

Stakeholder Comment and AESO Replies Matrix

Proposed New Alberta Reliability Standard CIP-012-AB-1, Cyber Security – Communications between Control Centres (“CIP-012-AB-1”)



Date of Request for Comment:	November 3, 2021		
Period of Consultation:	November 3, 2021	Through	November 24, 2021

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

Alberta reliability standard	Stakeholder Comments and/or Alternative Proposal	AESO Replies
<p>New</p> <p>1. Are there any requirements contained in the proposed new CIP-012-AB-1 that are not clearly articulated? If yes, please indicate the specific section of the proposed new CIP-012-AB-1, describe the concern, and suggest alternative language.</p>	<p>AltaLink Management Ltd. (“AltaLink”)</p> <p>1. AltaLink notes that the following statement in R1 of NERC CIP-012-1 was removed from the proposed CIP-012-AB-1:</p> <p style="padding-left: 40px;">“The Responsible Entity is not required to include oral communications in its plan.”</p> <p>It is AltaLink ‘s understanding that “oral communications” are not the “real time assessment and real time monitoring data” and would be out of scope.</p> <p>Please provide the definitions of “real time assessment” and “real time monitoring data” and please confirm that “oral communications” are out of scope for CIP-012</p>	<p>1. The AESO confirms that oral communications are out of scope for this standard and has added the referenced statement from R1 of NERC CIP-012-1 into requirement R1 of CIP-012-AB-1 for clarity.</p> <p>Please see the description and examples of the terms “real-time assessment” and “real-time monitoring data” provided below. The AESO will include this information in an CIP-012-AB-1 information document, which the AESO anticipates posting in Q3 2022.</p> <p><u>Real-time assessment</u></p> <p>The AESO considers the term “real-time assessment” to have a similar meaning as the NERC defined term “real-time assessment”. Due to differences between the AESO and NERC defined terms and functional entity types, the term has a slightly different meaning in Alberta. The meaning of the term real-time assessment and examples are provided below. Note that AESO defined terms are bolded for added clarity and can be found in the AESO’s <i>Consolidated Authoritative Document Glossary</i>.</p> <p>“Real-time assessment” meaning:</p> <p>an evaluation of system conditions using real-time data to assess pre-contingency and potential post-contingency operating conditions. The assessment must reflect applicable inputs including: load;</p>



		<p>generating unit and aggregated generating facility output levels; known remedial action scheme status or degradation, functions, and limitations; any outage of one or more transmission facility, any outage of one or more generating unit and aggregated generating facility; interchange; facility ratings; and identified phase angle and equipment limitations. Real-time assessment may be provided through internal systems or through third-party services.</p> <p>“Real-time assessment” examples:</p> <p>Real-time assessment data is all data that is an input to or generated by a real-time assessment. Examples of this data includes, load, generating unit and aggregated generating facility output levels, remedial action scheme status, transmission facility status, real power and reactive power flow, system voltage and system frequency.</p> <p>Appendix 1 to 5 of Section 502.8 of the ISO rules, <i>SCADA Technical and Operating Requirements</i> (“Section 502.8”) outline the real-time data requirements for market participants. The real-time data outlined in Section 502.8 that are used in a real-time assessment or generated by a real-time assessment are considered real-time assessment data.</p> <p><u>Real-time monitoring</u></p> <p>NERC does not have a definition for real-time monitoring. The AESO interprets “real-time monitoring” to mean the act of observing the current state of the interconnected electric system in real time by operating personnel to fulfill the AESO and each market participant duties.</p> <p>The AESO considers any real-time data that is used by the AESO and by each market participant, for the real-time monitoring of its facility, to be real-time</p>
--	--	---



