

June 16, 2022

To: The Market Surveillance Administrator, market participants and other interested parties (“Stakeholders”)

Re: Stakeholder Comments on Letter of Notice for Draft Proposed Amendments to ISO rules and Definitions to Enable Energy Storage (“Energy Storage ISO Rule Amendments”)

The Alberta Electric System Operator (“AESO”) received comments from Stakeholders in response to its May 9, 2022 *Letter of Notice for the Energy Storage ISO Rule Amendments*. These comments have been posted on the AESO website.

Comments were received from the following Stakeholders:

1. AltaLink;
2. ATCO Electric;
3. ATCO Energy Infrastructure;
4. Canadian Renewable Energy Association (“CanREA”);
5. Capital Power;
6. Energy Storage Canada;
7. Enfinite;
8. ENMAX Corporation;
9. TC Energy; and
10. TransAlta Corporation.

Thank you to all Stakeholders who participated in this consultation. All written comments received will be considered in the AESO’s finalization of the Energy Storage ISO Rule Amendments.

If you have any questions, please submit them to rules_comments@aeso.ca.

Sincerely,

Jackie Gow

Legal Manager, ISO Rules and Alberta Reliability Standards
Legal and Regulatory Affairs
rules_comments@aeso.ca

	Proposed Amended ISO Rules	Stakeholder Comments
1.	Section 103.4, <i>Power Pool Financial Settlement</i> .	<p><u>AltaLink</u> No comment at this point</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> ENMAX requests further clarity from the AESO on whether energy storage assets greater than 5 MW are eligible for ALM. In general, ENMAX would enforce that only loads that are able to respond with 5 MW or more are to be considered for ALM.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> Subsection 6(1) of Section 103.4 removes the requirement for the AESO to pay import assets the incremental costs associated with complying with a directive to cancel an outage. TransAlta would like to understand which change, energy storage or adjustment for load on the margins, this change is associated with as it is not an administrative change for import assets.</p>

<p>2.</p>	<p>Section 201.7, <i>Dispatches</i></p>	<p><u>AltaLink</u></p> <p>AltaLink is concerned there has not been formal consultation on the need for Fast Frequency Response. AltaLink believes it is important to provide stakeholders with a justification for the new service, complete with a comprehensive evaluation against alternatives, and provide the opportunity for stakeholder input. As such, AltaLink believes this consultation, which includes changes to implement the new service, is premature. Relative to the service proposed, AltaLink believes it could result in unintended consequences, including an adverse impact on the delivered cost to customers and non-compliance with FEOC requirements. Load Shed Service for Imports (LSSi) is a Non-Wires Solution (NWS). (Note: The AESO’s Alberta Intertie Restoration Initiative Discussion Paper, released in March 2010, first introduced using LSSi to mitigate this critical transmission contingency. This report clearly identified this service as being a Non-Wire Solution.) As Fast Frequency Response (FFR) is being proposed as a direct replacement for LSSi, FFR is also a Non-Wire Solution. As an NWS, there are additional limitations for its use specified within the Transmission Regulation. AltaLink is concerned that FFR (and LSSi previously) may not satisfy these requirements.</p> <p>In the recent DOE consultation, AltaLink proposed that the AESO follow a defined process, as part of performance of their Transmission Planning function, to incorporate NWS as potential alternatives to transmission when developing solutions to resolve transmission deficiencies. AltaLink’s proposal, which was presented in a DOE stakeholder session, was based on the objective of identifying the alternative which achieves the lowest delivered cost of electricity for customer while also respecting market integrity.</p> <p>In addition, rules which define requirements for services (whether Non-Wires Services or Ancillary Services) need to be explicit and transparent with all performance requirements for the service provider. i.e. Rules should not need to reference terms in a contract that are not yet defined.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p>
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	Proposed Amended ISO Rules	Stakeholder Comments
		No comment at this time.
3.	Section 202.2, <i>Short-Term Adequacy and Supply Shortfall</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> Suggest the following wording change to Section 3(1)(a) for added clarity: “instructing available source assets, including long lead time assets but excluding import assets, to deliver energy;” <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
4.	Section 202.3, <i>Issuing Dispatches for Equal Prices</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> While Capital Power does not have any significant concerns with the proposed changes, we note there are a few inconsistencies with wording in this Section and would suggest the AESO revise the language to be more consistent, clean, and reflect the priority of its actions when managing bids/offers of equal price.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Subsection 2(5): ENMAX requests further clarity on which section of ISO Rule 203.6 will be used to determine dispatch volumes for imports or exports? <p><u>TransAlta Corporation (“TransAlta”)</u> TransAlta agrees in principle with the proposed amendments to subsections 2(2) and 2(3) of Section 202.3 for issuing dispatches for equally priced offer and bid blocks. However, we request the AESO provide an explanation of the implications of the changes so we can more fully understand and comment on the proposed amendment.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
5.	Section 202.4, <i>Managing Long Lead Time Assets</i>	<p><u>AltaLink</u></p> <p>AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. (Note: Please refer to our initial comment in the Definitions comment matrix.) Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> Section 3 appears obsolete, suggest removing: “A pool participant that has a start-up time of greater than 36 hours in the Energy Trading System on June 7, 2016, must reduce the start-up time 36 hours or less within a period no more than 4 months from June 7, 2016.” <p>In reference to subsection 8(2)(d), what happens if a generator is paired with an energy storage resource, but that resource is not charged?</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>TransAlta would like further explanation as to why long lead time assets with associated energy storage are excluded from receiving an incremental payment if directed on under subsection 8(2). It is understood that some energy storage resources are not long lead time assets, however there may be circumstances where an energy storage technology will fall under the definition of a long lead time asset, such as non-battery energy storage. In these instances, where energy storage actually is long lead time, the rules should not exclude those long lead time energy storage resources from being eligible for or receiving an incremental payment. TransAlta believes that the exclusion in 8(2) does not align with the goal of creating technology agnostic rules and creates an unlevel playing field.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
6.	Section 202.5, <i>Supply Surplus</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • In reference to subsection 2(2)(f), what if there are more available MWs than needed? <p>Subsection 2(2)(g) refers to issuing directives for any other necessary actions, including shutting down generating units, aggregated facilities, and energy storage resources, to ensure reliability. What about a directive to charge an energy storage resource to absorb a supply surplus?</p> <p><u>Energy Storage Canada</u> The ISO rule allows exports to adjust their interchange transaction within 2 hours of the start of the settlement interval. ESC requests the AESO consider the ability for energy storage resources to adjust their energy bid within 2 hours of the start of the settlement interval. In other words, if there is a supply surplus event it would be in the best interest of economic efficiency to allow energy storage resource to consume the excess supply before it is spilled.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
7.	Section 202.6, <i>Adequacy of Supply</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes as part of this consultation. However, Capital Power continues to have concerns with the AESO’s proposed changes to Section 202.6 as part of its red tape reduction initiatives. It would be helpful if the AESO could provide stakeholders an update on this initiative considering stakeholders have not been engaged on this initiative since October 2021.</p> <p><u>ENMAX Corporation</u> Administrative change to Section 2(a) – change “and energy storage resource” to “and energy storage resources”.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
8.	Section 203.1, <i>Offers and Bids for Energy</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> TransAlta would like clarity as to why subsection 3(2)(a) of Section 203.1 has been deleted. Does the removal of the requirement for assets under 5 MW to not submit an offer infer that submitting an offer for source assets less than 5 MW is now optional? And if so, TransAlta recommends a “may” requirement be included in the rule for clarity. Additionally, TransAlta would like to understand how this amendment is associated with the integration of energy storage. If it is not, this amendment should not be made in this consultation package.</p>
9.	Section 203.3, <i>Energy Restatements</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
10.	Section 203.4, <i>Delivery Requirements for Energy</i>	<p><u>AltaLink</u> As per our earlier comment, AltaLink believes it is premature to alter definitions or market rules for a new service which has not been fully evaluated nor consulted on. Rules which define requirements for services (whether Non-Wires Services or Ancillary Services) need to be explicit and transparent with all performance requirements for the service provider. i.e. Rules should not need to reference terms in a contract that are not yet defined.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
11.	Section 205.2, <i>Issuing Dispatches and Directives for Operating Reserve</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
12.	Section 205.4, <i>Regulating Reserve Technical Requirements and Performance Standards</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
13.	Section 205.5, <i>Spinning Reserve Technical Requirements and Performance Standards</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
14.	Section 205.6, <i>Supplemental Reserve Technical</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
15.	Section 205.8, <i>Transmission Must-Run</i>	<p><u>AltaLink</u> To ensure adequate transparency, AltaLink recommends the process for determining requirements for procuring TMR should be included in the Rule. Transparency is necessary as TMR has FEOC implications and stakeholders need visibility of the evaluation that confirms procuring TMR is in the best interest of customers (ratepayers are not overpaying for these services). AltaLink also recommends the AESO report (file on its website for transparency) on the effectiveness of the arrangement made with the market participant for the service being provided. i.e. Service providers are meeting performance requirements and the service is delivering the lowest delivered cost of electricity for customers. Rules which define requirements for services (whether Non-Wires Services or Ancillary Services) need to be explicit and transparent with all performance requirements for the service provider. i.e. Rules should not need to reference terms within a contract.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
16.	Section 301.2, <i>ISO Directives</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are inherently included under the requirements for transmission facilities. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> Administrative change to Section 4(2) – change “not later <u>then</u> 5 minutes” to “not later <u>than</u> 5 minutes”.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
17.	Section 302.1, <i>Real Time Transmission Constraint Management</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Apart from the note to draft that the DOS terms may require updating after the current bulk and regional tariff hearing, Capital Power is not clear on what changes, if any, the AESO is seeking feedback on for Section 302.1.</p> <p><u>ENMAX Corporation</u> What happens in the case if two assets have the same price but different constraint effective factors?</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

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18.	Section 303.1, <i>Load Shed Service</i>	<p><u>AltaLink</u></p> <p>As per our earlier comment, AltaLink believes it is premature to alter definitions or market rules for a new service which has not been fully evaluated nor consulted on. To ensure adequate transparency, AltaLink recommends the requirements for procuring LSSi should be included in the Rule. Transparency is necessary as LSSi has FEOC implications and stakeholders need visibility of the evaluation that confirms procuring LSSi is in the best interest of customers (ratepayers are not overpaying for these services). AltaLink also recommends the AESO report (file on its website for transparency) on the effectiveness of the arrangement made with the market participant for the service being provided. i.e. Service providers are meeting performance requirements and the service is delivering the lowest delivered cost of electricity for customers. Rules which define requirements for services (whether Non-Wires Services or Ancillary Services) need to be explicit and transparent with all performance requirements for the service provider. i.e. Rules should not need to reference terms in a contract.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes to this rule and the clarity it shows that the FFR service is only for imports. As such, Capital Power would request that the AESO adopt a consistent acronym where an “i” is appended to FFR to identify that it is only for imports. This distinction is important as Capital Power continues to believe that the AESO must pursue an expanded FFR service to cover intra-Alberta needs for primary frequency response, and not just support imports, which are an opportunity service.</p> <p><u>ENMAX Corporation</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
19.	Section 304.3, <i>Wind and Solar Power Ramp Up Management</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
20.	Section 304.4, <i>Maintaining Network Voltage</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are inherently included under the requirements for transmission facilities. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
21.	Section 304.7, <i>Event Reporting</i>	<p><u>AltaLink</u></p> <p>AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are inherently included under the requirements for transmission facilities. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Under the heading of Section 4, add a comma after “Generating Unit” to separate it from “Aggregated Facility” • Appendix 1, Event 7(a); Appendix 2, Event 2(a) and (c): Does the 100kV requirement apply to any transmission facility that falls under this section or just to energy storage resources? • Appendix 2, Event 1: Can the AESO provide more insight on what is meant by “contrary to the design of generating units”? What about aggregated facilities and energy storage resources? • Appendix 4, Event 7 – “aggregate facility” should be changed to “aggregated facility” <p><u>TransAlta Corporation (“TransAlta”)</u></p> <ul style="list-style-type: none"> • No comment at this time.

	Proposed Amended ISO Rules	Stakeholder Comments
22.	Section 304.8, <i>Event Analysis</i>	<p><u>AltaLink</u></p> <p>AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are inherently included under the requirements for transmission facilities. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • In reference to Section 1(c), why does this section not refer to “legal owner or operator”? • Appendix Category 1(a): ENMAX seeks to better understand what is meant by the phrase “contrary to the design of”. See similar question above under ISO Rule Section 304.7, Event Reporting. • Appendix Category 1(iv) – change “generating units <u>and</u> energy storage resources” to “generating units <u>or</u> energy storage resources”. <p><u>TransAlta Corporation (“TransAlta”)</u></p> <ul style="list-style-type: none"> • No comment at this time.

	Proposed Amended ISO Rules	Stakeholder Comments
23.	Section 304.9, <i>Wind and Solar Aggregated Facility Forecasting</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Change “wind or solar” to “wind or solar <u>resources</u>” throughout ISO Rule 304.9 • The first part of Section 3(2) appears obsolete, suggest removing: “The legal owner of an aggregated facility containing wind or solar connected in accordance with any previous forecasting requirements must bring its aggregated facility into compliance with this Section 304.9 by no later than twelve (12) months after September 1, 2018,” • Suggest the following addition to Section 4(3)(c): “measurements must be taken at not less than 2 meters and not greater than 10 meters above ground, <u>except as otherwise noted in Table 1.</u>” • Suggest the following changes to Table 1: <ul style="list-style-type: none"> ○ Wind direction – range column should be changed to “0 to <u>359</u>” ○ Precipitation – accuracy column should be changed to “mm/<u>min</u>” ○ “<u>Diffused</u> Horizontal Irradiance” should be changed to “Diffuse Horizontal Irradiance” • The unit “HPa” should be changed to “<u>hPa</u>” <p><u>TransAlta Corporation (“TransAlta”)</u></p> <ul style="list-style-type: none"> • No comment at this time.

