

April 12, 2021

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

**Re: Stakeholder Comments on Letter of Notice for Development for Proposed Amendments to ISO rules to Enable Energy Storage ("Energy Storage ISO Rule Amendments")**

Pursuant to Section 5.2 of Alberta Utilities Commission Rule 017, *Procedures and Process for Development of ISO Rules and Filing of ISO Rules with the Alberta Utilities Commission*, written comments received from Stakeholders in response to the Alberta Electric System Operator's ("AESO") February 17, 2021 Letter of Notice for development of proposed Energy Storage ISO Rule Amendments have been posted on the AESO website. Comments were received from the following Stakeholders:

- AltaLink Management Ltd.
- Canadian Renewable Energy Association
- Capital Power
- Direct Energy
- ENMAX Corporation
- EPCOR Distribution & Transmission Inc.
- Energy Storage Canada
- FortisAlberta Inc.
- Greengate Power Corporation
- Suncor Energy Inc.
- TERIC Power Ltd.
- TransCanada Energy Ltd.
- TransAlta Corporation
- The Office of the Utilities Consumer Advocate

All Stakeholder comments received can be found on the Stakeholder engagement page on the AESO website at [www.aeso.ca](http://www.aeso.ca). Follow the path Stakeholder engagement > Rules, Standards and Tariff > Energy Storage Rule Amendments.

Thank you to all Stakeholders who participated in this part of the ISO rules comment process. All written comments received will be considered in the AESO's development of the proposed Energy Storage ISO Rule Amendments.

If you have any questions, please submit them to [rules\\_comments@aeso.ca](mailto:rules_comments@aeso.ca).

Sincerely,

*Jodi Marshall*

Legal Manager, ISO Rules and Alberta Reliability Standards  
Legal and Regulatory Affairs  
[rules\\_comments@aeso.ca](mailto:rules_comments@aeso.ca)

<b>Period of Comment:</b> February 17, 2021 through March 31, 2021	<b>Contact:</b> Hao Liu
<b>Comments From:</b> AltaLink	<b>Phone:</b> 403-710-1247
<b>Date:</b> 2021/03/31	<b>Email:</b> Hao.liu@altalink.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	<p>Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.</p>	<p>AltaLink agrees with the AESO in general that there is a need for amendments to the ISO rules to enable energy storage to participate in the energy market in a fair, efficient, and openly competitive (FEOC) manner. AltaLink understands that the AESO’s <i>Long-term Energy Storage Market Participation Draft Recommendation Paper (the Paper)</i> describes the AESO’s draft high-level market design recommendations. Further it is also AltaLink’s understanding that once finalized, these recommendations will form the basis for amendments to the ISO rules for implementation.</p> <p>AltaLink is of the view that the recommended market design and subsequent amendment of ISO rules should not result in unintended consequences that may undermine the transmission planning process as defined in T-Reg and impose higher costs to customers.</p> <p>To this end, AltaLink is concerned about an assumption made by the AESO in Section 1.3 of the Paper with respect to whether storage can be used instead of a traditional wires solution as part of transmission and distribution planning and utility ownership of such facilities. As discussed more thoroughly in its answer to Question 2 below, AltaLink disagrees and objects to this assumption and is of the view that it does not fully reflect how storage could be used in transmission and distribution system planning. AltaLink is concerned that with this assumption the AESO may be predetermining how storage is to be used in transmission and distribution system planning without broader consultation with market participants. Further, by limiting how storage can be used in addressing transmission and distribution issues and who can own that storage, the AESO is unnecessarily limiting its options to address such issues at the expense of potentially higher costs to customers. There needs to be a broader stakeholder discussion on how storage can be used in transmission and distribution planning, how different options fit into the legal, regulatory and planning framework as well as how different options can be utilized in the best interest of customers. This consultation needs to occur first before it is determined what, if any, energy market rules are required in relation to storage used to address transmission and distribution planning issues.</p>

