The current bulk electric system definition excludes “radial transmission facilities serving only load with one (1) transmission source”. As T-tapped load serving substations are radially connected to a single system element (the transmission line), they should be excluded from bulk electric system and the scope of PRC-005-AB1-6. Please confirm.</li> <li>For section 2.1 (a) (ii): AltaLink suggests the AESO publish the ISO’s current list of “extra transmission facilities” that would be included in 2.1(a)(ii) prior to the implementation of PRC-005 amendments. This would allow AltaLink to assess any impacts of these “extra transmission facilities” to AltaLink’s maintenance program.</li> <li>The PRC-005-AB1-6 is not applicable to the legal owner of a distribution facility, nor does it explicitly indicate applicability to distributed UFLS/UVLS installed in facilities operated at 100 KV or lower. Therefore AltaLink’s interpretation is that all requirements related to UFLS/UVLS and included in section 2.2 (b) and 2.2 (c) are not applicable to the UFLS/UVLS schemes deployed at 99 kV and lower levels Please confirm.</li> </ol>	<ol style="list-style-type: none"> <li>Substations only serving load that are radially connected (T-tapped) to a single system element are excluded from the bulk electric system and the scope of PRC-005-AB1-6, unless the AESO includes it on a list published on the AESO website in accordance with PRC-005-AB1-6 section 2.2.1(a)(ii).</li> <li>The AESO is not planning to add transmission facilities to the list as permitted through 2.2.1(a)(ii) at this time.</li> <li>AltaLink’s interpretation of subsection 2.2(b) and 2.2(c) of the current proposed amended PRC-005-AB1-6 is reasonable. However, the AESO is planning to consult on a further amendment to proposed amended PRC-005-AB1-6 to clarify that the reliability standard applies to the legal owner of a transmission facility that is not part of the bulk electric system, and owns any of the following: <ul style="list-style-type: none"> <li>the protection systems used for the ISO’s underfrequency load shedding program;</li> <li>the protection systems used for undervoltage load shed systems installed to prevent system voltage collapse or voltage instability for the reliability of the interconnected electric system; or</li> </ul>                     protection systems installed as a remedial action                 </li> </ol>

<p>and to the <b>reliability</b> of either the <b>interconnected electric system</b> or the City of Medicine Hat electric system, as the <b>ISO</b> determines and includes on a list published on the AESO website, which the <b>ISO</b> may amend from time to time in accordance with the process set out in Appendix 3;</p> <p>2.2 This <b>reliability standard</b> applies to the following devices:</p> <p>(b) <b>protection systems</b> used for the <b>ISO's underfrequency load shedding</b> program;</p> <p>(c): <b>protection systems</b> used for <b>undervoltage load shed</b> systems installed to prevent system voltage collapse or voltage instability for the reliability of the <b>interconnected electric system</b>;</p> <p>Appendix 1, Table 1-2</p>	<p>4. AltaLink interprets that this requirement is not applicable to devices and communication circuits used for sending Transfer Trips (generally as part of anti-islanding scheme or protection transfer trip) from distribution substations to the Independent Power Producers (IPPs) operated below 100 kV. Please confirm.</p> <p>5. AltaLink's interpretation of the term "independent ac measurement" is outlined below. Please confirm if this is acceptable.</p> <ul style="list-style-type: none"> <li>- The measurements of separate phases can be considered as independent ac measurements. Microprocessor relays allow techniques (beyond simple comparison) for detecting failure of input signals. For e.g. VT failure element that uses negative sequence components.</li> </ul> <p>6. Regarding Section 5.1 of Appendix 5, AltaLink's interpretation is outlined below. Please confirm if this is acceptable.</p> <ul style="list-style-type: none"> <li>- For maintenance activities that have a maximum maintenance interval of 4 months, Market Participants need to complete the first instance of those maintenance activities within 4 months after April 1, 2020 and every 4 months thereafter regardless of when the previous maintenance activity was completed. Please confirm AltaLink's interpretation is correct.</li> </ul> <p>7. Are the following NERC's Supplementary Reference and FAQ's definition of "a Calendar Year" and the example of "4 calendar months" applicable to the PRC-005-AB-6? If not, please provide the appropriate definition and example.