	Proposed Amended ISO Rules	Stakeholder Comments
24.	Section 306.3, <i>Load Planned Outage Reporting</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> TransAlta would like clarity on how the revision to the Applicability of Section 306.3 (i.e., limiting the ISO rule to market participants with loads 40 MW or greater) relates to the integration of energy storage.</p>
25.	Section 306.4, <i>Transmission Planned Outage Reporting and Coordination</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are inherently included under the requirements for transmission facilities. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
26.	Section 306.5, <i>Generation Outage Reporting and Coordination</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
27.	Section 306.7, <i>Mothball Outage Reporting</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes as part of this consultation (please note our comments in the separate consultation).</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
28.	Section 501.10, <i>Transmission Loss Factors</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” and “distribution energy storage resources”. “Transmission energy storage resources” like all transmission facilities are excluded from being charged for losses. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
29.	Section 502.1, Wind or Solar Aggregated Facilities Technical Requirements	<p><u>AltaLink</u></p> <p>AltaLink has no specific comments on the modifications to the rule. AltaLink does recommend the AESO consider, at some point, condensing all of the rules associated with different types of supply into a single technology agnostic rule. i.e. The grid’s requirements from all generators should be the same regardless of location, size, technology, prime mover, etc. A single rule simplifies the collection of rules and ensures all generators meet a consistent set of requirements.</p> <p><u>Capital Power</u></p> <p>Capital Power submits the following wording change should be made to section 1(1)(a): “the legal owner of a wind and-or solar aggregated facility...”</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • The first sentence of Section 1(1)(a) should read as follows: “the legal owner of a wind <u>or</u> solar aggregated facility that is directly connected to the transmission system [...]”. • Subsection 9(3): Is reference to “pump mode” still applicable given the deletion of “pumped storage”? <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
30.	Section 502.3, <i>Interconnected Electric System Protection Requirements</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are included within requirements for other transmission facilities. Recommend adding this clarity to the rule</p> <p>AltaLink questions why there is a size limit on energy storage resources (or for that matter the generation units or aggregated facilities). i.e. Although the energy contribution to the grid may not be significant, failure of protection at even the most minor facility, which is directly connected to the BES, can have a significant reliability impact on the grid and other market participants. AltaLink requests the AESO reconsider these size limits.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Section 43 – remove the word “either” • Section 44 – to be consistent with Section 42, remove the word “have” from (a) and (b) <p><u>Energy Storage Canada</u> Can the AESO please explain the reasoning and justification for the 18 MW limit for energy storage resources maximum authorized real power rating?</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

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31.	Section 502.5, <i>Generating Unit Technical Requirements</i>	<p><u>AltaLink</u></p> <p>AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. Recommend adding this clarity to the rule. AltaLink recommends the AESO consider, at some point, condensing all of the rules associated with different types of supply (which includes “market energy storage resources”) into a single technology agnostic rule. i.e. The grid’s requirements from all generators should be the same regardless of location, size, technology, prime mover, etc. A single rule simplifies the collection of rules and ensures all generators meet a consistent set of requirements.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Subsection 3(2): <p>Do standards that ceased to have effect in 2017 still need to be referenced? Suggest removing.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
32.	Section 502.6, <i>Generating Unit Operating Requirements</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. Recommend adding this clarity to the rule</p> <p>AltaLink recommends the AESO consider, at some point, condensing all of the rules associated with different types of supply (which includes “market energy storage resources”) into a single technology agnostic rule. i.e. The grid’s requirements from all generators should be the same regardless of location, size, technology, prime mover, etc. A single rule simplifies the collection of rules and ensures all generators meet a consistent set of requirements.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> Should instances of “generating unit” be changed to “synchronous generating unit”?</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
33.	Section 502.7, <i>Load Facility Requirements</i>	<p><u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. Recommend adding this clarity to the rule</p> <p>AltaLink fails to understand why one energy storage technology (battery energy storage) is specifically excluded. The rationale for such an exclusion is not apparent and may be offside with FEOC requirements.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

<p>34.</p>	<p>Section 502.8, <i>SCADA Technical and Operating Requirements</i></p>	<p><u>AltaLink</u></p> <p>AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. “Transmission energy storage resources” are included within requirements for other transmission facilities. Recommend adding this clarity to the rule. The table for transmission facilities (Appendix 4) requires updating to account for “transmission energy storage resources”. AltaLink strongly disagrees with the AESO modifying rules to accommodate Fast Frequency Response service without first providing justification that such a service is in the best interest of customers, meets FEOC requirements and has had been introduced following proper consultation.</p> <p><u>Capital Power</u></p> <p>Capital Power would appreciate more clarity around the proposed SCADA Technical and Operating Requirements, including the following:</p> <p><u>Appendix 2</u></p> <p>- What is the requirement for data acquisition of DC power for each collection system feeder (if sharing an inverter with another resource)? - The AESO should define “resource” in this context.</p> <p><u>Appendix 5</u></p> <p>- Similar to our comments on the definition of “gross real power”, the AESO should specify where Gross Real Power is measured (for example, would it be at each individual battery container or before the inverter?).</p> <p>- The AESO should specify where Net Real Power is measured (would this be at the Point of Interconnection?).</p> <p><u>Appendix 6</u></p> <p>- The AESO should specify where Gross Real Power and Reactive Power is measured.</p> <p>- Operational maximum state of charge should be plural as some facilities may have multiple means of charging the facility.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Suggest replacing instances of “+/-“ with the Unicode character “±” in all of the ISO rules <p>Appendix 2 – blackline changes to “km/h”, why are the units different from those</p>
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	Proposed Amended ISO Rules	Stakeholder Comments
		required under ISO Rule 304.9? <u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.
35.	Section 502.9, <i>Synchrophasor Measurement Unit Technical Requirements</i>	<u>AltaLink</u> AltaLink believes the energy storage resource referenced in this rule is “market energy storage resources” only. Recommend adding this clarity to the rule. <u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time. <u>ENMAX Corporation</u> No comment. <u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.

	Proposed Amended ISO Rules	Stakeholder Comments
36.	Section 502.13, <i>Battery Energy Storage Facility Technical Requirements</i>	<p><u>AltaLink</u> AltaLink believes that the requirements in this rule apply to “market energy storage resources” only. Recommend adding this clarity to the rule. AltaLink believes there may be a subset of these requirements which could apply for “transmission energy storage resources”. The AESO would need to determine if this can be done in a way that does not create undue confusion by incorporating them in this rule. Otherwise, a separate rule may be warranted, or requirements could be specified within the functional specification. Also, recommend the AESO be technology agnostic in their rules. i.e. Why have a rule only for battery energy storage?</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Subsection 1(a) – should “or to transmission facilities within the City of Medicine Hat” be included before the “;”? <p>Subsection 8(2) – over what period of time?</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
37.	Section 502.14, <i>Battery Energy Storage Facility Operating Requirement</i>	<p><u>AltaLink</u> AltaLink believes that the requirements in this rule apply “market energy storage resources” only. Recommend adding this clarity to the rule. Also, recommend that the AESO be technology agnostic in their rules. i.e. Why have a rule only for battery energy storage?</p> <p><u>Capital Power</u> See Capital Power’s response to Section 502.13 above.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Subsections 1(a) and (b) – should “or to transmission facilities within the City of Medicine Hat” be included before the “;” in subsections 1(a) and 1(b)? <p><u>TransAlta Corporation (“TransAlta”)</u></p> <ul style="list-style-type: none"> • No comment at this time.
38.	Section 502.15, <i>Reporting Facility Modelling Data</i>	<p><u>AltaLink</u> AltaLink believes that the requirements in this rule apply “market energy storage resources”. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> Section 1 – should there be any reference to the City of Medicine Hat?</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
39.	Section 502.16, <i>Aggregated Facilities Operating Requirements</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
40.	Section 504.3, <i>Coordinating Energization, Commissioning and Ancillary Services Testing</i>	<p><u>AltaLink</u> AltaLink believes that the requirements in this rule apply “market energy storage resources”. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
41.	Section 504.4, <i>Coordinating Operational Testing</i>	<p><u>AltaLink</u> AltaLink believes the requirements in this rule apply to “market energy storage resources”. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>
42.	Section 505.2, <i>Performance Criteria for Refund of GUOC</i>	<p><u>AltaLink</u> AltaLink believes the requirements in this rule apply to “market energy storage resources”. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> No comment.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed Amended ISO Rules	Stakeholder Comments
43.	Section 505.3, <i>Coordinating Energization, Commissioning and WECC Testing Activities</i>	<p><u>AltaLink</u> AltaLink believes the requirements in this rule apply to “market energy storage resources” and possibly “distribution energy storage resources”. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> ENMAX recommends that the rule include a provision which recognizes DFO coordination. For instance, under Section 2(1), a provision could be added which states that customers are also required to meet Distribution System Energization Requirements, which are established by each respective DFO.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> TransAlta would like clarity on why the requirement for WECC testing is being removed from Section 505.3. The proposed amended Section 505.3 now refers to Section 502.6 of the ISO rules, Generating Unit and Synchronous Storage Resource Operating Requirements, which does not refer to WECC testing. Does this revision mean that participants are no longer required to complete WECC testing? If not, the requirement should not be removed from the ISO rules.</p>
44.	Section 505.4, <i>Coordinating Operational Testing</i>	<p><u>AltaLink</u> AltaLink believes the requirements in this rule apply to “market energy storage resources”. Recommend adding this clarity to the rule.</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>ENMAX Corporation</u> See response to Question 42.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> No comment at this time.</p>

	Proposed New ISO Rule	Stakeholder Comments
45.	Section 203.5, <i>Consumption Requirements for Energy Storage</i>	<p><u>AltaLink</u> No comment</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes.</p> <p><u>ENMAX Corporation</u></p> <ul style="list-style-type: none"> • Section 1 (a): Is ENMAX correct in interpreting that this is voluntary and not all sink assets greater than 5 MW are required to bid into the market? Please elaborate on this. Further, does the AESO intend to dispatch a load/sink asset or have some requirements for load/sink assets to inform the AESO SC? • Section 2(1): Is ENMAX correct in interpreting that a sink asset that has a bid needs to be able to respond to dispatches, including having associated ADaMS requirements or operators that can move the unit to respond? • Section 3: Under ISO Rule 203.4, Subsection 2(a)(b), there is an additional 10 minutes for generators to show directional movement towards the dispatch. This additional 10 minutes appears to be missing from the sink calculation in Section 3 of ISO Rule 203.5. If this has been excluded on purpose, can the AESO provide some clarity as to why sink assets would not also be provided with this 10-minute period to show movement? • Section 4: - There are numerous other exceptions to non-compliance listed under Subsection 6(1) of ISO Rule 203.4. Can the AESO please provide further information on why bid assets would not get the same exceptions (such as responding to abnormal frequency)?

	Proposed New ISO Rule	Stakeholder Comments
		<p>At the end of subsection 4(a), should the “and” be an “or”?</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>In reviewing the proposed new consumption requirements for bids, TransAlta’s initial thoughts are that imposing a requirement to submit ramp rates for a load bid is unnecessary and further disincentivizes loads from voluntarily submitting bids. Loads are not currently subject to ramp rate restrictions or potential compliance penalties for ramping.</p> <p>Additionally, TransAlta notes that the applicability of the proposed new rule is not specific to energy storage and will impact any load that chooses to bid. As such, this new ISO rule should be consulted on separately (outside the energy storage package) so that all the potentially impacted parties have visibility of the change, understand requirements being placed on them and have equal opportunity to comment. Including a new ISO rule that is not limited to energy storage does not fit within the AESO’s Stakeholder Engagement Framework principles of Inclusive, Accessible and Transparent.</p> <p>While TransAlta appreciates that the AESO may desire greater visibility of ramp rates, we do not agree that imposing compliance obligations is necessary to obtain that visibility. A simple requirement to submit a ramp rate should suffice and imposing a ramp rate variance requirement should not be included in the ISO rules at this time.</p> <p>TransAlta would like clarity on the process for submitting ramp rates for bids. Will it be a single submission process, or will the participant have the ability to modify their ramp rate?</p> <p>Section 203.5, Consumption Requirements for Energy Storage Bid</p>

Definitions – New	
Proposed	Stakeholder Comments
<p>“energy storage resource” as defined in the Act means the component of an energy storage facility that uses a technology or process that is capable of using electric energy as an input, storing the energy for a period of time and then discharging electric energy as an output, and includes a share of the following associated facilities that are necessary for the safe, reliable, and economic operation of the energy storage resource, which may be used in common with other energy storage resources:</p> <ul style="list-style-type: none"> (i) fuel and fuel handling equipment; (ii) cooling water facilities; (iii) switch yards; and (iv) other items. 	<p><u>AltaLink</u></p> <p>AltaLink agrees with the definition of energy storage resource.</p> <p>However, AltaLink strongly recommends creating new defined terms which provides clear differentiation between the 3 distinct types of energy storage resources identified within Bill 22: “market energy storage resources”, “transmission energy storage resources” and “distribution energy storage resources”. These more precise terms are necessary to ensure ISO Rules are properly aligned with legislative requirements such as energy storage that is part of transmission or distribution facilities cannot participate in markets. As the draft Rules don’t have this differentiation of types of storage, many of the drafted Rule amendments are contrary to legislative requirements. E.g. Rules around settlement, metering, losses, etc. clearly only apply to “market energy storage resources” and not to regulated transmission facilities. AltaLink will base its comments on other definitions and rule amendments based on these 3 definitions.</p> <p><u>ATCO Energy Infrastructure</u></p> <p><u>Comments:</u></p> <p>The definition implies one technology or process. This should be expanded to include multiple technologies or multi-step processes. For example, adiabatic CAES which uses thermal storage and compressed air storage.</p> <p>The definition should be consistent with ‘generating unit’</p>

Definitions – New

Proposed

Stakeholder Comments

with respect to output use.

Proposed changes:

“energy storage resource” as defined in the **Act** means the component of an **energy storage facility** that uses ~~a technology or process~~ any technologies or processes that ~~is~~ are capable of using electric energy as an input, storing the energy for a period of time and then discharging electric energy as an output for use as electric energy and ancillary services, and include...

Canadian Renewable Energy Association (“CanREA”)

Recommend changing “... that are necessary...” to “...that may be necessary...”. For example, not all storage technologies require fuel and fuel handling equipment.

Capital Power

Capital Power has no concerns with the proposed definition at this time.

Energy Storage Canada (“ESC”)

ESC generally supports this definition and believes it encompasses the many varieties of energy storage technology types

Enfinite

Enfinite is generally supportive of this definition. This definition is general enough to allow for new technologies to be adapted as they reach commercialization.