<p>2.</p>	<p>Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.</p>	<p><b><u>General Concerns</u></b></p> <p>In Section 1.3 of the Paper, the AESO states that “There are a number of ongoing industry initiatives that are inter-related with the Energy Storage Roadmap” and that “this paper makes certain assumptions about the outcome of each initiative. Should those assumptions be incorrect, the AESO will need to consider the market design implications to the storage implementation”.</p> <p>On Page 5 of the Paper, the AESO describes its assumptions concerning the Alberta Department of Energy (ADOE) policy regarding storage, DER and Non-Wire Solutions (NWS). Specifically, the AESO states that:</p> <p><i>“This assumption relates to the ability for the AESO and DFOs to use non-wires solutions as part of transmission and distribution system planning. Central to the discussion is whether energy storage can be used as a substitute for traditional wires infrastructure in some circumstances”.</i></p> <p>The AESO then continues to state that:</p> <p><i>“The AESO’s current assumption is storage will be a market asset that may provide non-wires solutions, rather than a regulated asset capable of participating in the energy and ancillary services markets.”</i></p> <p>There are a number of issues with this assumption. First, it neglects to consider the scenario where a regulated asset does not participate in the market. The Alberta Utilities Commission recently approved a storage facility applied for by FortisAlberta which would not be exporting to the Alberta Interconnected Electric System and therefore would not be participating in the energy or ancillary services market. (Proceeding 26101).</p> <p>Second, the title and the general intent of the Paper appears to suggest that it is meant to address how energy storage can participate in the energy market, not how energy storage can be used in the planning of the electric system in Alberta. The Final Report resulting from the Distribution System Inquiry, shows that there are differing opinions on how storage can be used in utility planning and the ownership of such facilities. Any framework for this issue should be a result of a thorough and transparent consultation with stakeholders. AltaLink is concerned that the AESO may be attempting to predetermine this issue without this consultation.</p>
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Finally, and most importantly, the AESO’s assumption ignores that utility owned storage assets could be the best and most economical alternative. As AltaLink stated in the Distribution System Inquiry, there is a role for utility owned storage and that storage should be one of the potential options evaluated by the TFO and the AESO in identifying the optimal and most cost effective solution for meeting system needs (both in terms of future transmission build and capital replacement).

In the Distribution System Inquiry, AltaLink set out how TFO owned storage (controlled by the AESO) could be a cost effective and flexible solution to address N-1 contingencies and how such a solution could be used to address multiple contingencies (which may not be all predictable by the AESO).

AltaLink is concerned that the assumption set out in the Paper with respect storage use in transmission and distribution planning may unnecessarily limit the ability for utilities and the AESO to consider utility owned energy storage if it is the most cost effective means to address an issue.

**Fast Frequency Response**

In the same light, AltaLink is concerned about the inclusion of Fast Frequency Response (FFR) in this consultation.

The Paper does not address any design issues related to fast frequency response and the term “fast frequency response” is not defined in the Paper or the Letter of Notice. The AESO’s website defines FFR as “a fast-acting transmission reliability service” meant to “facilitate the arrest of, and recovery from, frequency decay caused by events such as the sudden loss of imports from the Alberta—B.C. Intertie and the Montana—Alberta Tie Line.” AltaLink is concerned that FFR is ultimately a means of addressing a transmission issue and therefore questions its inclusion in a consultation that appears to be aimed at addressing how storage participates in the energy market.

AltaLink has a number of concerns regarding FFR including the intended scope of the service, whether and how the AESO evaluated FFR against traditional and non-traditional transmission facility based solutions (including utility owned storage used as a transmission facility) and the potential impact of FFR on congestion on the intertie. AltaLink is of view that an open and transparent consultation on FFR should occur with stakeholders so that these issues (and potentially others) can be fully examined but questions whether that consultation should occur as part of the consultation on market rules for storage.