</p> <p>NERC's Supplementary Reference and FAQ 7.1 Frequently Asked Questions (page 26):</p> <p>What is a Calendar Year?          Calendar Year - January 1 through December 31 of any year. As an example, if an event occurred on June 17, 2009 and is on a "One Calendar Year Interval," the next</p>	<p>scheme, including automatic reclosing applied as an integral part of a remedial action scheme, for the reliability of the interconnected electric system.</p> <p>4. To the extent that such protection systems are not remedial action schemes and are not installed for the reliability of the interconnected electric system, the AESO agrees.</p> <p>5. AltaLink's interpretation is not acceptable. The reference to "independent ac measurement" means the ac measurement by a separate physical device.</p> <p>6. The AESO agrees that for maintenance activities that have a maximum maintenance interval of 4 months, market participants need to complete the first instance of those maintenance activities within 4 months after April 1, 2020.</p> <p>Maintenance activities following the first instance of a maintenance activity on a 4-month maximum interval must be performed within 4 full calendar months following the first maintenance activity. Please also refer to reply 7 below.</p> <p>7. The AESO agrees with the examples provided and will post an information document that will include a statement that the AESO generally agrees with the information contained within NERC's Supplementary Reference and FAQ document and recognizes that it may be a useful reference for market participants as they implement PRC-005.</p>			
<table border="1"> <tr> <td data-bbox="177 1084 419 1458">Any communications system necessary for correct operation of protective functions with continuous monitoring or periodic automated testing for the</td> <td data-bbox="419 1084 553 1458">12 calendar years</td> <td data-bbox="553 1084 782 1458">Verify that the communications system meets performance criteria pertinent to the communications technology applied (e.g. signal level, reflected power, or data error</td> </tr> </table>	Any communications system necessary for correct operation of protective functions with continuous monitoring or periodic automated testing for the	12 calendar years	Verify that the communications system meets performance criteria pertinent to the communications technology applied (e.g. signal level, reflected power, or data error		
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<p>presence of the channel function, and alarming for loss of function (See Table 2).</p>		<p>rate).  Verify operation of communications system inputs and outputs that are essential to proper functioning of the <b>protection system</b>.</p>	<p>event would have to occur on or before December 31, 2010.</p> <p>Please provide an example of “4 Calendar Months”. If a maintenance activity is described as being needed every four Calendar Months then it is performed in a (given) month and due again four months later. For example a battery bank is inspected in month number 1 then it is due again before the end of the month number 5. And specifically consider that you perform your battery inspection on January 3 then it must be inspected again before the end of May. Another example could be that a four-month inspection was performed in January is due in May, but if performed in March (instead of May) would still be due four months later therefore the activity is due again July. Basically every “four Calendar Months” means to add four months from the last time the activity was performed and perform the activity by the end of the fourth month.</p>	
<p>Appendix 1, Tables 1-3 (the comment is</p>				
<p>Voltage and current sensing devices connected to microprocessor relays with ac measurements that are continuously verified by comparison of sensing input value, as measured by the microprocessor relay, to an independent ac measurement source, with alarming for unacceptable error or failure (see Table 2).</p>	<p>No periodic maintenance specified</p>	<p>None.</p>		
<p>also applicable to Tables 4.1 and 4.3)  Appendix 5 – Implementation Plan 5. Implementation Plan for Requirements R3</p>				

<p>and R4</p> <p>1. For protection system, automatic reclosing, and sudden pressure relaying component maintenance activities with maximum allowable intervals of less than 1 calendar year, as established in Tables 1-1 through 1-5, the entity must be compliant with PRC-005-AB1-6 by</p> <table border="1" data-bbox="177 540 782 695"> <tr> <td data-bbox="177 540 534 695">Protection system station dc supply using Vented Lead-Acid (VLA) batteries not having monitoring attributes of Table 1-4(f).</td> <td data-bbox="534 540 782 695">4 months unless a variance is granted by the AESO</td> </tr> </table> <p>April 1, 2020.</p> <p>Table 1-4(a)</p>	Protection system station dc supply using Vented Lead-Acid (VLA) batteries not having monitoring attributes of Table 1-4(f).	4 months unless a variance is granted by the AESO		