TransAlta Corporation (TransAlta)

TransAlta agrees that the proposed new defined term

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – New	
Proposed	Stakeholder Comments
	<p>“energy storage resource” aligns with the term in Bill 22, Electricity Statutes (Modernizing Alberta’s Electricity Grid) Amendment Act, 2022 (“Bill 22”)</p>
<p>“Fast Frequency Response Service” means a service the ISO contracts to provide a change in real power supplied to the interconnected electric system in response to a change_in system frequency:</p> <ul style="list-style-type: none"> (i) in accordance with the requirements the ISO specifies in the contract; and (ii) which may be in the form of either one or both of a change_in real power consumption or a change in real power production <p>but does not include operating reserves.</p>	<p>AltaLink</p> <p>AltaLink is concerned there has not been formal consultation on the need for Fast Frequency Response. AltaLink believes it is important to provide stakeholders with a justification for the new service, complete with a comprehensive evaluation against alternatives, and provide the opportunity for stakeholder input. As such, AltaLink believes this consultation, which includes changes to implement the new service, is premature. Relative to the service proposed, AltaLink believes it could result in unintended consequences, including an adverse impact on the delivered cost to customers and non-compliance with FEOC requirements.</p> <p>Load Shed Service for Imports (LSSi) is a Non-Wires Solution (NWS). (Note: The AESO’s Alberta Intertie Restoration Initiative Discussion Paper, released in March 2010, first introduced using LSSi to mitigate this critical transmission contingency. This report clearly identified this service as being a Non-Wire Solution.) As Fast Frequency Response (FFR) is being proposed as a direct replacement for LSSi, FFR is also a Non-Wire Solution. As an NWS, there are additional limitations for its use specified within the Transmission Regulation. AltaLink is concerned that FFR (and LSSi previously) may not satisfy these requirements.</p> <p>In the recent DOE consultation, AltaLink proposed that the AESO follow a defined process, as part of performance of their Transmission Planning function, to incorporate NWS as potential alternatives to</p>

Definitions – New	
Proposed	Stakeholder Comments
	<p>transmission when developing solutions to resolve transmission deficiencies. AltaLink’s proposal, which was presented in a DOE stakeholder session, was based on the objective of identifying the alternative which achieves the lowest delivered cost of electricity for customer while also respecting market integrity.</p> <p><u>ATCO Energy Infrastructure</u></p> <p><u>Comment:</u></p> <p>This definition could also include expected technical requirements and performance standards to signal to potential service providers, what is required for future contracts.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Agree</p> <p><u>Capital Power</u></p> <p>Capital Power is supportive of the proposed definition and believes this is an important change for reliability and to appropriately contemplate new and emerging technologies in the rules.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the new Fast Frequency Response Service proposed by ISO and believes innovations like this service will be required to support net-zero electricity objectives.</p> <p>While ESC supports contracted Fast Frequency Response Service to start, ESC believes that the AESO should consider in the future the ability to procure the service through market activities similar to operating</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – New	
Proposed	Stakeholder Comments
	<p>reserve if possible.</p> <p><u>Enfinite</u></p> <p>This definition should be amended to include the term ‘transmission reliability service’ or some variation of that as Load Shed Service for imports is a similar product and is defined as such.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed new defined term at this time.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"acceptable operational reason" means, any one (1) or more of the following:</p> <ul style="list-style-type: none"> (i) a circumstance related to the operation of a generating source asset which if it operated could reasonably be expected to affect the safety of the source asset, the environment, personnel working at the source asset or the public; (ii) re-positioning a generating source asset assets, within the energy market due to the need to meet a dispatch given to that source asset from the ISO to serve the stand-by operating reserves market; (iii) re-positioning a generating source asset within the energy market to manage physical or operational constraints associated with the source asset; (iv) re-positioning a pool asset that is an import asset or an export asset within the energy market to manage physical or operational constraints associated with an interconnection or a neighbouring balancing authority; (v) a circumstance directly resulting in the generating source asset not being capable of operation, which circumstance was solely caused by an occurrence of force majeure; or (vi) re-positioning a generating source asset for electric energy that is: 	<p>"acceptable operational reason" <u>means:</u></p> <p>(i) any one (1) or more of the following for a pool asset, that is not an import asset or export asset:</p> <ul style="list-style-type: none"> a) a circumstance related to the operation of a generating pool source asset which, if it operated could reasonably be expected to affect the safety of the poolsource asset, the environment, personnel working at the poolsource asset or the public; b) re-positioning a poolgenerating source asset assets, within the energy market due to the need to meet a dispatch given to that pool-source asset from the ISO to serve the stand-by operating reserves market; c) re-positioning a generating poolsource asset within the energy market to manage physical or operational constraints associated with the pool-source asset; (i) re-positioning a pool asset that is an import asset or an export asset within the energy market to manage physical or operational constraints associated with an interconnection or a neighbouring balancing authority; d) a circumstance directly resulting in the generating pool source asset not being capable of operation, which circumstance was solely caused by an occurrence of force majeure; or e) re-positioning a generating pool source asset for electric energy that is: <u>A. a) produced on the property of which a person is the owner or a tenant; and</u> 	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") Agree</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>However, the AESO should also review the proposed amendments to the terms and definitions with the Alberta Reliability Standards (ARS) Discussion Group as part of its ARS stakeholder engagement. (Note: this comment applies to all the of the terms and definitions that are proposed here that are related to reliability standards. Capital Power notes that many terms and definitions (even where not referenced by the AESO) may either directly or indirectly impact compliance with Alberta Reliability Standards. In Capital Power's view, the AESO should avoid working in silos on these initiatives considering there are potential impacts to both the rules and reliability standards.)</p> <p>Energy Storage Canada ("ESC") A key concern for energy storage resources is the state of charge (SOC) limitations that might restrict the ability to generate (or consume). Specifically for this definition, the inability for energy storage resources to adjust energy bids and energy offers because of unforeseen</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>a) produced on the property of which a person is the owner or a tenant; and</p> <p>b) consumed solely by that person and solely on that property.</p> <p>[Rules (2013-01-08)]</p>	<p>B. b) consumed solely by that person and solely on that property; <u>or-</u></p> <p><u>(ii) re-positioning a pool asset that is an import asset or an export asset within the energy market to manage physical or operational constraints associated with an interconnection or a neighbouring balancing authority.;</u></p>	<p>SOC of charge limitations due to extreme condition dispatch instructions from the AESO.</p> <p>ESC supports the amended definition under the assumption that (i) (c) (i.e., “re-positioning a pool asset within the energy market to manage physical or operational constraints associated with the pool asset”) applies to a SOC constraint where the energy storage resource market participant reasonably and in good electricity industry practice is unable to deliver energy in response to a dispatch instruction and took all reasonable means to inform the AESO prior to real-time dispatch instructions.</p> <p>Enfinite</p> <p>Please provide clarity on whether an asset supporting an intertie would be treated as an import or export asset.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta requests that the AESO consider adding an acceptable operational reason that would permit an energy storage asset to restate its AC should an energy storage asset not have sufficient charge to discharge at full output.</p>
<p>"aggregated generating facility" means, unless otherwise designated by the ISO, an aggregation of two (2) or more generating units, including any associated reactive power resources, where:</p> <p>(i) each generating unit is rated less than 9 MW;</p> <p>(ii) all generating units are situated in the same proximate location and have a common collector bus or multiple</p>	<p>"aggregated generating facility" means unless otherwise designated by the ISO, an aggregation of two (2) or more generating units <u>or energy storage resources, or a combination thereof,</u> including any associated reactive power resources, where:</p> <p>(i) each generating unit <u>or energy storage resource</u> is rated less than 9 MW;</p> <p>(ii) all generating units <u>and energy storage resources</u> are situated in the same</p>	<p>AltaLink</p> <p>As per our initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”.</p> <p>ATCO Energy Infrastructure</p> <p>Proposed changes:</p> <p>Remove ‘or energy storage resource’ from clause (i)</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



<p>collector busses that can be operated as a common collector bus; and</p> <p>(iii) the aggregated generating facility is connected to the interconnected electric system or the electrical system in the service area of the City of Medicine Hat.</p> <p>[Rules (2018-09-01)]</p>	<p>proximate location and have a common collector bus or multiple collector busses that can be operated as a common collector bus; and</p> <p>(iii) the aggregated generating facility is connected to the interconnected electric system or the electrical system in the service area of the City of Medicine Hat.</p>	<p>... means unless otherwise designated by the ISO, an aggregation of 2 or more generating units or energy storage resources, or a combination thereof, ..., where:</p> <ul style="list-style-type: none"> (i) Each generating unit <u>or energy storage resource</u> is rated less than 9 MW (ii) All generating units and energy storage resources are situated in the same proximate location and have a common collector bus or multiple collector busses that can be operated as a common collector bus; and (iii) The aggregated facility is connected to the IES of the electrical system in the service area of the City of Medicine Hat. <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Agree. This is referred to as Option 1 in the AESO presentation and is the preferred option. We encourage the AESO to accelerate consideration of increasing the 9 MW limit and suggest removing the limit for an energy storage resource.</p> <p><u>Capital Power</u></p> <p>Capital Power generally agrees with the proposed changes, however, we acknowledge the issues this creates with respect to the size threshold. The AESO should provide more detail in the definition of an aggregated facility to contemplate the use of waiver & variance as an interim solution to accommodate resources greater than 9 MW. For example:</p> <ul style="list-style-type: none"> i) each generating unit <u>or energy storage resource</u> is: <ul style="list-style-type: none"> a. rated less than 9 MW; or b. greater than 9MW and is issued a waiver under ... (ID #)
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Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC is unclear of the applicability of aggregated facility to energy storage resources paired with generating resources and the 9 MW limit.</p> <p>Is the intent of the amended definition to restrict aggregated facilities to only those that have generating units and energy storage resources of less than 9 MW? In the “allowable dispatch variance” the proposed amendment considers a wind or solar aggregated facility of 200 MW maximum capability; would that not exceed the 9 MW limit?</p> <p>Further, some energy storage resources utilize generating technology that have large unit capacities (e.g., compressed air energy storage, pumped storage). Would those facilities be restricted from aggregated facilities with wind or solar generation? For example, would the AESO not allow aggregated facility of 200 MW for a solar + storage solution?</p> <p>Further clarity and application of the 9 MW limit and aggregated facility definition is required for ESC to support the amendment.</p> <p><u>Enfinite</u></p> <p>Enfinite would like to understand the specific application of the 9 MW limit.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta agrees with the proposed changes to incorporate energy storage resources into the defined term aggregated facilities.</p> <p>However, we believe that the 9 MW limit for each generating unit or energy storage resource in an</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		aggregation should be expanded. Having to apply through the waiver and process for every aggregated facility containing generating units and/or energy storage resources greater than 9 MW increases the regulatory burden for stakeholders. TransAlta supports the AESO continuing to look into this threshold.
<p>"Alberta internal load" means a number in MW:</p> <ul style="list-style-type: none"> (i) that represents, in an hour, system load plus load served by an on-site generating unit or aggregated generating facility, including those within an industrial system and the City of Medicine Hat; and (ii) which the ISO, using SCADA data, calculates as the sum of the output of each generating unit and aggregated generating facility in Alberta and the Fort Nelson area in British Columbia, plus import volumes and minus export volumes. <p>[Rules (2020-09-16)]</p>	<p>"Alberta internal load" means a number in MW:</p> <ul style="list-style-type: none"> (i) that represents, in an hour, system load plus load served by an on-site generating unit, or aggregated generating facility, or energy storage resource, including those within an industrial system and the City of Medicine Hat; and (ii) which the ISO, using <u>supervisory control and data acquisition SCADA</u> data, calculates as the sum of the output energy produced of by each generating unit, and aggregated generating facility, and energy storage resource; in Alberta and the Fort Nelson area in British Columbia, plus import volumes and minus export volumes. 	<p><u>AltaLink</u></p> <p>As per our initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources and distribution energy storage resources”. The energy flow in or out of “transmission energy storage resources” is part of transmission losses which is a component of system load already.</p> <p><u>ATCO Energy Infrastructure</u></p> <p><u>Comment:</u></p> <p>The definition appears to be cumulative, where it may be important to distinguish isolated energy storage resources from those counted under aggregated facilities. I.e. Energy storage resources that are part of aggregated facilities should not be counted twice.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the changes</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>Enfinite</u> No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u> TransAlta does not have concerns with the proposed amendments to the definition of “Alberta internal load” at this time.</p> <p>However, TransAlta would like clarity on why the amendments to the definition of “Alberta internal load” are required for the integration of energy storage. Energy storage technologies typically charge and discharge such that the net impact over time to Alberta internal load would generally be small. We wish to understand the implications of accounting for energy storage charging and discharging and if they are expected to have any meaningful impacts.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"allowable dispatch variance" means:</p> <p>(i) for each generating source asset, other than a wind or solar aggregated generating facility, as measured from the dispatch quantity:</p> <p>(a) plus or minus five (5) MW for a generating source asset with a maximum capability of two hundred (200) MW or less; or</p> <p>(b) plus or minus ten (10) MW for a generating source asset with a maximum capability of greater than two hundred (200) MW;</p> <p>(ii) for each wind or solar aggregated generating facility with a maximum capability of two hundred (200) MW or less:</p> <p>(a) five (5) MW greater than the dispatch quantity and five (5) MW less than the potential real power capability, if the potential real power capability is less than the dispatch quantity; or</p> <p>(b) plus or minus five (5) MW from the dispatch quantity, if the potential real power capability is greater than or equal to the dispatch quantity; and</p> <p>(iii) for each wind or solar aggregated generating facility with a maximum capability of greater than two hundred (200) MW:</p> <p>(a) ten (10) MW greater than the dispatch quantity and ten (10) MW less than the potential real power</p>	<p>"allowable dispatch variance" means:</p> <p>(i) for each generating source asset, excluding an import asset, other than and a wind or solar wind or solar aggregated generating facility, as measured from the dispatch quantity:</p> <p>(a) plus or minus five (5) MW for a generating source asset, with a maximum capability of two hundred (200) MW or less; or</p> <p>(b) plus or minus ten (10) MW for a generating source asset, with a maximum capability of greater than two hundred (200) MW;</p> <p>(ii) for each wind or solar aggregated generating facility with a maximum capability of two hundred (200) MW or less:</p> <p>(a) five (5) MW greater than the dispatch quantity and five (5) MW less than the potential real power capability, if the potential real power capability is less than the dispatch quantity; or</p> <p>(b) plus or minus five (5) MW from the dispatch quantity, if the potential real power capability is greater than or equal to the dispatch quantity; and</p> <p>(iii) for each wind or solar aggregated generating facility with a maximum capability of greater than two hundred (200) MW:</p> <p>(a) ten (10) MW greater than the dispatch quantity and ten (10) MW less than the potential real power capability, if the potential real power capability is less than the dispatch quantity; or</p> <p>(b) plus or minus ten (10) MW from the dispatch quantity, if the potential real power capability is greater than or equal to the dispatch quantity.;</p>	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”. AltaLink does not believe “Variable Energy Resource” is defined. AltaLink suggests the AESO define this term.</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>Agree.</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the amended definition</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta disagrees with the manner in which the AESO has proposed its additions (iv) and (v) into the definition of “allowable dispatch variance”. These amendments are drafted in a manner that is confusing and is not easily understood. We are concerned that the drafting will result in a poor understanding of the requirements and increase compliance risk due to potential misinterpretation. We ask the AESO to draft the requirements in a clearer and simpler manner so that</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>capability, if the potential real power capability is less than the dispatch quantity; or</p> <p>(b) plus or minus ten (10) MW from the dispatch quantity, if the potential real power capability is greater than or equal to the dispatch quantity.</p> <p>[Rules (2018-09-01)]</p>	<p><u>(iv) -for a single pool asset that is an aggregated facility containing wind or solar, and an energy storage resource, and for which the ISO issues a dispatch within the variable energy resource quantity:</u></p> <p><u>(a) 5 MW greater than the dispatch quantity and 5 MW less than the potential real power capability, if the potential real power capability is less than the dispatch quantity;</u></p> <p><u>or</u></p> <p><u>(b) plus or minus 5 MW from the dispatch quantity, if the potential real power capability is greater than or equal to the dispatch quantity; and</u></p> <p><u>(v) for a single pool asset that is an aggregated facility containing wind or solar and an energy storage resource, and for which the ISO issues a dispatched outside the variable energy resource quantity:</u></p> <p><u>(a) plus or minus 5 MW from the dispatch quantity for a source asset, excluding an import asset, with a maximum capability of 200 MW or less; or</u></p> <p><u>(b) plus or minus 10 MW from the dispatch quantity for a source asset, that is not excluding an import asset, with a maximum capability of greater than 200 MW.</u></p> <p><u>Where: “the variable energy resource quantity” means the amount of available capability of a source asset that could be produced from a variable energy resource.</u></p>	<p>they can be readily understood by the reader.</p> <p>More specifically, the AESO has added a new term, “variable energy resource quantity”, within the definition of the term “allowable dispatch variance”. This is a very confusing approach to drafting and appears to needlessly create new terms, the purpose and intent of which is not clear. If the AESO would like to use this term it should be included as a new defined term within the CADG or requirement in an ISO rule. That said, the AESO should avoid creating terms unless they are clearly needed. It is TransAlta’s understanding that defined terms are meant to stand alone and not require additional explanation, therefore including a term within a term goes against these principles.</p> <p>We would like a clear explanation of what the proposed changes are attempting to achieve and what, if any, impact they will have in the real-time operational environment, and how the revised definition will work with the ISO rules. A detailed explanation for this change would have been beneficial for stakeholders to understand what the AESO has proposed and its implications. TransAlta has operated a co-located renewable and energy storage resource for a number of years and is currently working on another development. We are concerned that the proposed definition will negatively impact our current resource and proposed resource. TransAlta would like to understand the problem the proposed amendments are trying to solve.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended

Existing	Blackline of Revisions	Stakeholder Comments
<p>"automatic generation control (AGC)" means equipment that adjusts a balancing authority's generation in a balancing authority's area from a central location to maintain the balancing authority's frequency or interchange schedule plus or minus frequency bias. AGC may also accommodate automatic inadvertent payback and time error correction.</p> <p>[Rules (2009-05-28)]</p>	<p>"automatic generation control (AGC)" means equipment that adjusts a balancing authority's <u>electrical energy producing and consuming resources</u> generation in a balancing authority's <u>area</u> from a central location to maintain the balancing authority's frequency or interchange schedule plus or minus frequency bias; <u>and</u> AGC may also accommodate automatic inadvertent payback and time error correction.</p>	<p>AltaLink</p> <p>AltaLink suggests the AESO consider utilizing their already defined terms of source assets and sink assets rather than introduce a new phrase ("electrical energy producing and consuming resources") which may be open for interpretation. Consistency in definitions will provide clarity for all market participants.</p> <p>ATCO Energy Infrastructure</p> <p>Proposed changes:</p> <p>"automatic generation source control" means equipment that adjusts <u>electrical energy producing and consuming resources</u> in a balancing authority area from a central location...</p> <p>Canadian Renewable Energy Association ("CanREA")</p> <p>Agree</p> <p>Capital Power</p> <p>Capital Power submits that this term could be changed to "automatic control" instead of "automatic generation control" considering the proposed change to include consuming resources as well.</p> <p>Energy Storage Canada ("ESC")</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>Please confirm whether or not "electrical energy producing and consuming resources" should state "electrical energy producing and/or consuming resources" as the amendment reads as if it only applies</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>to energy storage. Should generators and loads be included in this amended definition?</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “automatic generation control” at this time.</p>
<p>"automatic voltage regulator (AVR)" means the automatic control equipment that adjusts the excitation level of a generating unit to maintain voltage levels.</p> <p>[Rules (2003-06-01), Alberta Reliability Standards (2016-04-01), Tariff (2015 07 01)]</p>	<p>"automatic voltage regulator (AVR)" means the automatic control equipment that adjusts the excitation level of a generating unit <u>or</u> an energy storage resource to maintain voltage levels.</p>	<p><u>AltaLink</u></p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”.</p> <p>The AESO may consider further adjustments to this definition as “excitation level” really has no meaning with certain generation and energy storage technologies (i.e. Excitation level only has meaning for synchronous generators and is meaningless when it comes to inverter technology)</p> <p><u>ATCO Energy Infrastructure</u></p> <p>No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Agree</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “automatic voltage regulator” at this time.</p>
<p>"available capability" means:</p> <p>(i) for a generating source asset, the maximum MW that the source asset is physically capable of providing; or</p> <p>(ii) for an import source asset, the MW that the pool participant submits in an offer.</p> <p>[Rules (2013-01-08)]</p>	<p>"available capability" means:</p> <p>(i) for a generating source asset, excluding an import asset, the maximum MW that the source asset is physically capable of providing; or</p> <p>(ii) for an import source asset, the MW that the pool participant submits in an offer.</p>	<p><u>AltaLink</u></p> <p>No comments.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Agree</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “available capability” at this time.</p> <p>However, TransAlta would like further clarity on why the</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		AESO is excluding imports from source asset in this instance and how this change relates to the integration of energy storage.
<p>"black start capability (BSC)" means the ability of a power plant or generating asset to start up without external electric supply and serve to provide power to the AIES.</p> <p>[Rules (2003-06-01)]</p>	<p>"black-start capability (BSC)" means the ability of a power plant or pool asset generating asset to start up without external electric supply and serve to provide power to the interconnected electric system AIES.</p>	<p>AltaLink No comments</p> <p>ATCO Energy Infrastructure <u>Proposed changes:</u> ... the ability of a generating resource source asset to start up without external electric supply...</p> <p><u>Comment:</u> Should not be limited to generating resources. For example, Li-Ion has been deployed for black start in Perryville Louisiana.</p> <p>Canadian Renewable Energy Association ("CanREA") Agree</p> <p>Capital Power The term "generating resource" should be clearly defined. Alternatively, the term "generating resource" could be replaced with "source asset".</p> <p>Energy Storage Canada ("ESC") ESC believes that energy storage resources that are</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>capable of offering black start services should be allowed to participate. It is not clear to ESC if generating facility restricts the ability of energy storage resources to participate in black start capability.</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta recommends defining “generating resource” or using a defined term in the <i>Consolidated Authoritative Document Glossary</i> (“CADG”) for clarity on how the AESO interprets “generating resource”.</p>
<p>"bulk transmission line" means a system or arrangement of lines of wire or other conductors and related equipment, wholly in Alberta, whereby electric energy, however produced, is transmitted in bulk, and includes:</p> <p>(i) transmission circuits composed of the conductors that form the minimum set required to so transmit electric energy;</p> <p>(ii) insulating and supporting structures; and</p> <p>(iii) all property of any kind used for the purpose of, or in connection with, or incidental to, the operation of such a line;</p> <p>(iv) but does not include a substation, operational and control devices, a generating unit, an aggregated generating facility or an electric distribution system.</p> <p>[Rules (2012-01-01)]</p>	<p>"bulk transmission line" means a system or arrangement of lines of wire or other conductors and related equipment, wholly in Alberta, whereby electric energy, however produced, is transmitted in bulk, and includes:</p> <p>(i) transmission circuits composed of the conductors that form the minimum set required to so transmit electric energy;</p> <p>(ii) insulating and supporting structures; and</p> <p>(iii) all property of any kind used for the purpose of, or in connection with, or incidental to, the operation of such a line;</p> <p>(iv) but does not include:</p> <p>a. -a substation,</p> <p>b. operational and control devices; or</p> <p>c. of one or more or any combination of;</p> <p>a generating unit, an aggregated generating facility and an energy storage resource that has not been designated by the Commission as a transmission facility in accordance with the applicable legislation; or</p>	<p>AltaLink</p> <p>No comments</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>Agree</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
	a.d. of an electric distribution system.	<p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “bulk transmission line” at this time.</p>
<p>"collector bus" means the low voltage side of any step-up transformers connected to the interconnected electric system or the electrical system in the City of Medicine Hat where the real power and reactive power produced by any generating units or reactive power resources, or both of them within an aggregated generating facility, are collected.</p> <p>[Rules (2010-09-07)]</p>	<p>"collector bus" means the low voltage side of any step-up transformers connected to the interconnected electric system or the electrical system in the City of Medicine Hat where the real power and reactive power produced by any generating units or reactive power resources, or both of them within an aggregated generating facility, are collected <u>within an aggregated facility</u>.</p>	<p>AltaLink</p> <p>No comments</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>OK</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “collector” at this time.</p>
<p>"commercial operation" means the date upon which a load or generating unit begins to operate on the transmission system in a manner which is acceptable to the ISO and which is expected to be normal for it to so</p>	<p>"commercial operation" means the date upon which a load, or generating unit, aggregated facility, or energy storage resource begins to operate on the transmission system in a manner which is acceptable to the ISO and which is</p>	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
operate, after energization and commissioning . [Rules (2010-12-01)]	expected to be normal for it to so operate, after energization and commissioning .	are “market energy storage resources”. <u>ATCO Energy Infrastructure</u> No comments at this time. <u>Canadian Renewable Energy Association (“CanREA”)</u> OK <u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time. <u>Energy Storage Canada (“ESC”)</u> ESC supports the definition amendment <u>Enfinite</u> No comment. <u>TransAlta Corporation (TransAlta)</u> TransAlta does not have concerns with the proposed amendments to the definition of “commercial operation” at this time.