	Development of a Proposed ISO Rule	Stakeholder Comments
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	AltaLink recommends that the proposed consultation activities and timeline should address the issues and concerns described in AltaLink’s response to Question 1 and 2.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	AltaLink is of the view that the issues and concerns described in AltaLink’s responses to Questions 1 and 2 should be treated as a high priority in the development of ISO rule amendment.
5.	Do you agree or disagree with the AESO’s recommendation regarding hybrid asset participation? Why or why not? Please comment.	No comments at this point of time.
6.	Do you agree or disagree with the AESO’s recommendation regarding full-range participation? Why or why not? Please comment.	No comments at this point of time.
7.	Do you agree or disagree with the AESO’s recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	No comments at this point of time.
8.	Do you agree or disagree with the AESO’s recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	No comments at this point of time.
9.	Do you have any additional comments?	No comments at this point of time.

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Leonard Olien
<b>Comments From:</b> Canadian Renewable Energy Association	<b>Phone:</b> 587-971-0049
<b>Date:</b> 2021/03/30	<b>Email:</b> lolien@renewablesassociation.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<i>Yes. Energy storage market participation is not adequately explained in the current ISO rules</i>
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<i>CanREA supports consultation with Stakeholders on recommendations before the drafting of ISO rules.</i>
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	<i>The consultation activities on the recommendations are sufficient. Further consultation will be required once the draft rules have been finalized.</i>
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	<i>CanREA supports the recommendation regarding hybrid asset participation. The recommendation is flexible enough to allow market participants to operate their facility in an optimal way. In particular, hybrid assets with result in more efficient use of existing transmission infrastructure.</i>
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	<i>CanREA supports the recommendation regarding full-range participation. The recommendation allows sufficient flexibility for market participants, who may still choose half-range participation if it supports optimal operation of the storage asset.</i>
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	<i>CanREA agrees with the AESO recommendation regarding the state of charge requirement. CanREA encourages the AESO to engage in technical discussions with Stakeholders prior to drafting the ISO rules to ensure the rules do not result in a quick sequence of dispatch instructions that may be damaging to installed equipment.</i>
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	<i>The AESO recommendation on energy storage commissioning requirements is a reasonable extension of the current requirements for commissioning of generation.</i>

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9.	Do you have any additional comments?	<i>CanREA is encouraged by the AESO efforts to develop market rules that reflect the unique nature of energy storage assets. We look forward to working with the AESO to ensure the evolving regulatory framework enables the delivery of the many services energy storage can provide.</i>

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021 <b>Comments From:</b> Capital Power <b>Date:</b> 2021/03/31	<b>Contact:</b> Matthew Davis <b>Phone:</b> 403.540.6087 <b>Email:</b> <a href="mailto:mdavis@capitalpower.com">mdavis@capitalpower.com</a>
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The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Capital Power agrees that the AESO requires rules to address market participation issues faced by energy storage (ES). The rules are technology agnostic today, and Capital Power believes that this should continue. As such Capital Power believes this effort clarifies how an ES asset would participate in the market but is not supportive of technology specific rules for participating in the market as maintaining a level-playing field amongst all technologies is a foundational principle of Alberta’s market.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Capital Power generally agrees with the AESO stated purpose. Given the scope of the long-term ES market participation rules differs from the AESO’s proposed fast frequency reserve pilot, Capital Power would suggest that efforts around addressing fast frequency response be addressed either separately or through the AESO’s forthcoming operating reserves market review to maintain technology neutrality.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	Capital Power appreciates the AESO’s efforts to develop and introduce the issues through the options paper, and then provide recommendations before rule drafting occurs. Overall Capital Power is supportive of the AESO’s use of road maps when developing new market rules and suggests additional milestones be created where appropriate to ensure market participants have clear understandings on changes, and when the AESO may start to see concern that has to be addressed through rule changes.