	<p><u>ATCO Electric Ltd. (“ATCO”)</u></p> <p>2. Could the AESO please provide an example on who the control centers are in this exception:</p> <p>“(b) a control centre that transmits to another control centre real time assessment or real time monitoring data pertaining only to the generating resource, transmission station, or substation co-located with the transmitting control centre”.</p> <p>Will the AESO clarify that this excludes “data center associated with control centers”?</p>	<p>monitoring data. This data includes data that is provided through supervisory control and data acquisition systems. Examples of this data includes: load; generating unit, and aggregated generating facility output levels; substation equipment status; real power and reactive power flow; system voltage; and system frequency.</p> <p>All data identified in Appendix 1 to 5 of Section 502.8 that is received through real-time monitoring systems, including EMS and SCADA systems, is real-time monitoring data.</p> <p>2. An explanation and examples to help illustrate the intent of exemption (b) are provided in NERC’s document Cyber Security - Communications between Control Centers Technical Rationale and Justification for Reliability Standard CIP-012-1 (“NERC Rationale Document”), PDF pages 5 to 8, provides.</p> <p>The AESO agrees with the guidance provided in the NERC Rationale Document and will include a reference to it in the CIP-012-AB-1 information document, which the AESO anticipates posting in Q3 2022.</p> <p>Please note, when reviewing the NERC Rationale Document, that, in the Alberta context, the AESO performs the function of a NERC Reliability Coordinator (“RC”) and the operator of a transmission facility performs the function of a NERC Transmission Operator (“TOP”), referred to by NERC as the RC and the TOP.</p> <p>To answer ATCO’s question, the AESO assumes ATCO is asking if a data centre, that is part of an exempt control centre, is also exempt from CIP-012-AB-1. The AESO can confirm that such a data center is exempt as, it is considered part of the control</p>
--	--	---



	<p>3. Could the AESO please provide a definition for “real time assessment data” and “real time monitoring data”?</p> <p>4. What is the AESO looking to have as evidence of implementation of security protections between controls centers in the plan?</p>	<p>centre.</p> <p>For further information on what is considered part of the control centre, please refer to the definition of control centre (found in the AESO’s <i>Consolidated Authoritative Document Glossary</i>) below. Note that bolded terms within the definition are also defined in the AESO’s <i>Consolidated Authoritative Document Glossary</i></p> <p>control centre: “means one or more facilities hosting operating personnel that monitor and control the bulk electric system in real-time to perform the reliability tasks, including their associated data centres, of: 1) the ISO, 2) an operator of a transmission facility for transmission facilities at two (2) or more locations, or 3) an operator of a generating unit or an operator of an aggregated generating facility for either generating units or aggregated generating facilities at two (2) or more locations.”</p> <p>Based on this definition, CIP-012-AB-1 is applicable to any data centre that is associated with a control centre if the associated control centre meets the applicability of CIP-012-AB-1. By the same token, a data centre associated with a control centre, will be exempted from CIP-012-AB-1 if the associated control centre meets the criteria for CIP-012-AB-1 exemption (b).</p> <p>3. Please see the AESO’s reply to comment #1.</p> <p>4. Evidence could include screenshots of security encryption configurations and photographs of physical security that support the plan identified in the market participants documented plan in accordance with requirement R1. The NERC document , NERC Cyber</p>
--	--	---