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"commissioning" means:</p> <ul style="list-style-type: none"> (i) in the case of a new generating unit or a new aggregated generating facility, the process of carrying out, after connection to the interconnected electric system but before commercial operation, activities designed to test equipment, the facility or a process to confirm that the facility can satisfactorily enter commercial operation and, where applicable, meets the ISO's requirements and other relevant standards; (ii) in the case of an existing generating unit or an existing aggregated generating facility that is being modified, the process of carrying out activities designed to test equipment, the facility or a process to confirm that the facility can satisfactorily continue in commercial operation and, where applicable, continue to meet the ISO's requirements and other relevant standards; (iii) in the case of a new transmission facility or a new load facility, the process of carrying out, after energization but before normal operation, activities designed to test equipment, the facility or a process to confirm that the facility can satisfactorily enter normal operation and, where applicable, meets the ISO's requirements and other relevant standards; and 	<p>"commissioning" means:</p> <ul style="list-style-type: none"> (i) in the case of a new generating unit, or a new aggregated generating facility, <u>or a new energy storage resource</u>, the process of carrying out, after connection to the interconnected electric system but before commercial operation, activities designed to test equipment, <u>or the facility</u>, or a process to confirm that the facility can satisfactorily enter commercial operation and, where applicable, meets the ISO's requirements and other relevant standards; (ii) in the case of an existing generating unit, or an existing aggregated generating facility, <u>or an existing energy storage resource</u>, that is being modified, the process of carrying out activities designed to test equipment, <u>or the facility</u>, or a process to confirm that the facility can satisfactorily continue in commercial operation and, where applicable, continue to meet the ISO's requirements and other relevant standards; (iii) in the case of a new transmission facility or a new load facility, the process of carrying out, after energization but before normal operation, activities designed to test equipment, <u>or the facility</u>, or a process to confirm that the facility can satisfactorily enter normal operation and, where applicable, meets the ISO's requirements and other relevant standards; and (iv) in the case of an existing transmission facility or an existing load facility that is being upgraded in the form of a requested 	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”. “Transmission energy resources would be included in part (iii) with other transmission facilities. AltaLink is unclear, however, on this list where commissioning of facilities such as DERs and “Distribution Energy Storage Resources” would fit. i.e. Distribution connected facilities can have a significant impact on the interconnected electric system which the AESO is accountable for. Adherence to relevant ISO Rules, standards, requirements is important for these facilities too. AltaLink suggests the AESO determine how to ensure these facilities are accounted for properly.</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>OK</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>(iv) in the case of an existing transmission facility or an existing load facility that is being upgraded in the form of a requested increase in capacity or revised functionality, the process of carrying out activities designed to test equipment, a facility or a process to confirm that the facility can satisfactorily continue in normal operation and, where applicable, continue to meet the ISO's requirements and other relevant standards.</p> <p>[Rules (2012-12-31)]</p>	<p>increase in capacity or revised functionality, the process of carrying out activities designed to test equipment, or a the facility, or a process to confirm that the facility can satisfactorily continue in normal operation and, where applicable, continue to meet the ISO's requirements and other relevant standards</p>	<p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “commissioning” at this time.</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>[Rules (2016-08-30), Alberta Reliability Standards (2017-10-01)]</p>	<p>"control centre" means one or more facilities, <u>including their associated data centres,</u> hosting operating personnel that monitor and control <u>the bulk electric system</u> in real-time to perform the reliability tasks, <u>including their associated data centres,</u> of <u>any one or more of:</u></p> <p>(i) 1) the ISO; 2)</p> <p>(ii) an operator of a transmission facility for transmission facilities at two (2) or more locations; or; and 3)</p> <p>(+) (iii) an operator of a generating unit, or an operator of an aggregated generating facility, or an operator of an energy storage resource for either generating units, or aggregated generating facilities, <u>or energy storage resource</u> at two (2) or more locations.</p>	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources and distribution energy storage resources”. “Transmission energy resources” would be included in part (ii) with other transmission facilities.</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>OK</p> <p>Capital Power</p> <p>The term “operating personnel” should be defined to make it clear that it excludes a dispatching center that simply relays operating instructions (and does not make decisions on operating instructions). In this same</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>regard, the term “reliability tasks” should be clearly defined.</p> <p>This would align with NERC’s proposed revision to its control center definition which explicitly states:</p> <p>“Operating personnel do not include:</p> <ol style="list-style-type: none"> 1) plant operators located at a generator plant site or personnel at a centrally located dispatch center who relay dispatch instructions without making any modifications; or 2) Transmission Owner or Transmission Operator field switching personnel.” <p>Capital Power would like more clarity on how this definition will apply to aggregated facilities with energy storage resources that are used only for reliability purposes (and not market purposes), specifically with respect to the potential compliance implications.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “control centre” at this time</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>“electric distribution system” as defined in the Act means the plant, works, equipment, systems and services necessary to distribute electricity in a service area, but does not include a generating unit or a transmission facility.</p>	<p>“electric distribution system” as defined in the Act, means the plant, works, equipment, systems and services necessary to distribute electricity in a service area, but does not include a generating unit or a transmission facility. (i) a generating unit. (ii) a transmission facility. (iii) an energy storage resource that is a component of an energy storage facility, except as approved by the Commission in accordance with section 25.1 of the HEEA.</p>	<p>AltaLink No comments</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”) OK</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”) ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of “electric distribution system” at this time. TransAlta is assuming the AESO intends there to be an “or” after (ii).</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"electrical islands" means a condition in the electrical system where geographical areas of the interconnected electric system electrically separate from the interconnected electric system, resulting from system disturbances, such that there exists both generation and load in these separated areas.</p> <p>[Rules (2003-06-01)]</p>	<p>"electrical islands" means a condition in the electrical system where geographical areas of the interconnected electric system electrically separate from the interconnected electric system, resulting from system disturbances, such that there exists both generation and load <u>energy production and consumption</u> in these separated areas.</p>	<p>AltaLink No comments</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") OK</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "electrical islands" at this time.</p>
<p>"energy storage facility" means a facility with technologies capable of storing and releasing electric energy.</p> <p>[Rules (2016-04-25)]</p>	<p>Proposed new defined term in the HEEA: "energy storage facility" <u>as defined in the HEEA</u> means a facility that uses any technologies <u>ogy or process that is</u> capable of <u>using electric energy as an input</u>, storing <u>the energy for a period of time and then discharging</u> electric energy <u>as an output</u>.</p>	<p>AltaLink No comments</p> <p>ATCO Energy Infrastructure Proposed changes: energy storage facility" <u>as defined in the HEEA</u> means a facility that uses any technologies <u>or process</u></p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>processes that is are capable of <u>using electric energy as an input</u>, storing <u>the energy for a period of time and then discharging</u> electric energy <u>as an output</u></p> <p><u>Comments:</u></p> <p>"processes" instead of "process" to capture all types of energy storage technologies.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>OK</p> <p><u>Capital Power</u></p> <p>It is not clear if a facility could qualify as both an “aggregated facility” and an “energy storage facility”. With the proposed definition, it appears any facility with both generation resources and energy storage resources would fall under multiple definitions. Capital Power is concerned that this could lead to confusion for market participants and potential compliance issues. The AESO could clarify this definition to exclude any facility that meet the definition of an aggregated facility. Alternatively, the AESO could consider removing this definition as it does not appear to be referred to in the ISO rules or other definitions (i.e., See comments on the definition of “legal owner” below).</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta is in agreement with the proposed</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		amendments to the definition of “energy storage facility” as they align with the term in Bill 22.
<p>"generating asset steady state" means the state of operation that begins the first 10 minute clock period following the period in which a generating source asset's output has reached the allowable dispatch variance for that generating source asset.</p> <p>[Rules (2020-09-16)]</p>	<p>"generating asset steady state" means the state of operation that begins the first 10 minute clock period following the period in which the output of a generating source asset's output, excluding an import assets, has reached the allowable dispatch variance for that generating source asset.</p>	<p>AltaLink No comments</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") OK</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of “generating asset steady state” at this time. However, TransAlta would like further clarity on why the AESO is excluding imports from source asset in this instance and how this change relates to the integration of energy storage.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"generating unit" as defined in the Act means the component of a power plant that produces, from any source, electric energy and ancillary services, and includes a share of the following associated facilities that are necessary for the safe, reliable and economic operation of the generating unit, which may be used in common with other generating units:</p> <p>(i) fuel and fuel handling equipment; (ii) cooling water facilities; (iii) switch yards; other items.</p> <p>[Rules (2010-12-01), Alberta Reliability Standards (2011-12-31), Tariff (2011-07-01)]</p>	<p>"generating unit" as defined in the Act means the component of a power plant that produces, from any source, electric energy and ancillary services, and includes a share of the following associated facilities that are necessary for the safe, reliable and economic operation of the generating unit, which may be used in common with other generating units:</p> <p>(i) fuel and fuel handling equipment; (ii) cooling water facilities; (iii) switch yards; (iv) other items, <u>but does not include an energy storage resource.</u></p>	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") OK</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "generating unit" at this time.</p>
<p>"governor or governor system" means automatic control equipment with frequency or speed droop characteristics to control:</p> <p>(i) the speed or electric power output of a generating unit, or both; (ii) the electric power input of a load; (iii) the electric power output or input of an energy storage facility, or both; or</p>	<p>"governor or governor system" means automatic control equipment with frequency or speed droop characteristics to control:</p> <p>(i) the speed or electric power output of a generating unit, or both; (ii) the electric power input of a load; (iii) the electric power output or input of an energy storage -resource facility, or both; or</p>	<p>AltaLink No comments</p> <p>ATCO Energy Infrastructure No comments at this time.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>(iv) the speed or electric power output of an aggregated generating facility.</p> <p>[Rules (2018-09-01)]</p>	<p>(iv) the speed or electric power output of an aggregated generating facility.</p>	<p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>OK</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “governor or governor system” at this time.</p>
<p>"gross real power" means:</p> <p>(i) for aggregated generating facilities with one or more collector busses, the sum of real power delivered by the generating units measured at those collector busses;</p> <p>(ii) for aggregated generating facilities without a collector bus, a real power measurement at the generator terminal for each generating unit;</p> <p>(iii) for a generating unit that is not part of an aggregated generating facility, the real power measurement at the generator terminal; or</p>	<p>"gross real power" means:</p> <p>(i) for aggregated generating facilities with one or more collector busses, the sum of real power delivered by the generating units measured at those collector busses;</p> <p>(ii) for aggregated generating facilities without a collector bus, a real power measurement at the generator terminal for each generating unit;</p> <p>(iii) for a generating unit that is not part of an aggregated generating facility, the real power measurement at the generator terminal; or</p>	<p><u>AltaLink</u></p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>OK</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>(iv) for an energy storage facility, the real power measurement at the low voltage side of the transmission system step-up transformer.</p> <p>[Rules (2016-04-25)]</p>	<p>(iv) for an energy storage facilityresource, the real power measurement at the low voltage side of the transmission system step-up transformer.</p>	<p><u>Capital Power</u></p> <p>Capital Power would appreciate more clarity on the implication of this definition as it relates energy storage resources. For example, it would be helpful for the AESO to provide a specific example to illustrate the real power measurement point for energy storage resources that are part of an aggregated facility.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “gross real power” at this time.</p>
<p>“in merit” means :</p> <p>(i) for the energy market, an operating block whose price is at or below system marginal price;</p> <p>(ii) for dispatch down service and load shed service for imports, starting from the lowest priced operating block, the operating blocks with a sum of MW sufficient to meet the MW requirements for dispatch down service or load shed service for imports as applicable; or</p> <p>(iii) for standby operating reserves, any offer that the ISO accepts.</p> <p>[Rules (2013-01-08)]</p>	<p>“in merit” means:</p> <p>(i) for the energy market, an operating block for an offer whose price is at or below the system marginal price or an operating block for a bid whose price is at or above the system marginal price;</p> <p>(ii) for dispatch down service and load shed service fast frequency response service for imports, starting from the lowest priced operating block, the operating blocks with a sum of MW sufficient to meet the MW requirements for dispatch down service or load shed service fast frequency response service for imports as applicable; or</p>	<p><u>AltaLink</u></p> <p>As per our earlier comment, AltaLink believes it is premature to alter definitions or market rules for a new service which has not been fully evaluated nor consulted on.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>OK</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
	(iii) for standby operating reserves , any offer that the ISO accepts.	<p>Capital Power</p> <p>In Capital Power's view, more clarity is required here to help us understand the implications of the new proposed wording regarding bid pricing. It would be helpful for the AESO to clarify with an example at or before the next stakeholder session.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “in merit” at this time.</p>
<p>"incremental generation costs" means, where the ISO has issued a directive:</p> <p>(i) for energy from a long lead time asset; or</p> <p>(ii) to cancel, in the case of a generating source asset, any one (1) or more of a planned outage, a delayed forced outage or an automatic forced outage, requiring that a long lead time asset or a generating source asset, be made available to, or to actually, operate, exchange electric energy or provide ancillary services, those reasonable costs incurred that are reasonably attributed to compliance with the directive and which would have been</p>	<p>"incremental generation costs" means, where the ISO has issued a directive:</p> <p>(i) for energy from a long lead time asset; or</p> <p>(ii) to cancel, in the case of a generating source asset, excluding an imports asset, any one (1) or more of a planned outage, a delayed forced outage or an automatic forced outage, and</p> <p>(ii)(iii) the directive requires requiring that a long lead time asset or a generating source asset, excluding an imports asset, be made available to, or to actually, operate, exchange electric energy, or provide ancillary services, those reasonable costs incurred that are reasonably attributed to compliance with the directive and which would have been avoided but for the directive, and includes:</p>	<p>AltaLink</p> <p>No comments</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>OK</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>avoided but for the directive, and include:</p> <p>(iii) in the case of compliance with a directive for energy from a long lead time asset:</p> <p>(a) the actual costs of all variable charges from Rate STS of the ISO tariff, including any applicable loss factors charge or credit;</p> <p>(b) variable operational and maintenance charges;</p> <p>(c) fuel costs to start and run the long lead time asset or the generating source asset; and</p> <p>(d) other related reasonable costs;</p> <p>(iv) in the case of compliance with a directive canceling a planned outage, a delayed forced outage or an automatic forced outage for a generating source asset, those costs incurred:</p> <p>(a) to plan, prepare for and execute the outage, from initial planning and inception to the date of the directive canceling the outage;</p> <p>(b) subsequent to the date of the directive cancelling the outage and in accordance with good electric industry practice;</p> <p>(c) for re-scheduling personnel, equipment and other materials required for the performance of the work originally to be completed or performed pursuant to the cancelled outage;</p> <p>(d) in the form of verified damages or liquidated claims dollar amounts or</p>	<p>(iii)(iv) in the case of compliance with a directive for energy from a long lead time asset:</p> <p>(a) the actual costs of all variable charges from Rate STS of the ISO tariff, including any applicable loss factors charge or credit;</p> <p>(b) variable operational and maintenance charges;</p> <p>(c) fuel costs to start and run the long lead time asset or the generating source asset, excluding an imports asset; and</p> <p>(d) other related reasonable costs;</p> <p>(iv)(v) in the case of compliance with a directive canceling a planned outage, a delayed forced outage, or an automatic forced outage for a generating source asset, excluding an imports asset, those costs incurred:</p> <p>(a) to plan, prepare for and execute the outage, from initial planning and inception to the date of the directive canceling the outage;</p> <p>(b) subsequent to the date of the directive cancelling the outage and in accordance with good electric industry practice;</p> <p>(c) for re-scheduling personnel, equipment and other materials required for the performance of the work originally to be completed or performed pursuant to the cancelled outage;</p> <p>(d) in the form of verified damages or liquidated claims dollar amounts or claimed by third parties pursuant or related to:</p> <p>(A) any third party contract terms and conditions for performing repair, retrofit, upgrade or maintenance work on or directly related to the source asset during the outage, which third party work has been</p>	<p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta would like further clarity on why the AESO is excluding imports from source asset in this instance and how this change relates to the integration of energy storage.</p> <p>Additionally, we believe the change in (iii) of the definition, "the directive requiresrequiring", is unnecessary and grammatically incorrect.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>claimed by third parties pursuant or related to:</p> <p>(A) any third party contract terms and conditions for performing repair, retrofit, upgrade or maintenance work on or directly related to the source asset during the outage, which third party work has been cancelled or otherwise cannot be performed due to the outage cancellation; and</p> <p>(B) any third party market or hedging transactions directly related to participation in the energy or ancillary services market by the source asset which is the subject of the directive; and</p> <p>(e) as other related reasonable costs.</p> <p>[Rules (2014-07-02)]</p>	<p>cancelled or otherwise cannot be performed due to the outage cancellation; and</p> <p>(B) any third party market or hedging transactions directly related to participation in the energy or ancillary services market by the source asset which is the subject of the directive; and</p> <p>(e) as other related reasonable costs.</p>	