	Development of a Proposed ISO Rule	Stakeholder Comments
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	Capital Power appreciates the recognition that the AESO has for competing priorities and the use of stakeholder sessions to discuss specific rule changes and issues. A staged approach will allow for more fulsome review, resulting in better outcomes.
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	Capital Power has no concerns with this approach, the AESO's proposed approach will allow participants to configure their site in a manner that best suits the circumstances of the facility.
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	<p>The AESO has indicated that their preference is for full-range participation (submit both offers and bids) by energy storage assets but acknowledges there may be a need to allow for ES assets to offer only through half-range participation by submitting only an offer. As such the AESO is allowing voluntary full-range participation.</p> <p>Capital Power shares the AESO's preference for full range participation for the same reasons as the AESO, particularly given how half-range participation through over-dispatching impacts price formation. By making full-range participation voluntary, unless there is a strong incentive to submit full range offers/bids, it is highly unlikely that the AESO will get their preferred participation in the market. Capital Power suggests that the AESO may want to monitor how participants elect to participate with ES assets and review the optionality if there is not material uptake on full-range participation.</p> <p>Capital Power is concerned that at this time there is little incentive for ES to elect for full range market participation. Under the current tariff, ES would look to avoid charging in 12-CP periods even if the market price signal indicates otherwise. Half-range participation would allow more flexibility to avoid these periods as the ES asset would not have a commitment in the form of a bid in the market. While the AESO's proposed tariff changes for ES has yet to be fully articulated, the AESO has indicated that it will look to modernize demand opportunity service (DOS). Capital Power is concerned that these changes will likely not encourage full range participation.</p>

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7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	<p>Capital Power is supportive of the AESO's recommendations on state of charge requirements. This is consistent with other fuel limited resources.</p> <p>The AESO may need to consider how the linked bid/offer range is implemented in the Energy Trading System as situations could arise where a participant requires adjustments to where volumes are in their bid / offer combination, the prices of which are locked at T-2. The validation of infeasible bids/offers should only be assessed on non -zero volume blocks to allow for the most flexibility when an ES participant submits a restatement within T-2 as a result of adjustments to their state of charge.</p>
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	Capital Power does not have any concerns on the ES commissioning requirements at this time.
9.	Do you have any additional comments?	<p>The AESO has included in the long-term energy storage rules consultation details around its proposed adjustments to load on the margin rule. In general, Capital Power is supportive of ensuring technology neutral rules and is aware that there is no current analog to the payments to suppliers on the margin rule for sink assets that choose to bid into the market. Capital Power would note that the AESO should not view this as the incentive for ES to submit a bid as it is relatively immaterial relative to overall settlement (in 2020 payments to suppliers on the margin totaled \$0.75 M, less than 0.1% of total market value).</p>

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Nicole Black
<b>Comments From:</b> Direct Energy	<b>Phone:</b> (403) 463-3520
<b>Date:</b> 2021/03/30	<b>Email:</b> Nicole.black@directenergy.com

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**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Direct Energy agrees with the majority of the issues identified in the letter. The primary concern of Direct Energy is that load is not unfairly burdened with the costs of enabling the participation of energy storage assets.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Direct Energy agrees with the potential purpose for most amendment items but is of the view that full-range participation should be required by all.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	The proposed consultation activities allow for a fair evaluation of the market.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	No comment.
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	Hybrid asset participation should require unique virtual meters for each asset - one as a sink and one as a source. A bid or offer should be provided for each virtual asset.
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	Disagree. If an asset is taking power off the grid, there should be two asset IDs (either virtual or real). If the assets are not capable of meeting ongoing bid and offer requirements, they should not participate.
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	Agree. This energy storage state of charge information should be provided in real time to the AESO for the benefit of the entire market.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	No comment.
9.	Do you have any additional comments?	Direct Energy is supportive of exploring the establishment of a congestion market, which works well in other jurisdictions in which Direct Energy operates.