	<p>5. Does the AESO’s interpretation of ‘real time assessment and real time monitoring data’ as per of CIP-012-AB-1 include oral communications? This is included in the NERC version of the standard but was excluded in the proposed AESO version with no comment in the comparative matrix column</p> <p>ENMAX Corporation (“ENMAX”)</p> <p>6. Based on Exemption (b) – ENMAX requests clarity on the exemption (b) based on ENMAX Energy’s control centres. Is the best process to obtain clarity through the ISO’s RFI process?</p> <p>7. Requirement 1 – What is the expectation on the effective date of CIP-012-AB-1? Should the plans be in place to include how to mitigate the risks (& identify the measures that are in place), or should the plans include how to respond to the risks (event based)?</p>	<p>Security – Communications Between Control Centers Implementation Guidance for CIP-012-1 (“NERC Implementation Document”) on PDF page 8, also indicates that security protection implementation can be demonstrated in many ways. The AESO supports the NERC Implementation Document and will include a reference to it in the CIP-012-AB-1 information document, which the AESO anticipates posting in Q3 2022.</p> <p>5. Please see the AESO’s reply to comment #1.</p> <p>6. Please see the AESO’s reply to comment #2, which provides further information on exemption (b). The AESO also plans to meet with Responsible Entities in Q3 2022 to assist them in meeting their CIP-012-AB-1 obligations by their effective date of July 1, 2023.</p> <p>7. If, after reviewing the reply to comment #2 the referenced NERC Rationale Document and meeting with the AESO in Q3 2022, ENMAX Energy is still unclear, then ENMAX Energy is welcome to submit a request for clarification through the RFI process. It is expected that each Responsible Entity will be fully compliant with all the requirements as outlined in CIP-012-AB-1 by July 1, 2023. This means that the documented plans described in requirements R1.1 and R1.2 must be implemented by the July 1, 2023 effective date.</p> <p>CIP-012-AB-1 does not include any requirements related to how each Responsible Entity responds to event-based risks; therefore, plans related to event-based risks are not required for CIP-012-AB-1.</p>
--	--	---



	<p>8. Requirement 1 – Is the “real-time monitoring data while being transmitted between any applicable control centres” considered as a uni-directional data flow or does it include bi-directional data flows in the exemption?</p> <p>9. NERC CIP-012-1 R1 includes a statement missing from CIP-012-AB-1:</p> <p style="padding-left: 40px;">“The Responsible Entity is not required to include oral communications in its plan.”</p> <p>Does the AESO interpretation of ‘real time assessment and real time monitoring data’ as per CIP-012-AB-1 include oral communications?</p> <p><u>EPCOR Distribution & Transmission Inc. (“EPCOR”)</u></p> <p>10. EPCOR requests that the AESO provide definitions for “real time assessment data” and “real time monitoring data.”</p> <p>The NERC CIP-012-1 reliability standard includes the following statement in R1:</p> <p>‘The Responsible Entity is not required to include oral communications in its plan.’</p> <p>This statement is not included in the AESO’s CIP-012-AB-1 reliability standard. EPCOR requests clarity on whether Responsible Entities are required to include oral communications in their plan.</p>	<p>The CIP-012-AB-1 implementation plan includes an effective date of July 1, 2022. To clarify, this effective date only applicable to communication between the AESO’s control centre and control centres external to Alberta. It does not impact other Responsible Entities.</p> <p>8. The exemption includes both uni-directional and the bi-directional flow of data that meets the exemption criteria.</p> <p>9. Please see the AESO’s reply to comment #1.</p> <p>10. Please see the AESO’s reply to comment #1.</p>
--	--	--



	<p><u>Heartland Generation Ltd.</u></p> <p>11. Clarify and give examples of "real-time assessment data" and "real-time monitoring data".</p> <p>12. ADD an exemption for controls centres that do not transmit the type of data .</p> <p><u>Suncor Energy Inc. (“Suncor”)</u></p> <p>13. Suggest including in the requirement that if all control centers are in scope regardless if they are CIP high, medium, or low impact facilities</p> <p>In addition to that, it would be great to include that communication between entities are also part of the scope of this standard / Reason: including the scope will provide more clarity to the plan that will be developed.</p>	<p>11. Please see the AESO’s reply to comment #1.</p> <p>12. The AESO is of the opinion that it is not necessary to add more exemptions to the CIP-012-AB-1 applicability. For clarity on CIP-012-AB-1 exemption (b), please see the AESO’s reply to comment #2.</p> <p>13. The AESO will be providing the suggested clarity in the CIP-012-AB-1 information document, which the AESO anticipates posting in Q3 2022.</p>
<p>2.Do you have any additional comments regarding the proposed new CIP-012-AB-1? If yes, please specify.</p>	<p><u>AltaLink</u></p> <p>14. AltaLink notes that the operator or owner of distribution facilities (DFO) is not listed as one of the applicable responsible entities of CIP-012-AB-1. Please confirm that the communications between a control center owned by a TFO (operator or owner of transmission facilities) and a control center owned by a DFO would be out of scope.</p>	<p>14. The AESO cannot confirm that communications between a control centre owned by a TFO and a control centre owned by a DFO would be out of scope based on the information provided. The intent of the CIP-012-AB-1 is to protect real-time assessment and real-time monitoring data between control centres. Please refer to the definition of “control centre” in the AESO’s <i>Consolidated Authoritative Document Glossary</i>, for clarity on what is defined as a control centre, which will assist AltaLink in making its determination of what is in scope. Generally, a facility that, at all times, exclusively hosts operating personnel that monitors and controls an electric distribution system is out of scope. However, in situations where such facility meets the AESO’s definition of control centre, the</p>