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"legal owner" means the person who owns electric industry property including any one or more of:</p> <ul style="list-style-type: none"> (i) a generating unit; (ii) any aggregated generating facilities; (iii) a transmission facility; (iv) an electric distribution system; (v) an industrial system that has been designated as such by the Commission; and (vi) a load facility with system access service under subsection 101(2) of the Act. <p>[Rules (2010-09-07)]</p>	<p>"legal owner" means the person who owns electric industry property including any one or more of:</p> <ul style="list-style-type: none"> (i) a generating unit; (i)(ii) an energy storage resource; (ii)(iii) any aggregated generating facilities; (iii)(iv) a transmission facility; (iv)(v) an electric distribution system; (v)(vi) an industrial system that has been designated as such by the Commission; and (vi)(vii) a load facility with system access service under subsection 101(2) of the Act. 	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") OK</p> <p>Capital Power Capital Power notes that the term "energy storage facility" is missing from this definition and should be included if it is going to be defined as a distinct type of facility.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "legal owner" at this time.</p>
<p>"Load Shed Service" means an amount of load contracted by the ISO to provide:</p> <ul style="list-style-type: none"> (i) instantaneous fifty-nine point five (59.5) Hz underfrequency load shedding; or (ii) manual load shedding. <p>[Rules (2003-06-01)]</p>	<p>"Load Shed Service" means an amount a type of fast frequency response service provided by load for which the ISO contracted by the ISO. of load contracted by the ISO to provide:</p> <ul style="list-style-type: none"> (i) instantaneous fifty-nine point five (59.5) Hz underfrequency load shedding; or (ii)(i) manual load shedding. 	<p>AltaLink As per our earlier comment, AltaLink believes it is premature to be altering market rules for a new service which has not been fully evaluated nor consulted on.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>ATCO Energy Infrastructure</u> No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u> OK</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u> ESC supports the definition amendment</p> <p><u>Enfinite</u> No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u> TransAlta does not have concerns with the proposed amendments to the definition of “load shed service” at this time and agrees with keeping the defined term in the CADG until the existing LSSi contracts expire.</p>
<p>"long lead time asset" means a generating source asset that:</p> <ul style="list-style-type: none"> (i) requires more than one (1) hour to synchronize to the system under normal operating conditions; or (ii) is synchronized but has varying start-up times for distinct portions of its MW and which requires more than one (1) hour to deliver such additional portions of its MW; and 	<p>"long lead time asset" means a generating source asset, excluding an import asset, -that:</p> <ul style="list-style-type: none"> (i) requires more than one (1) hour to synchronize to the system under normal operating conditions; or (ii) is synchronized but has varying start-up times for distinct portions of its MW and which requires more than one (1)-hour to deliver such additional portions of its MW; and which is not delivering all of its energy for reasons other than an outage. 	<p><u>AltaLink</u> No comments.</p> <p><u>ATCO Energy Infrastructure</u> No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u> OK</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>which is not delivering all of its energy for reasons other than an outage.</p> <p>[Rules (2014-07-02)]</p>		<p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “long lead time asset” at this time.</p> <p>However, TransAlta would like further clarity on why the AESO is excluding imports from source asset in this instance and how this change relates to the integration of energy storage.</p>
<p>"loss factor" means the value, in percent, which reasonably represents the contribution to transmission system losses, based on location, of a generating facility, export service, import service, or other opportunity service, and which the ISO establishes in accordance with section 501.10 of the ISO rules, <i>Transmission Loss Factors</i>.</p> <p>[Rules (2017-01-01)]</p>	<p>"loss factor" means the value, in percent, which reasonably represents the contribution to transmission system losses, based on location, of a generating facility, an energy storage resource, export service, import service, or other opportunity service, and which the ISO establishes in accordance with Ssection 501.10 of the ISO rules, <i>Transmission Loss Factors</i>.</p>	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources” and “distribution energy storage resources”. Losses associated with “transmission energy storage resources”, like all transmission facilities make up transmission system losses which are recovered from non-TFO market participants through loss factors.</p> <p>ATCO Energy Infrastructure</p> <p><u>Question:</u></p> <p>Is ‘generating facility’ defined?</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>OK</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC generally supports the definition amendment; however, it is unclear what mode of operation that energy storage resources will be considered when determining transmission loss factors. For example, generating from an energy storage resource may result in higher transmission losses while consuming would reduce transmission losses. Further clarity is required on loss factor applicability for energy storage mode of operation expected for calculation of loss factors.</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “loss factor” at this time.</p> <p>Note, generating facility is not a defined term and should not be bold in the proposed amended definition.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"market participant" means</p> <p>(i) any person that supplies, generates, transmits, distributes, trades, exchanges, purchases or sells electricity, electric energy, electricity services or ancillary services; or</p> <p>(ii) any broker, brokerage or forward exchange that trades or facilitates the trading of electricity, electric energy, electricity services or ancillary services.</p> <p>[Rules (2020-09-16)]</p>	<p>"market participant" means:</p> <p>(i) any person that supplies, <u>stores</u>, generates, transmits, distributes, trades, exchanges, purchases₁ or sells electricity, electric energy, electricity services₁ or ancillary services; or</p> <p>(ii) any broker, brokerage₁ or forward exchange that trades or facilitates the trading of electricity, electric energy, electricity services₁ or ancillary services.</p>	<p>AltaLink</p> <p>No comments</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA")</p> <p>OK</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC")</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of "market participant" at this time.</p>
<p>"maximum authorized charging power" means, for an energy storage facility, the maximum gross real power that the ISO has authorized each energy storage facility to receive from the interconnected electric system, as measured at the low voltage side of the transmission system step-up transformer.</p>	<p>"maximum authorized charging power" means, for a <u>battery</u> energy storage facility<u>resource</u>, the maximum gross real power that the ISO has authorized each <u>battery</u> energy storage facility<u>resource</u> to receive from the interconnected electric system, as measured at the low voltage side of the transmission system step-up transformer.</p>	<p>AltaLink</p> <p>As per AltaLink's initial comment, AltaLink believes the energy storage resources referenced in this definition are "market energy storage resources". Also, AltaLink fails to understand why the AESO singled out just battery energy storage as AltaLink believes this applies to all technology types of storage.</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
[Rules (2016-04-25)]		<p><u>ATCO Energy Infrastructure</u></p> <p><u>Question:</u> Why is this specific to battery energy storage?</p> <p><u>Comment:</u> Remove reference to “battery” to account for all applicable types or methods of energy storage. Change defined term to ‘maximum authorized consumed power’.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Recommend removing the term “battery” so that this concept applies to all energy storage resources.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment; however, how does the AESO expect to treat other energy storage technology types (e.g., compressed air energy storage, pumped storage, gravity storage, etc.)</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta would like clarity on why the definition of “maximum authorized charging power” is being revised to be specific to battery energy storage. Do these changes put additional requirements on battery</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		technology versus other energy storage technology types?
<p>"maximum authorized discharging power" means, for an energy storage facility, the maximum gross real power that the ISO has authorized each energy storage facility to deliver to the interconnected electric system, as measured at the low voltage side of the transmission system step-up transformer.</p> <p>[Rules (2016-04-25)]</p>	<p>"maximum authorized discharging power" means, for a battery energy storage facility resource, the maximum gross real power that the ISO has authorized each battery energy storage facility resource to deliver to the interconnected electric system, as measured at the low voltage side of the transmission system step-up transformer.</p>	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”. Also, AltaLink fails to understand why the AESO singled out just battery energy storage as AltaLink believes this applies to all technology types of storage.</p> <p>ATCO Energy Infrastructure</p> <p><u>Question:</u></p> <p>Why is this specific to battery energy storage?</p> <p><u>Comment:</u></p> <p>Remove reference to “battery” to account for all applicable types or methods of energy storage.</p> <p>Change defined term to ‘maximum authorized released power’.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>Recommend removing the term “battery” so that this concept applies to all energy storage resources.</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes. However, “battery” should be defined for clarity.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment; however, how does the AESO expect to treat other energy storage technology types (e.g., compressed air energy storage, pumped storage, gravity storage, etc.)</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta would like clarity on why the definition of “maximum authorized discharging power” is being revised to be specific to battery energy storage. Do these changes put additional requirements on battery technology versus other energy storage technology types?</p>
<p>"maximum authorized real power" means:</p> <p>(i) for an aggregated generating facility, the sum of the maximum gross real power that may be delivered to the collector busses of the aggregated generating facility; or</p> <p>(ii) for a generating unit that is not part of an aggregated generating facility, the maximum gross real power that may be delivered to the stator winding terminal of the generating unit.</p> <p>[Rules (2018-09-01)]</p>	<p>"maximum authorized real power" means:</p> <p>(i) for an aggregated generating facility, the sum of the maximum gross real power that may be delivered to the collector busses of the aggregated generating facility; or</p> <p><u>(ii) for a generating unit that is not part of an aggregated generating facility, the maximum gross real power that may be delivered to the stator winding terminal of the generating unit;</u></p> <p><u>(iii) for an energy storage resource that is not a battery energy storage resource and that is not part of an aggregated facility, the maximum gross real power that may be delivered to the stator winding terminal of the energy storage resource; or.</u></p>	<p><u>AltaLink</u></p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources”. Also, AltaLink fails to understand why the AESO differentiates energy storage based on technology type. AltaLink believes the AESO needs to make rules, and the supporting definitions, as technology agnostic as possible. Otherwise, rule changes may continuously be required simply as technology evolves. In addition, requirements of the grid should be independent of technology. Furthermore, introducing differences based solely on technology may have FEOC implications.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>Question:</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
	<p>(ii)(iv) _____ for a battery energy storage resource, the maximum authorized discharging power of the battery energy storage resource that may be delivered to the collector buses of the energy storage resource</p>	<p>Are there other scenarios/configurations that could apply that should be captured? E.g. not a battery energy storage resource and part of an aggregated facility?</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Is it necessary to consider “battery” separately here?</p> <p>It is understandable that, for example, the delivery of real power from a battery may be different from a pumped hydro resource (which will look like other hydro), however our concern is for new technologies that are not batteries but may not look like other existing technologies.</p> <p><u>Capital Power</u></p> <p>Capital Power has no concerns with the proposed changes. However, “battery” should be defined for clarity.</p> <p><u>Energy Storage Canada (“ESC”)</u></p> <p>ESC supports the definition amendment; however, how does the AESO expect to treat other energy storage technology types that utilize inverter connection-types and therefore do not have stator winding terminals.</p> <p><u>Enfinite</u></p> <p>No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u></p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “maximum authorized real power” at this time.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"maximum capability" means:</p> <p>(i) for a generating unit or aggregated generating facility, the maximum MW that it is physically capable of providing under optimal operating conditions while complying with all applicable ISO rules and terms and conditions of the ISO tariff; or</p> <p>(ii) for a source asset that is an import asset, the available capability.</p> <p>[Rules (2013-01-08), Tariff (2015-07-01)]</p>	<p>"maximum capability" means:</p> <p>(i) for a generating unit or aggregated generating facility pool asset, the maximum quantity expressed in MW, that it is physically capable of providing under optimal operating conditions while complying with all applicable ISO rules and terms and conditions of the ISO tariff; or</p> <p>(ii) for a source asset that is an import asset, the available capability.</p>	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA")</p> <p>Ok</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "maximum capability" at this time.</p>
<p>"merit order" means:</p> <p>(i) for the energy market, the dispatch down service market or load shed service for imports, a list of operating blocks sorted by price; or</p> <p>(ii) for standby operating reserves, a list of procured volumes sorted by price</p> <p>[Rules (2013-01-08)]</p>	<p>"merit order" means:</p> <p>(i) for the energy market, the dispatch down service market, or load shed service fast frequency response service for imports, a list of operating blocks sorted by price; or</p> <p>(ii) for standby operating reserves, a list of procured volumes sorted by price.</p>	<p>AltaLink As per our earlier comment, AltaLink believes it is premature to be altering market rules for a new service which has not been fully evaluated nor consulted on.</p> <p>ATCO Energy Infrastructure No comments at this time.</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p><u>Canadian Renewable Energy Association (“CanREA”)</u> ok</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u> ESC supports the definition amendment</p> <p><u>Enfinite</u> No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u> TransAlta does not have concerns with the proposed amendments to the definition of “merit order” at this time.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"operational deviation" means:</p> <p>(i) a generating source asset is unable to comply with the ramping requirements set out in section 4 of subsection 203.4 of the ISO rules, Delivery Requirements for Energy; or</p> <p>(ii) a generating source asset operating in generating asset steady state varies outside its allowable dispatch variance, due to force majeure or any other circumstances related to the operation of the generating source asset which could reasonably be expected to affect the available capability or safety of the generating source asset, third party facilities, contracts or arrangements, the environment, personnel working at the generating source asset or the public.</p> <p>[Rules (2013-01-08)]</p>	<p>"operational deviation" means <u>a circumstance where:</u></p> <p>(i) a generating source asset, excluding an import asset, is unable to comply with the ramping requirements set out in subsection 4 of subsection-subsection 4 of Section 203.4 of the ISO rules, <i>Delivery Requirements for Energy</i>; or</p> <p>(ii) a generating source asset, excluding an import asset, operating in generating asset steady state varies outside its allowable dispatch variance, due to force majeure or any other circumstances related to the operation of the generating source asset, which could reasonably be expected to affect the available capability or safety of the generating source asset, asset, third party facilities, contracts or arrangements, the environment, personnel working at the generating source asset, or the public.</p>	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") Ok</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "operational deviation" at this time. However, TransAlta would like further clarity on why the AESO is excluding imports from source asset in this instance and how this change relates to the integration of energy storage.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"operator" means a person given expressed authority by a legal owner to operate on the legal owner's behalf any one (1) or more of its electric industry properties, including:</p> <ul style="list-style-type: none"> (i) a generating unit; (ii) an aggregated generating facility; (iii) a transmission facility; (iv) an electric distribution system; (v) an industrial system that has been designated as such by the Commission; and (vi) a load facility with system access service under subsection 101(2) of the Act; <p>and includes the legal owner, if no such other person has been so authorized.</p> <p>[Rules (2010-09-07)]</p>	<p>"operator" means a person given expressed authority by a legal owner to operate on the legal owner's behalf any one (1) or more of its electric industry properties, including:</p> <ul style="list-style-type: none"> (i) a generating unit; (ii) an aggregated generating facility; (iii) an energy storage resource (iv) a transmission facility; (iv) an electric distribution system; (vi) an industrial system that has been designated as such by the Commission; and (vii) a load facility with system access service under subsection 101(2) of the Act; and includes the legal owner, if no such other person has been so authorized. 	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") ok</p> <p>Capital Power Capital Power notes that the term "energy storage facility" is missing from this definition and should be included if it is going to be defined as a distinct type of facility.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "operator" at this time.</p>
<p>"point of connection" means a point at which electric energy is transferred between a transmission facility that is not an industrial system, and</p> <ul style="list-style-type: none"> (i) the high voltage side of any aggregated generating facilities or generating unit; (ii) an electric distribution system; 	<p>"point of connection" means a point at which electric energy is transferred between a transmission facility that is not an industrial system, and</p> <ul style="list-style-type: none"> (i) the high voltage side of any aggregated generating facilities, an energy storage resource, or generating unit; (ii) an electric distribution system; 	<p>AltaLink As per AltaLink's initial comment, AltaLink believes the energy storage resources referenced in this definition are "market energy storage resources". "Distribution energy storage resources" connect to the transmission system through the electric distribution system. "Transmission energy storage resources" are</p>

