### Alberta Reliability Standard

The AESO is seeking comments from market participants with regard to the following matters:

1. 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.

2. Please provide any additional comments regarding proposed Amended PRC-005-AB1-6.

#### Applicability:

2.1 This **reliability standard** applies to:

(a) the legal owner of a transmission facility; that:

(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

(ii) is material to this **reliability standard**

<table>
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<tr>
<th><strong>Market Participant Comments and/or Alternative Proposal</strong></th>
<th><strong>AESO Replies</strong></th>
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<tbody>
<tr>
<td>Altalink Management Ltd. (&quot;AML&quot;)</td>
<td>1. 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).</td>
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<td>2. The AESO is not planning to add transmission facilities to the list as permitted through 2.2.1(a)(ii) at this time.</td>
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<td>3. 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:</td>
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<td>• the protection systems used for the ISO’s underfrequency load shedding program;</td>
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<td></td>
<td>• 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</td>
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<td>• protection systems installed as a remedial action</td>
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2.2 This reliability standard applies to the following devices:

- protection systems used for the ISO’s underfrequency load shedding program;
- 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;

Appendix 1, Table 1-2

<table>
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<tr>
<th>Description</th>
<th>Requirement</th>
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<td>Any communications system necessary for correct operation of protective functions with continuous monitoring or periodic automated testing for the 12 calendar years</td>
<td>Verify that the communications system meets performance criteria pertinent to the communications technology applied (e.g. signal level, reflected power, or data error)</td>
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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.

5. AltaLink’s interpretation of the term “independent ac measurement” is outlined below. Please confirm if this is acceptable.
- 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.

6. Regarding Section 5.1 of Appendix 5, AltaLink’s interpretation is outlined below. Please confirm if this is acceptable.
- 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.

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.

NERC’s Supplementary Reference and FAQ 7.1 Frequently Asked Questions (page 26):
- 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
### Appendix 1, Tables 1-3 (the comment is also applicable to Tables 4.1 and 4.3)

| 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). | No periodic maintenance specified | None. |

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.

Appendix 5 – Implementation Plan

5. Implementation Plan for Requirements R3
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 April 1, 2020.

Table 1-4(a)

| 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 | April 1, 2020.

Table 1-4(a) version R4

ATCO Electric Ltd. ("ATCO")

8. The bulk electric system definition that the standard refers to is not clear about the system elements that are in scope. [Link to CADG Glossary]

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. [Link to NERC BES Phase 2]

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. [Link to AESO Reply]

Responding to AESO’s Reply #21, we believe AESO has decided to exceed NERC.
<table>
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<th>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.</th>
<th>will not be providing an exemption in proposed PRC-005-AB1-6 for what the NERC describes as a local network.</th>
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<td>9. Can we get confirmation if 2.1 (a) (i) is referencing phase to phase voltage or phase to ground voltage? For example, would 240 kV to 138 kV autotransformer phase to phase values be excluded?</td>
<td>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.</td>
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