	<p>15. AltaLink also submits that the release of the Reliability Standard Audit Worksheet during the consultation period would be beneficial and help Market Participants provide comments regarding CIP-012-AB-1.</p> <p><u>ATCO</u></p> <p>16. The ISO’s compliance date is July 1, 2022. How will the AESO engage with the Market Participant to meet this compliance date?</p> <p>17. Does the AESO foresee the development of a cost sharing and security measure agreement between the AESO and the Market Participants? Will the AESO be drafting such agreement?</p> <p>18. Does the AESO support the contents of NERC’s CIP-012 implementation guide –</p>	<p>facility would be in scope. For example, if the facility hosts operating personnel that monitors and controls in real-time to perform reliability tasks both an electric distribution system and part of the bulk electric system, it would be considered a control centre and be in scope. The definition of control centre is provided in the AESO’s reply to comment #2.</p> <p>15. The AESO acknowledges AltaLink’s comment. The reliability standards audit worksheet (“RSAW”) development process considers a number of factors including, the final content of the reliability standard, content of information documents, and stakeholder training. For this reason, it is developed and finalized after each standard is approved by the Commission. Knowing that some market participants use the RSAW in establishing the internal process for gathering information for demonstrating compliance, the AESO will increase its efforts to post the RSAW as soon as practicable following the AUC approval date. We would like to note that changes to the current process and timing of the RSAW development may occur as part of the ARS Development & Monitoring Initiative.</p> <p>16. Please see the AESO’s reply to comment #7. The AESO plans to meet with Responsible Entities in Q3 2022 to assist them in meeting their CIP-012-AB-1 obligations by their effective date of July 1, 2023.</p> <p>17. No, the AESO does not foresee the development of cost sharing or security measure agreements</p> <p>18. Yes. Please see the AESO’s reply to comment #4.</p>
--	--	--



	<p>https://www.nerc.com/pa/comp/guidance/EROEndorsedImplementationGuidance/CIP-012-1%20Communications%20Between%20Control%20Centers%20(2016-02%20SDT).pdf</p> <p>19. Will the security measures be standardized across all Market Participants or will the Market Participant’s own internal standards apply to the link between the AESO and individual Market Participant?</p> <p>20. Does the AESO have a projected timeline on when the RSAW for CIP-012 would be available to the market participants</p> <p><u>ENMAX</u></p> <p>21. No comment.</p> <p><u>EPCOR</u></p> <p>22. EPCOR requests that the AESO develop the reliability standards audit worksheet (RSAW) for CIP-012-AB-1 concurrent with the development of the standard.</p> <p>23. In regards to in scope communication links between the AESO and Responsible Entities, EPCOR requests that the AESO provide clarity on whether there will be cost-sharing agreements between the AESO and connected entities.</p> <p>24. Will security measures be standardized for all Responsible Entities, or will the Responsible Entities’ own internal measures apply to the link between the AESO and each Responsible Entity?</p> <p><u>Suncor</u></p> <p>25. We would propose implementation of this standard to align with NERC which was 24-months after the standard was approved in US to ensure the market participants have sufficient time to become compliant.</p>	<p>19. The AESO is of the opinion that a standardized approach with logical protection for Responsible Entities would be appropriate in most situations. The AESO plans to initiate discussions with market participants in Q3 2022 to establish an acceptable implementation of security measures that best meets the requirements.</p> <p>20. Please see the AESO’s reply to comment #15.</p> <p>21. The AESO acknowledges ENMAX’s comment.</p> <p>22. Please see the AESO’s reply to comment #15.</p> <p>23. Please see the AESO’s reply to comment #17.</p> <p>24. Please see the AESO’s reply to comment #19.</p> <p>25. The AESO acknowledges Suncor’s proposal. The AESO is of the opinion it remains reasonable for all Responsible Entities to be compliant by July 1, 2023. However, if a Responsible Entity is unable to meet the</p>
--	--	--