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	<p><b>ATCO Electric Ltd. (“ATCO”)</b></p> <p>8. The bulk electric system definition that the standard refers to is not clear about the system elements that are in scope.  <a href="https://www.aeso.ca/assets/Uploads/Consolidated-Authoritative-Document-Glossary-January-1-2019-.pdf">https://www.aeso.ca/assets/Uploads/Consolidated-Authoritative-Document-Glossary-January-1-2019-.pdf</a></p> <p>The definition talks about generating sources, transmission lines, etc but does not specifically state other elements such as transformers, buses, breakers, reactors, capacitor banks, static var compensators, synchronous condensers, and filter banks. In addition, the voltage level and configuration of these elements are also not described, which are vital in defining a BES element, similar to NERC’s definitions.  <a href="https://www.nerc.com/pa/RAPA/BES%20DL/bes_phase2_reference_document_2014_0325_final_clean.pdf">https://www.nerc.com/pa/RAPA/BES%20DL/bes_phase2_reference_document_2014_0325_final_clean.pdf</a></p> <p>Local Networks are not mentioned in the CADG’s bulk electric system definition, yet it was referenced to in AESO Replies to Market Participant Comments: 2018-07-05, Page 11 of 21, Reply #21.  <a href="https://www.aeso.ca/assets/Uploads/Market-Participant-Comment-and-AESO-Reply-Matrix-PRC-005-AB-6.pdf">https://www.aeso.ca/assets/Uploads/Market-Participant-Comment-and-AESO-Reply-Matrix-PRC-005-AB-6.pdf</a></p> <p>Responding to AESO’s Reply #21, we believe AESO has decided to exceed NERC</p>	<p>8. The current definition of bulk electric system does not explicitly identify elements such as transformers, buses, breakers, reactors, capacitor banks, static var compensators, synchronous condensers, and filter banks. However, it is the AESO’s opinion that such facilities are “associated equipment” under the AESO’s current definition of bulk electric system . Additionally, the AESO’s current bulk electric system definition includes all facilities operated at 100kV or higher, but could also include facilities energized below 100 kV. For clarity, the AESO will identify additional associated facilities in the applicability where this is the case.</p> <p>The AESO appreciates ATCO Electric’s statement that any protection failure or misoperation on what the NERC describes as a local network will not back-up into the backbone grid. However, it remains the responsibility of the AESO to maintain the reliable operation of all facilities that meet the applicability criteria in proposed PRC-005-AB-6. As such, the AESO</p>		

	<p>BES Definitions by including Local Networks because it believes a) reliability of Local Network is important and b) if protection systems in Local Network is not maintained per PRC-005, the disturbances in Local Network will back up into system network to impact BES Reliability. We agree that reliability of Local Network is important, however, a protection system issue in Local Network will not back up into the system (backbone grid). For example, in the event of protection system failure in Local Network, say a line fault misoperation or a non-operation would only back up to one of the Interconnecting Tie Transformer and not back up into the system network. Therefore, a disturbance in Local Network is always localized when designed adequately (i.e. as per ISO rule 502.3). If AESO believes a disturbance in Local Network can back up or impact backbone grid, then we need to address the root cause of protection design or ISO rule 502.3 rather than impose PRC-005 on it. NERC accordingly does not impose PRC-005 on Local Networks. What we are trying to establish is that only customers served by the radial line will be affected, and not the BES. If necessary, we can have a meeting with protection engineers on AESO's team and discuss this further.</p>	<p>will not be providing an exemption in proposed PRC-005-AB1-6 for what the NERC describes as a local network.</p>
<p>[REDACTED]</p>	<p><b>ENMAX Power Corporation (“EPC”)</b></p> <p>9.Can we get confirmation if 2.1 (a) (i) is referencing phase to phase voltage or phase to ground voltage?</p> <p>For example, would 240 kV to 138 kV autotransformer phase to phase values be excluded?</p>	<p>9. The AESO confirms that the voltage being referenced in 2.1(a)(i) is a phase-to-phase voltage. The example of a 240 kV to 138 kV autotransformer, using phase-to-phase values would not be excluded.</p>