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Mark McGillivray
<b>Comments From:</b> ENMAX Corporation	<b>Phone:</b>
<b>Date:</b> 2021/03/31	<b>Email:</b> <a href="mailto:MMcGillivray@enmax.com">MMcGillivray@enmax.com</a>

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**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	ENMAX agrees that some rule changes will be required to allow for energy storage to participate in the Energy and OR markets; however, until we see the specific wording of the rules, it remains unclear if all the required changes have been identified.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	The potential purpose of the proposed amendments appears reasonable on the surface, but the detailed drafting of the rules may raise more questions and issues that have not yet been contemplated.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	<p>Agree.</p> <p>While outstanding issues relating to the future tariff structure, self-supply and export policy, and other potential uses of energy storage in a non-market application remain outside of this consultation, these issues can be of significant importance to some potential developers and may need to be contemplated in the future energy storage framework.</p>
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	<p>The rules should be implemented with careful thought vs. a rushed timeline and remain justifiable and relevant to the market. Market design stability should continue to be a priority.</p> <p>As alluded to by the AESO, there are a number of interdependencies (slide 38) at play and these topics will require continued coordination. Timelines may need to be shifted should AESO assumptions change.</p> <p>Details surrounding the potential tariff treatment of storage resources (which was not discussed at the session) is an important element and ongoing developments in this area will impact stakeholder views.</p>
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	See response to Question 9.
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	See response to Question 9.

	Development of a Proposed ISO Rule	Stakeholder Comments
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	See response to Question 9.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	See response to Question 9.
9.	Do you have any additional comments?	<p>It should be clear that the AESO's assumption that "storage will be a market asset that may provide non-wires solutions, rather than a regulated asset capable of participating in the energy and ancillary services markets"<sup>1</sup> only applies to market participation. The assumption should not be applied generally to storage assets given that there are other potential uses of energy storage in a non-Energy market or non-OR market application (which remains out of scope for this particular initiative and any related ISO rule amendments). While regulated entities may not participate in the energy and AS markets, the regulatory framework should remain flexible to allow for the investment and deployment of energy storage where it makes economic sense to do so and should accommodate both utility and non-utility ownership to provide products or services with this infrastructure.</p> <p>The above notwithstanding, the AESO's recommendations appear reasonable; however, clarity is required on the actual details associated with the implementation of each recommendation. The technical rules and practices will have direct impacts on a market participants' operations; therefore, these details must be fully reviewed and understood by stakeholders before being implemented. ENMAX will participate in the AESO's upcoming consultations pertaining to the development of energy storage rules.</p> <p>The consultation plan should remain flexible and focus on priority initiatives, as well as allocate enough time for stakeholders to consider and provide feedback on each rule.</p>

<sup>1</sup> Long-term Energy Storage Market Participation Draft Recommendation, Section 1.3.3.

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Saqib Chaudhary
<b>Comments From:</b> EPCOR Distribution & Transmission Inc.	<b>Phone:</b> 780-441-7109
<b>Date:</b> 2021/03/31	<b>Email:</b> schaudha@epcor.ca

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**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**



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1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	EPCOR has reviewed the letter of notice and also the recommendation summary. EPCOR does not have any comments on the 4 recommendations, however submits this response in regards to comments made in Section 1.3 of the Draft Recommendation document.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	See response to question 1.

	Development of a Proposed ISO Rule	Stakeholder Comments
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	<p>EPCOR is concerned with the assumptions made by the AESO, as described in section 1.3 of the Draft Recommendation document. More specifically, the third assumption which states:</p> <p>“The AESO’s current assumption is storage will be a market asset that may provide non-wires solutions, rather than a regulated asset capable of participating in the energy and ancillary services markets.”</p> <p>Recognizing that this consultation is focused “on the market design component of the Markets integration pillar” EPCOR is still concerned that the AESO has made pre-determinations on the eligibility of energy storage to qualify as a potential non-wires solution.</p> <p>In the quoted paragraph above, the AESO identifies two types of energy storage:</p> <ul style="list-style-type: none"> <li>• a market asset that may provide non-wires solutions</li> <li>• a regulated asset capable of participating in the energy and ancillary services markets</li> </ul> <p>EPCOR notes the energy storage can play a role as a regulated asset that is <b>not</b> participating in the energy or ancillary services market. For example, the Alberta Utilities Commission recently approved the addition of an energy storage system in Proceeding 26101 where “the electric energy from the energy storage system would not be exported to the AIES and that FortisAlberta would not be competing in the energy-only or ancillary-services markets”.</p> <p>As noted by EPCOR during the AUC’s Distribution System Inquiry, EPCOR’s view is that owners of distribution systems or transmission facility owners should be allowed, on appropriate terms, to own energy storage resources for utility purposes where such a resource is the most economical alternative.</p> <p>EPCOR is of the view that the role of energy storage as a regulated asset requires more consultation as energy storage as a regulated asset has the potential to provide benefits to customers.</p>
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	It is not clear to EPCOR as to why the proposed recommendations are required at this time without further consultation on the treatment or use of energy storage as a regulated asset,