Consolidated Stakeholder Comment Matrix
 Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>(iii) an industrial system that has been designated as such by the Commission; or (iv) a load facility with system access service under subsection 101(2) of the Act.</p> <p>[Rules (2010-09-07), Alberta Reliability Standards (2014-10-01)]</p>	<p>(iii) an industrial system that has been the Commission designates as such by the Commission; or (iv) a load facility with system access service under subsection 101(2) of the Act.</p>	<p>transmission facilities. So, there is no further point of connection.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”) ok</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”) ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of “point of connection” at this time.</p>
<p>"point of supply" means the point at which electricity is transferred to transmission facilities from facilities owned by a market participant receiving system access service under the ISO tariff, including a generating unit, aggregated generating facility or an electric distribution system.</p> <p>[Rules (2020-09-16)]</p>	<p>"point of supply" means the point at which electric energy electricity is transferred to a transmission facilities from a facilities facility owned by a market participant receiving system access service under the ISO tariff, including a generating unit, aggregated generating facility or an electric distribution system.</p>	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>Ok</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “point of supply” at this time.</p>
<p>"pool asset" means one (1) or more generating units, aggregated generating facilities, load assets, import assets or export assets, identified by a single pool ID the ISO assigns, and registered to a pool participant.</p> <p>[Rules (2013-01-08)]</p>	<p>"pool asset" means <u>either</u> one (1) or more generating units, aggregated generating facilities, load assets, import assets or export assets a of a source asset or a sink asset <u>registered to a pool participant and</u>, identified by a single pool ID the ISO assigns, and registered to a pool participant.</p>	<p>AltaLink</p> <p>No comments.</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>ok</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed amendments to the definition of “pool asset” at this time. However, for drafting consistency, TransAlta recommends the “one (1)” be deleted and replaced with “1”.</p>
<p>"ramping" means changing the production of a generating source asset and begins at the effective time specified in the most current dispatch and continues until the time the generating source asset's output has reached the allowable dispatch variance for that generating source asset.</p> <p>[Rules (2020-09-16)]</p>	<p>"ramping" means <u>a change in the output of electric energy ing the production of a pool asset, of a generating source asset beginning and begins</u> at the effective time specified in the most current dispatch and <u>continuinges</u> until the time the pool asset generating source asset's output has reached the allowable dispatch variance for that <u>pool asset, generating source asset</u>.</p>	<p>AltaLink</p> <p>No comments.</p> <p>ATCO Energy Infrastructure</p> <p>No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>ok</p> <p>Capital Power</p> <p>Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p> <p>Enfinite</p> <p>No comment.</p> <p>TransAlta Corporation (TransAlta)</p> <p>TransAlta does not have concerns with the proposed</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		amendments to the definition of “ramping” at this time.
<p>"scheduled generator outage" means the period of time as planned by the legal owner of a generating unit or the legal owner of an aggregated generating facility during which that generating unit or aggregated generating facility is partially or fully removed, derated from, or otherwise is not physically or mechanically available for service due to planned or scheduled maintenance or repairs to any of the plant, equipment or components of the generating unit.</p> <p>[Rules (2013-01-08)]</p>	<p>"scheduled generator outage" means the period of time as planned by the legal owner of a generating unit, <u>an energy storage resource</u>, or the legal owner of an aggregated generating facility during which that generating unit, <u>energy storage resource</u>, or aggregated generating facility is partially or fully removed, derated from, or otherwise is not physically or mechanically available for service due to planned or scheduled maintenance or repairs to any of the plant, equipment or components of the generating unit, <u>or energy storage resource, or aggregated facility</u>.</p>	<p>AltaLink</p> <p>As per AltaLink’s initial comment, AltaLink believes the energy storage resources referenced in this definition are “market energy storage resources” and “distribution energy storage resources”. “Transmission energy storage resources” would be managed like scheduled outages on any other transmission facility.</p> <p>ATCO Energy Infrastructure</p> <p><u>Proposed change:</u></p> <p>Change name of defined term to “scheduled source outage” to account for energy storage resources.</p> <p>Canadian Renewable Energy Association (“CanREA”)</p> <p>ok</p> <p>Capital Power</p> <p>Capital Power submits that this term could be changed to “scheduled source outage” instead of “scheduled generator outage” considering the proposed change to include energy storage resources and the titling of the revised Section 306.5.</p> <p>Energy Storage Canada (“ESC”)</p> <p>ESC supports the definition amendment</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		<p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of “scheduled generator outage” at this time.</p>
<p>"sink asset" is a subcategory of pool asset and means one (1) or more load assets or export assets.</p> <p>[Rules (2013-01-08)]</p>	<p>"sink asset" is a subcategory of pool asset and means one (1) or more that consumes or exports electricity from the interconnected electric system. load assets or export assets.</p>	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association (“CanREA”) Per the definition of “energy storage resource”, and webinar comment that storage is represented in the AESO market as a “sink asset” and a “source asset”, recommend replacing “consumes” with “uses”.</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada (“ESC”) ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		amendments to the definition of “sink asset” at this time.
<p>"source asset" is a subcategory of pool asset and means one (1) or more aggregated generating facilities, generating units, or import assets.</p> <p>[Rules (2013-01-08)]</p>	<p>"source asset" is a subcategory of pool asset and means one (1) or more that produces or delivers electric energy to the interconnected electric system, aggregated generating facilities, generating units, or import assets.</p>	<p><u>AltaLink</u> No comments.</p> <p><u>ATCO Energy Infrastructure</u> No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u> Ok</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada (“ESC”)</u> ESC supports the definition amendment</p> <p><u>Enfinite</u> No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u> TransAlta does not have concerns with the proposed amendments to the definition of “source asset” at this time.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
<p>"transmission facility" as defined in the Act means an arrangement of conductors and transformation equipment that transmits electricity from the high voltage terminal of the generation transformer to the low voltage terminal of the step down transformer operating phase to phase at a nominal high voltage level of more than 25,000 volts to a nominal low voltage level of 25,000 volts or less, and includes:</p> <ul style="list-style-type: none"> (i) transmission lines energized in excess of 25,000 volts; (ii) insulating and supporting structures; (iii) substations, transformers and switchgear; (iv) operational, telecommunication and control devices; (v) all property of any kind used for the purpose of, or in connection with, the operation of the transmission facility, including all equipment in a substation used to transmit electric energy from (A) the low voltage terminal, to (B) electric distribution system lines that exit the substation and are energized at 25,000 volts or less, and (vi) connections with electric systems in jurisdictions bordering Alberta, but does not include a generating unit or an electric distribution system. <p>[Rules (2010-04-30), Alberta Reliability Standards (2014-10-01)]</p>	<p>"transmission facility" as defined in the Act means an arrangement of conductors and transformation equipment that transmits electricity from the high voltage terminal of the generation transformer to the low voltage terminal of the step down transformer operating phase to phase at a nominal high voltage level of more than 25 000 volts to a nominal low voltage level of 25000 volts or less, and includes</p> <ul style="list-style-type: none"> (i) transmission lines energized in excess of 25000 volts, (ii) insulating and supporting structures, (iii) substations, transformers and switchgear, (iv) operational, telecommunication and control devices, (v) all property of any kind used for the purpose of, or in connection with, the operation of the transmission facility, including all equipment in a substation used to transmit electric energy from (A) the low voltage terminal, to (B) electric distribution system lines that exit the substation and are energized at 25 000 volts or less, and (vi) connections with electric systems in jurisdictions bordering Alberta, but does not include a generating unit or an electric distribution system. (vii) <u>a generating unit,</u> (viii) <u>an electric distribution system, or</u> (ix) <u>an energy storage resource, unless it is included in a needs identification document that has</u> 	<p>AltaLink No comments.</p> <p>ATCO Energy Infrastructure No comments at this time.</p> <p>Canadian Renewable Energy Association ("CanREA") OK</p> <p>Capital Power Capital Power has no concerns with the proposed changes at this time.</p> <p>Energy Storage Canada ("ESC") ESC supports the definition amendment</p> <p>Enfinite No comment.</p> <p>TransAlta Corporation (TransAlta) TransAlta does not have concerns with the proposed amendments to the definition of "transmission facility" at this time.</p>

Consolidated Stakeholder Comment Matrix

Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
	<p><u>been approved by the Commission in accordance with section 34(3)(a);</u></p>	
<p>"transmission must-run" means a service whereby a generating source asset that is not in merit may receive a directive to operate at a minimum specified MW output level in order to maintain system security.</p> <p>[Rules (2013-01-08)]</p>	<p>"transmission must-run" means a service whereby a generating source asset that is not in merit may receive a directive to operate at a minimum specified MW output level in order to maintain system security.</p>	<p><u>AltaLink</u> No comments.</p> <p><u>ATCO Energy Infrastructure</u> No comments at this time.</p> <p><u>Canadian Renewable Energy Association ("CanREA")</u> Ok</p> <p><u>Capital Power</u> Capital Power has no concerns with the proposed changes at this time.</p> <p><u>Energy Storage Canada ("ESC")</u> ESC supports the definition amendment</p> <p><u>Enfinite</u> No comment.</p> <p><u>TransAlta Corporation (TransAlta)</u> TransAlta does not have concerns with the proposed amendments to the definition of "transmission must-run" at this time. However, TransAlta would like further clarity on why</p>

Consolidated Stakeholder Comment Matrix
Energy Storage Draft New and Amended Terms and Definitions



Definitions – Amended		
Existing	Blackline of Revisions	Stakeholder Comments
		imports are not being excluded from source asset in this instance.

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	<p><u>Options for Incorporating Hybrid Facility into the ISO rules</u></p> <p>The Energy Storage ISO Rule Amendment Webinar explained the drafting issues the AESO encountered when incorporating hybrid facilities into the rule book.</p> <p>Should the AESO continue with the proposed definition of “aggregated facility” to account for hybrid facilities, as well as aggregations of the same technology type (Option 1)?</p> <p>or</p> <p>Should the AESO explore the adoption of a separate “hybrid facility” definition (Option 2)?</p> <p>Please elaborate on the reasons for your preferred option.</p>	<p><u>ATCO Energy Infrastructure</u></p> <p>ATCO recommends the adoption of Option 1. This will reduce added complexity and prevent the need for future revisions. Addressing compliance issues with the issuance of a new ISO rule can also support flexibility for new resources.</p> <p>That said, ATCO recommends that in lieu of waivers or variances, the AESO remove the limit on energy storage resources. (Consideration for changes to the 9 MW limit on generating units can be considered separately). The definition of ‘aggregated facility’ should be revised as follows:</p> <p>“aggregated facility” means unless otherwise designated by the ISO, an aggregation of 2 or more generating units or energy storage resources, or a combination thereof, including any associated reactive power resources, where:</p> <ul style="list-style-type: none"> (i) each generating unit or energy storage resource is rated less than 9 MW; (ii) all generating units and energy storage resources are situated in the same proximate location and have a common collector bus or multiple collector busses that can be operated as a common collector bus; and <p>the aggregated facility is connected to the interconnected electric system or the electrical system in the service area of the City of Medicine Hat.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>CanREA supports Option 1. We believe the simplicity and future flexibility of the single term “aggregated facility” is better than separate facility definitions. We believe it is easier to resolve the specific issues directly rather than trying to avoid them by creating multiple facility definitions.</p> <p><u>Capital Power</u></p> <p>At this time, Capital Power would prefer option 1 considering the limited flexibility of option 2. That said, the AESO should provide clear guidance and process(es), perhaps in an Information Document, to ensure the requirements for receiving a waiver & variance for aggregated facilities that have resources greater than 9 MW is streamlined and does not result in regulatory uncertainty for investors.</p> <p><u>Enfinite</u></p> <p>Enfinite is supportive of Option 1 as it is more flexible in allowing future rules specific to</p>

		<p>a technology as required as well as future subsets of definitions under “aggregated facility” in the future. As technology is gaining market acceptance at an increasingly rapid rate, it is important to have a set of rules and definitions that are able to be amended with little administrative burden. Enfinite is satisfied that the AESO has mitigated the potential compliance issues by suggesting a separate ISO rule. The threshold issue will need to be addressed regardless of which option is chosen.</p> <p><u>ENMAX Corporation</u></p> <p>As long as transparency to the market is easily visible and available to the market on what resources make up an aggregated facility, then option 1 appears to be a reasonable approach. The key to this is the breakdown to demonstrate what is an energy storage resource and what is a generating unit, with the split easily determined by MW size.</p> <p><u>TC Energy</u></p> <p>Some energy storage resources utilize generating technology that have large unit capacities (e.g., compressed air energy storage, pumped storage) and would not fall under the 9MW limit. The presentation indicated that the AESO would address this issue in the following way:</p> <p><i>“Use waiver & variance as interim solution to accommodate aggregations of resources, where a resource may be greater than 9MW”</i></p> <p>TC Energy would prefer a solution as part of this ES Rule Amendment Process rather than a waiver and variance method that may or may not be granted for Aggregated Facilities with a large energy storage and variable resource co-located.</p> <p>TC Energy would also like to understand the additional analysis required by the AESO to raise or remove the 9MW and the justification for the 9MW threshold.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>TransAlta agrees with Option 1, amending the aggregated generating facility term and definition to incorporate hybrid facilities. This approach is administratively simple and does not complicate the requirements in the ISO rules. However, a sample proposed definition of “hybrid facility”, and a proposal on how it would be implemented (i.e., how would it be incorporated into the rule book) would be helpful for stakeholders to determine which option is preferable.</p>
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<p>2.</p>	<p><u>Facility Rules</u></p> <p>In the 500-series rules, do you spot any situations where an energy storage resource would be subject to compliance double jeopardy?</p>	<p><u>AltaLink</u></p> <p>As the application of specific rules depends on the type of energy storage resources identified within Bill 22: “market energy storage resources”, “transmission energy storage resources” and “distribution energy storage resources”. These more precise terms are necessary to ensure ISO Rules are properly aligned with legislative requirements such as energy storage that is part of transmission or distribution facilities cannot participate in markets. As the draft Rules don’t have this differentiation of types of storage, many of the drafted Rule amendments are contrary to legislative requirements. E.g. Rules around settlement, metering, losses, etc. clearly only apply to “market energy storage resources” and not to regulated transmission facilities. AltaLink will base our comments on other definitions and rule amendments based on these 3 definitions.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>No comments at this time.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>None.</p> <p><u>Capital Power</u></p> <p>At this time, Capital Power did not find any situations where an energy storage resource would be subject to compliance double jeopardy. However, related to our comments in regard to the “Energy Storage Facility” in the separate terms and definitions comment matrix – it will be important for the AESO to provide more clarity on whether or not an aggregated facility with an energy storage resource would be considered an “Aggregated Facility” or an “Energy Storage Facility” in the rules.</p> <p><u>Enfinite</u></p> <p>Enfinite has no comment.</p> <p><u>ENMAX Corporation</u></p> <p>At this time, it does not appear that the 500-series rules would result in a situation where an energy storage resource would be subject to compliance double jeopardy. If such a situation occurs in the future, the AESO should review these on a case-by-case basis to ensure fairness is maintained. We would also look to the AESO Compliance team to apply its discretion to ensure no double jeopardy exists in the future.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p>
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		<p>TransAlta appreciates the AESO’s concern with the ISO rules creating situations where duplicative compliance penalties could be assessed to single instances of compliance violations. TransAlta did not spot instances of compliance double-jeopardy in the proposed amendments to the 500-series technical rules. However, TransAlta may revise its opinion as more of the details are discussed in further consultation steps.</p> <p><u>TC Energy</u></p> <p>No comments at this time.</p>
3.	<p><u>Fast Frequency Response (FFR) Service Provisions</u></p> <p>In your view:</p> <ul style="list-style-type: none"> (i) are the proposed amendments effective in enabling technology-agnostic FFR service in replacement of LSSi? (ii) do the proposed amendments capture the revisions necessary to facilitate technology-agnostic FFR service? (iii) are there any gaps for FFR service within the ISO rules? 	<p><u>AltaLink</u></p> <p>AltaLink is concerned there has not been formal consultation on the need for Fast Frequency Response. AltaLink believes it is important to provide stakeholders with a justification for the new service, complete with a comprehensive evaluation against alternatives, and provide the opportunity for stakeholder input. As such, AltaLink believes this consultation, which includes changes to implement the new service, is premature. Relative to the service proposed, AltaLink believes it could result in unintended consequences, including an adverse impact on the delivered cost to customers and non-compliance with FEOC requirements.</p> <p>Load Shed Service for Imports (LSSi) is a Non-Wires Solution (NWS). (Note: The AESO’s Alberta Intertie Restoration Initiative Discussion Paper, released in March 2010, first introduced using LSSi to mitigate this critical transmission contingency. This report clearly identified this service as being a Non-Wire Solution.) As Fast Frequency Response (FFR) is being proposed as a direct replacement for LSSi, FFR is also a Non-Wire Solution. As an NWS, there are additional limitations for its use specified within the Transmission Regulation. AltaLink is concerned that FFR (and LSSi previously) may not satisfy these requirements.</p> <p>In the recent DOE consultation, AltaLink proposed that the AESO follow a defined process, as part of performance of their Transmission Planning function, to incorporate NWS as potential alternatives to transmission when developing solutions to resolve transmission deficiencies. AltaLink’s proposal, which was presented in a DOE stakeholder session, was based on the objective of identifying the alternative which achieves the lowest delivered cost of electricity for customer while also respecting market integrity.</p> <p><u>ATCO Electric</u></p>