		<p>implementation timeline, despite best efforts, the Responsible Entity may submit a request for a variance to the implementation timeline pursuant to ADM-002-AB-1, <i>Waivers and Variances</i>. The AESO will consider granting variances to the implementation timeline for up to 12 months. Please see the AESO’s reply to comment #7 for further clarity on CIP-012-AB-1 effective dates. In the AESO’s view, it is important to implement the CIP-012-AB-1 requirements as soon as possible to address current security risks</p>
<p>26. Please provide any comments or views on the need for the development of a related information document, including the type of content that should be included.</p>	<p>AltaLink</p> <p>26. AltaLink would recommend the AESO develop a related information document and include the following contents:</p> <p>27. To provide guidance on the evidence and expectations;</p> <ol style="list-style-type: none"> 1. To establish a standardized security protection practice/procedure for market participants; 2. To provide guidance on the coordination between entities (including the AESO), including any requirements for agreements. 	<p>26. The AESO agrees with AltaLink and intends to develop a CIP-012-AB-1 information document to support proposed new CIP-012-AB-1, which the AESO anticipates posting in Q3 2022.</p> <p>27. The AESO agrees. The purpose of the CIP-012-AB-1 information document will be:</p> <p>(a) <u>NERC Rationale Document</u>: to provide Responsible Entities with information regarding the use of the NERC Rationale Document in Alberta, which was referenced in AESO’s reply to comment #2. This will include:</p> <ul style="list-style-type: none"> -further clarification on the CIP-012-AB-1 exemptions; and -guidance related to determining the applicable scope for generating resource control room communication links. <p>(b) <u>NERC Implementation Document</u>: to provide Responsible Entities with information regarding the use of the NERC Implementation Document in Alberta, referenced in the AESO’s reply to comment #4. This will include:</p> <ul style="list-style-type: none"> -guidance on the applicability to backup control



	<p>28. Please comment on the applicability of NERC guidance to the AESO’s CIP-012-AB-1</p> <p><u>ATCO</u></p> <p>29. AE suggest that an information document to provide some guidance on examples of “real time assessment data” and “real time monitoring data” would be beneficial.</p> <p><u>ENMAX</u></p> <p>30. Will the AESO be developing an Information Document in alignment with NERC Technical Rationale and Justification for Reliability Standard CIP-012-1 (dated August 2018) which</p>	<p>centres; -reference material to help identify where an entity shall apply security protection; and -examples where a physical protection is appropriate. (c) <u>Real-time Assessment and Monitoring Data</u>: to provide information on the meaning and examples of real-time assessment and monitoring data, as described in AESO’s reply to comment #1. (d) <u>Standardized Security Protection</u>: to provide guidance on standardized security protection, where applicable, between applicable Responsible Entities and their control centres. (e) <u>Development of Plans</u>: to provide guidance and information that supports the Responsible Entities with the development of plans as required in requirement R1 of CIP-012-AB-1. (f) <u>CIP Impact Ratings</u>: to provide clarity on how the scope of CIP-012-AB-1 relates to the CIP impact ratings (i.e., low, medium, and high).</p> <p>28. Please see the AESO’s reply to comment #27.</p> <p>29. Please see the AESO’s reply to comment #27.</p> <p>30. Yes, please see the AESO’s reply to comment #27.</p>
--	--	--