	Development of a Proposed ISO Rule	Stakeholder Comments
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	See response to question 1.
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	See response to question 1.
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	See response to question 1.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	See response to question 1.
9.	Do you have any additional comments?	No.

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Justin Rangooni
<b>Comments From:</b> Energy Storage Canada	<b>Phone:</b> 647.627.1815
<b>Date:</b> 2021/03/31	<b>Email:</b> jrangooni@energystoragecanada.org

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1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	ESC agrees with the issues identified in the letter of notice. The discussion papers and recommendation papers have provided appropriate information to interested parties on the issues. Further, the stakeholder consultation sessions have provided a proper forum to discuss the challenges facing energy storage resource development and operation in Alberta.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	ESC agrees with the purpose of the proposed Energy Storage ISO Rule Amendments <i>“to facilitate the integration of energy storage, improve the clarity required for market qualification and participation, and enable efficient, effective connection, monitoring and control of energy storage facilities when connected”</i>
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	ESC agrees with the proposed consultation activities. ESC believes the AESO has been diligent in addressing the barriers to energy storage resources in Alberta. The approach and execution by the AESO is a good example of how markets should address significant changes to market design.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	At this time, ESC has no comments on prioritization.
5.	Do you agree or disagree with the AESO’s recommendation regarding hybrid asset participation? Why or why not? Please comment.	ESC agrees with the proposed recommendation for hybrid asset participation; however, ESC is interested in understanding how the recommendation will be translated into an ISO market rule and what nuanced issues may arise.
6.	Do you agree or disagree with the AESO’s recommendation regarding full-range participation? Why or why not? Please comment.	<p>ESC agrees with the proposed recommendations for full-range participation with one exception. The AESO has indicated that a decision for optional full-range participation must be made as part of site commissioning. The AESO should explore allowing energy storage resources to change their full-range participation under specific circumstances initially as the risks and administrative complexities of full-range are not well known at this time.</p> <p>ESC notes that the concerns of administrative complexity related to the linked asset mechanism may still exist and reserves the right to comment further when draft ISO market rules are published.</p>

	Development of a Proposed ISO Rule	Stakeholder Comments
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	ESC agrees with the recommendation regarding energy storage state of charge requirements. ESC support is based on the understanding that state of charge will not be used for dispatch decision making; but instead will be used to help determine if changes to energy market offers and bids are allowed within the locked window (i.e., the time period when market participants cannot change their bid without justifiable reasons).
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	ESC agrees
9.	Do you have any additional comments?	ESC thanks the AESO for the opportunity to participate.

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Neil Cumming
<b>Comments From:</b> FortisAlberta Inc.	<b>Phone:</b> 403-514-4949
<b>Date:</b> [2021/03/31]	<b>Email:</b> neil.cumming@fortisalberta.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	No comment.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	No comment.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	FortisAlberta supports the opportunity to provide stakeholder feedback on this topic.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	No comment.
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	No comment.
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	No comment.
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	No comment.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	No comment.