		<p>ATCO Electric notes that it has concerns with the proposed changes for Fast Frequency Response Service (FFRS). FFRS is a form of non-wire-alternative (NWA). ATCO Electric submits that parties should be provided the opportunity to fully evaluate and respond to these proposed changes via a fulsome review and consultation process. ATCO Electric further notes that there is an ongoing Alberta Department of Energy (DOE) consultation which is reviewing and addressing the definition of NWAs for the purpose of revising the Transmission Regulation. The AESO should hold any changes to FFRS in abeyance until there is clarity from the DOE around the definition of NWA's.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>This language is suitable assuming FFR remains as a contracted service with the associated Technical Requirement and Performance Standards noted within the contract. If FFR was to move away from a contracted service additional clarity in the ISO rules would be required.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>CanREA supports the proposed changes.</p> <p><u>Capital Power</u></p> <p>Capital Power generally supports the introduction of the term “FFR” to replace “LSSi”. This will be an effective first step in enabling technology-agnostic FFR service. The AESO should consider adopting an additional term “FFRi” to identify FFR that is only for imports. In Capital Power’s view, it is important for the AESO to pursue an expanded FFR service to cover intra-Alberta needs for primary frequency response, and not just support imports, which are an opportunity service.</p> <p>Capital Power would suggest that the AESO develop a broader engagement on frequency response as there clearly is a need based on the under-frequency events in 2020 and 2021.</p> <p><u>Enfinite</u></p> <p>Enfinite is supportive of the proposed amendments as they successfully enable technology agnostic FFR service in replacement of LSSi.</p> <p><u>ENMAX Corporation</u></p> <p>At this time, FFR service within the ISO rules appears to be technology agnostic. We understand that more work will be done in this space and for other reliability products</p>
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		<p>and look forward to working with the AESO to refine or create appropriate rules.</p> <p><u>Energy Storage Canada</u></p> <p>Given the approach to contract FFR service, ESC supports the proposed amendments and believes it captures the objective of enabling technology-agnostic FFR service.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>At this time, TransAlta believes the proposed ISO rule amendments adequately facilitate the incorporation of fast frequency response service.</p> <p>(i) The proposed new defined term is technology agnostic; the proposed amendments to the ISO rules did not refer to any specific technology technical requirements. However, the AESO needs to be careful that the details in the individual contracts, where the terms, conditions, and other detailed requirements for service provision will be specified, do impose unnecessarily restrictive limits that would bar specific technologies that can otherwise meet the technical requirements from participating in the service. TransAlta views FFR are an important service that could be utilized beyond accommodating imports such as creating an operating reserves services that can support grid resiliency for a future grid with a significant amount of intermittent, renewable generation.</p> <p>(ii) As discussed in response to (i) above, TransAlta believes that the proposed amendments to the ISO rules facilitate technology-agnostic FFR service participation. However, we have concerns that the details in the contract may limit such participation.</p> <p>(iii) TransAlta does not see any gaps for FFR services in the proposed amended ISO rules at this time.</p> <p><u>TC Energy</u></p> <p>TC Energy supports the new Fast Frequency Response Service proposed by the AESO.</p>
4.	<p><u>Adjustment for Load on the Margin (ALM) Provisions</u></p> <p>Do the proposed amendments facilitate the implementation of ALM? Do you see any gaps?</p>	<p><u>AltaLink</u></p> <p>No comments at this time.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>No comments at this time.</p>

		<p><u>Canadian Renewable Energy Association (“CanREA”)</u> CanREA supports the proposed changes.</p> <p><u>Capital Power</u> Capital Power does not have any comment at this time.</p> <p><u>Energy Storage Canada</u> ESC has no comment</p> <p><u>Enfinite</u> Enfinite has no comment.</p> <p><u>ENMAX Corporation</u> ENMAX requests further clarity from the AESO on whether energy storage assets greater than 5 MW are eligible for ALM. In general, ENMAX would enforce that only loads that are able to respond with 5 MW or more are to be considered for ALM.</p> <p><u>TransAlta Corporation (“TransAlta”)</u> TransAlta agrees that the proposed amendments to the ISO rules generally supports the implementation of adjustment for load on the margin (ALM). However, TransAlta would like further details regarding the eligibility concerns raised by TransAlta in the AESO’s 2021 AML consultation. More specifically, we ask the AESO to clarify whether all energy storage resource configurations (i.e., standalone or hybrid) will be eligible for AML. The proposed revisions to Section 103.4 of the ISO rules, Power Pool Financial Settlement, appear to apply to all sink assets. TransAlta would like confirmation on the specific impact to energy storage resources with some examples of how it may be used by standalone or hybrid assets.</p> <p><u>TC Energy</u> No additional comments at this time.</p>
5.	Do you have any additional comments on the Energy Storage ISO Rule Amendments?	<p><u>AltaLink</u> AltaLink recommends that the AESO consider performing another round of consultation after the ambiguity in want type of energy storage resource is being</p>

		<p>referenced in each specific rule has been resolved.</p> <p><u>ATCO</u></p> <p>Please find enclosed ATCO Electric's general response to the AESO proposed energy storage rule amendments. Due to the general nature of ATCO Electric's response, it will not be filing responses to the comment matrices question's specifically, but rather will outline its responses within.</p> <p>Generally, ATCO Electric does not object to the changes proposed by the AESO in relation to energy market participant ownership of energy storage when taken in isolation. However, it is not clear in the proposed changes that the intent of these changes is solely for the purpose of setting rules for energy market participants. ATCO Electric submits that this lack of clear distinction is an issue and may cause confusion between market participants that engage in energy trading and transmission and distribution utility market participants.</p> <p>ATCO Electric notes that there are three types of energy storage ownership that must be contemplated and are distinct from each other. The first is ownership of energy storage by energy trading market participants, which would allow for such market participants to utilize energy storage assets to offer ancillary services and engage in market arbitrage. The second/third type is utility (transmission or distribution) ownership of energy storage for grid reliability and as an alternative to traditional wire's solutions. This distinction is consistent with the proposed changes in Bill 22, which includes "energy storage resource" as part of the definition of a transmission facility and electric distribution system under Section (1). Specifically, Section 39(1.1) states, "an owner of a transmission facility that owns an energy storage resource that has been included in a needs identification document that has been approved by the Commission in accordance with section 34(3)(a) may not offer electric energy or ancillary services from that energy storage resource to any electricity market." Absent the distinction, including within the proposed changes to the AESO Rules as part of this consultation, confusion will be created for all parties.</p> <p>ATCO Electric submits that clarity between the three types of energy storage ownership in the changes proposed by the AESO to energy storage rules and definitions is essential for market participants and to align with proposed legislation. ATCO offers the following potential solutions to addressing this issue:</p> <ol style="list-style-type: none"> 1. Include a definition as part of the proposed changes that clarifies the three ownership types for energy storage. This would limit the currently proposed rule and definition changes to market participants eligible to participate in energy trading.
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		<p>2. Address proposed rule changes related to transmission and distribution utility ownership of energy storage as part of the current consultation.</p> <p>ATCO submits these solutions would address the concerns outlined above and will ensure clarity to all parties, reducing the need to re-review rules in the future.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>As energy storage technologies continue to evolve (and improve) it would be prudent to avoid language that would preclude different energy storage types (e.g., language related to battery chemistry, flow batteries, etc.).</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>No.</p> <p><u>Capital Power</u></p> <p>In Capital Power’s view, the term “Energy Storage Facility” creates confusion considering it is not referenced in the ISO rules and it is not clear if an aggregated facility that includes an energy storage resource would qualify as an “Aggregated Facility” or an “Energy Storage Facility”.</p> <p><u>Enfinite</u></p> <p>Enfinite is supportive of the AESO’s promptness in publishing the storage amendments for review. Given the multiple concurrent regulatory changes taking place, i.e., OR Market Review, AUC Bulk & Regional Tariff Proceeding, it would be beneficial for the AESO to provide stakeholders with an update to the rules that reflect the outcome of these changes.</p> <p><u>ENMAX Corporation</u></p> <p>ENMAX’s understanding is that the AESO’s proposed new and amended definitions apply only to ISO Rules and not Alberta Reliability Standards (ARS). If the intent is to extend these definitions to ARS, the definitions would first need to go through the formal ARS consultation process to better understand applicability and determine specific impacts as it relates to reliability standards in Alberta. In addition, ENMAX recommends that the AESO consider one common definition that applies consistently to both ISO Rules and ARS throughout the Consolidated Authoritative Document.</p> <p><u>Energy Storage Canada</u></p> <p>ESC has no additional comments at this time and believe AESO has handled the energy storage inclusion in ISO rules at this time very well.</p>
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6.	<p>Was the Energy Storage ISO Rule Amendments Webinar helpful to your review and understanding of the Energy Storage ISO Rule Amendments?</p> <p>Would you support the AESO using a similar approach for future ISO rule consultations in lieu of stakeholder sessions?</p>	<p><u>AltaLink</u></p> <p>As I was unfortunately unable to attend the Webinar, I am unable to comment.</p> <p><u>ATCO Energy Infrastructure</u></p> <p>The webinar was helpful to our review and understanding of the Energy Storage ISO Rule Amendments. The use of this approach will be very helpful with future ISO rule or other consultations.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u></p> <p>Yes, the webinar was useful, and we recommend an approach with a webinar and a shortened stakeholder session or a written Q&A process to allow participants to submit questions for clarification.</p> <p><u>Capital Power</u></p> <p>Capital Power found the webinar and presentation helpful to understanding the amendments. For consultations that are intended to “inform” stakeholders rather than “consult” with stakeholders, this is likely an appropriate forum. However, for initiatives that require collaboration, input, and discussion from stakeholders, the AESO should continue with stakeholder sessions. If continuing with the webinar format, the AESO should consider hosting a brief Q&A session to answer any questions (or, alternatively, listing Q&A on its webpage to answer any questions it receives electronically from stakeholders)</p> <p><u>Enfinite</u></p> <p>The webinar was helpful in clarifying the amendments. Stakeholders would have</p>

		<p>benefited from an opportunity to engage in a discussion and ask questions.</p> <p><u>ENMAX Corporation</u></p> <p>While the pre-recorded webinar is a good resource to refer to, ENMAX sees value in the AESO continuing to hold stakeholder sessions for future ISO rule consultations. Stakeholder sessions are valuable as they provide stakeholders with an opportunity to ask questions, which may provide the AESO with additional insight on possible concerns, challenges or opportunities with a proposed amendment or new provision.</p> <p>Should the AESO look to change its approach in the future, it should solicit feedback as part of a broader consultation on its stakeholder engagement framework, rather than through the energy storage initiative.</p> <p><u>Energy Storage Canada</u></p> <p>Yes, the rule amendment webinar was helpful, and ESC supports using a similar approach in future ISO rule consultations.</p> <p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>TransAlta does not support the AESO using recorded webinars in lieu of stakeholder sessions for future ISO rule consultation. Webinars do not provide the opportunity for stakeholders to meaningfully engage with the AESO, enable the AESO to receive contemporaneous feedback that aids in ensuring stakeholders clearly understand the proposed changes and impacts, or facilitate an efficient engagement where stakeholders can ask clarifying questions regarding the proposals and rationale. If the AESO intends to use a recorded webinar format for future ISO rule consultations it should be restricted to straightforward and minor changes and should not be applied to large packages of rule changes. Furthermore, it should be accompanied by a detailed written document explaining the AESO’s rationale and impact of the amendments. Trying to find specific information in a webinar is time-consuming for stakeholders as it can require stakeholders to replay the webinar several times and is difficult to navigate as it requires the stakeholder to figure out when in the webinar specific topics were discussed. TransAlta recommends this approach only be used in very limited situations, if at all, going forward.</p> <p>In lieu of a stakeholder session or any written documentation to provide an explanation of the amendments the AESO has made to integrate energy storage, fast frequency response service and ALM, TransAlta believes the webinar was helpful in providing basic information on the issues.</p> <p><u>TC Energy</u></p>
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<p>7.</p>	<p>Were the Energy Storage ISO Rule Amendments Map and the Consolidated Draft ISO Rule Book helpful to your review and understanding of the Energy Storage ISO Rule Amendments?</p>	<p><u>AltaLink</u> Due to how extensive the changes were to many rules, the Consolidated Draft ISO Rule Book was extremely helpful. It was easy to see all of the specific changes in the broader context of all of the entire collection of rules. The Energy Storage ISO Rule Amendments Map was not overly helpful because we felt the need to review each and every rule in detail anyways.</p> <p><u>ATCO Energy Infrastructure</u> The ISO Rule Amendments Map was very helpful to our review and understanding of the Energy Storage ISO Rule Amendments, as was the blackline version of the consolidated rules. Use of these tools for future engagement sessions would be extremely welcome.</p> <p><u>Canadian Renewable Energy Association (“CanREA”)</u> Yes the map and Consolidated rulebook were both helpful.</p> <p><u>Capital Power</u> Capital Power did not use the map in its review of the Energy Storage ISO Rule Amendments. The Consolidated Draft ISO Rule Book was very helpful.</p> <p><u>Enfinite</u> The amendments map and draft ISO Rule book were helpful. A clean copy of the rules would have been beneficial.</p> <p><u>ENMAX Corporation</u> Yes, this material was helpful.</p> <p><u>Energy Storage Canada</u> Yes, the ISO Rule Amendment Map and Consolidated ISO Rule Book were helpful for the review.</p> <p>Two suggestions are made. First, a clean version for searching final drafting of the Consolidated Draft ISO Rule Book. Second, a blackline and clean version of the Consolidated Glossary / definition changes would have been helpful.</p>

		<p><u>TransAlta Corporation (“TransAlta”)</u></p> <p>The map and the blacklines were helpful to see the specific changes to the ISO rules regarding the integration of energy storage, fast frequency response service and adjustment for load on the margin. However, a clearer summary and explanation of the specific changes and how they align, or deviate and why, with the Long-term Implementation paper would have been helpful in gaining a clearer understanding. The stakeholder consultation sessions in the fall will be essential for the AESO to explain its rationale and the impacts of the proposed amendments. TransAlta may modify the comments or opinions shared in these comment matrices following these sessions.</p> <p><u>TC Energy</u></p> <p>Yes, the ISO Rule Amendment Map and Consolidated ISO Rule Book were helpful for the review.</p>
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