	<p>further outlines and clarifies CIP-012 Exemptions for certain control centers based upon Figures 1 – 4 within that document?</p> <p>31. Without this clarification, some control centres could be included within the scope that were not intended to be within the scope of the reliability standard developed and approved by NERC.</p> <p>32. Does the AESO recommend the use of NERC’s CIP-012 implementation guide?</p> <p>33. ENMAX would like to confirm when the CIP-012-AB-1 RSAW will be made available?</p> <p><u>EPCOR</u></p> <p>34. A guidance document such as NERC’s CIP-012-1 Implementation Guidance would be useful. This guide provides Responsible Entities with implementation guidance and offers examples of approaches for compliance with CIP-012-1. Alternatively, if the AESO is not inclined to develop additional documentation, its adoption of the NERC document would be helpful.</p> <p><u>Heartland Generation Ltd.</u></p> <p>35. Additional information that AESO may want to include in the ID, is contained in the NCCP white paper on CIP npcc-whitepaper-on-nerc-reliability-standard-cip-012.pdf . Key points are the types/examples of real time assessment and monitoring data; and location based examples of communication paths.</p> <p><u>Suncor</u></p> <p>36. Can the AESO provide a sample of what it is expected to see in the documented plan mentioned in MR1?</p> <p>37. Please provide guideline to evaluate if Backup control center and generating unit control rooms within Industrial System Designation (ISD) are in scope of this new proposed standard. Similar illustration provided in NERC document</p>	<p>31. The AESO acknowledges ENMAX’s comment. Please see the AESO’s reply to comment #27.</p> <p>32. Please see the AESO’s reply to comment #27.</p> <p>33. Please see the AESO’s reply to comment #15.</p> <p>34. Please see the AESO’s reply to comment #27.</p> <p>35. The AESO appreciates Heartland Generation Ltd. pointing out this information. The AESO will review this document and consider including similar content in the CIP-012-AB-1 information document. Please also see the AESO’s reply to comment #1 and comment #27.</p> <p>36. Please see the AESO’s reply to comment #4 and comment #27. The AESO intends to provide guidance in the CIP-012-AB-1 information document that supports the responsible entities with the development of required plans.</p> <p>37. Please see the AESO’s reply to comment #27.</p>
--	---	---

Stakeholder Comment and AESO Replies Matrix

Proposed New Alberta Reliability Standard CIP-012-AB-1, Cyber Security – Communications between Control Centres (“CIP-012-AB-1”)



	<p>(Technical Rationale and Justification for Reliability Standard CIP-012-1) will help evaluate exception criteria in the Applicability Section 2.</p> <p>38. Please provide examples with illustration when an entity will need to implement both or either of physical and logical security protections while data being transmitted between Control Centers. Also provide examples for expected means of physical protections to the assets that are in scope of this standard.</p> <p>39. Please provide examples for identification where the entity shall apply security protection (both physical and logical) for transmitting real time assessment and real time monitoring data between control centres.</p> <p>40. Proposed new standard requires the communication between control centers, please clarify if external remote access <u>connection</u> (i.e. by Vendor) to a facility is in scope of this standard.</p>	<p>38. Please see the AESO’s reply to comment #27.</p> <p>39. Please see the AESO’s reply to comment #27.</p> <p>40. Remote access to systems or data by a vendor is not within the scope of this standard. CIP-012-AB-1 is applicable to Responsible Entities that transmit real-time assessment and real-time monitoring data between applicable control centres. See the AESO’s definition of control centre, provided in AESO’s reply to comment #2, for further clarity.</p>
--	--	---