<p>9.</p>	<p>Do you have any additional comments?</p>	<p>FortisAlberta wishes to comment on the ES ownership assumption stated in section 1.3.3 which states:</p> <p><i>Alberta Department of Energy (ADOE) policy regarding storage, DER and Non-Wire Solutions (NWS)</i></p> <p><i>This assumption relates to the ability for the AESO and DFOs to use non-wires solutions as part of transmission and distribution system planning. Central to the discussion is whether energy storage can be used as a substitute for traditional wires infrastructure in some circumstances. While the scope of this effort is focused on the changes needed to better facilitate NWS, these changes could have implications on the market participation of these resources.</i></p> <p><i>The AESO's current assumption is storage will be a market asset that may provide non-wires solutions, rather than a regulated asset capable of participating in the energy and ancillary services markets.</i></p> <p>As the AESO is responsible for transmission system planning, AESO consideration of Non-Wire Solutions (NWS) and associated ownership issues should be limited to transmission planning needs and not consider the separate and unique needs of distribution system planning. Additionally, FortisAlberta disagrees with the AESO's stance on ES ownership by regulated utilities. FortisAlberta proposes that ownership of ES by a regulated utility should be permitted where the ES is used as a utility asset for grid purposes, separate from the needs of energy and ancillary services markets.</p> <p>FortisAlberta supports the integration of ES into the Alberta Interconnected Electricity System (AIES) in an efficient and cost-effective manner to maximize the benefit, and minimize costs, to Alberta electricity consumers. ES should be evaluated on a case-by-case basis against other technologies and service options where appropriate to determine the most cost-effective solution.</p> <p>FortisAlberta agrees that applications exist where an ES asset can provide both grid and market functions thereby maximizing the use of the asset for the benefit of customers. Grid and market functions however are often competing priorities for ES, and are often both needed most during periods of peak demand or system constraint. The operational balance between these two functions is an important consideration to understand and manage throughout the evolving grid and market requirements.</p>
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	Development of a Proposed ISO Rule	Stakeholder Comments
		<p>FortisAlberta disagrees with the assumption that all ES is a market asset that can provide grid functions. ES technologies and use cases are continuing to evolve at a rapid pace. ES grid service technologies and use cases are in the early stages of development and are expected to be required for the future safe, reliable, and cost-effective operation of distribution systems.</p> <p>An example of this is FortisAlberta's Waterton BESS project. This pilot project is utilizing battery ES to provide backup grid services to a remote, end of feeder community in the event of grid outages. The pilot project is not participating in any energy or ancillary services markets. The location of this ES installation allows for restoration grid services for a remote community but would have limited technical ability to participate in the AESO energy and ancillary services markets due to its remoteness from the Alberta transmission system and associated limited ability to export energy or transmission ancillary services back to the Alberta transmission system.</p> <p>The AESO has ensured that ES adoption is technology agnostic, however, are being prescriptive when it comes to ownership. Restricting regulated ownership of ES may limit the ability for ES to be most economically integrated into the AIES.</p>

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Jordan Balaban
<b>Comments From:</b> Greengate Power Corporation	<b>Phone:</b> 403-630-4581
<b>Date:</b> 2021/03/31	<b>Email:</b> jordan@greengatepower.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<i>Agree. Energy storage market participation is not adequately explained in the current ISO rules, thus necessitating Energy Storage ISO Rule Amendments that will increase certainty for energy storage assets.</i>
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<i>Greengate supports consultation with Stakeholders on recommendations before the drafting of ISO rules.</i>
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	<i>The consultation activities on the recommendations are sufficient. Further consultation will be required once the draft rules have been finalized.</i>
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	<p><i>Greengate Power supports timely consultation and development of proposed Energy Storage ISO Rule Amendments. Greengate does not believe that the consultation and development of proposed Energy Storage ISO Rule Amendments should incur delays due to other initiatives underway with the AESO.</i></p> <p><i>It is important that rules are amended as soon as is feasible. Market participation clarity is essential to supporting development and deployment of energy storage projects in Alberta.</i></p> <p><i>Greengate requests that the AESO clearly communicates the anticipated timeline for the Energy Storage ISO Rule Amendments as soon as possible.</i></p>
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	<i>Greengate supports the AESO's recommendation regarding hybrid asset participation. Greengate applauds the AESO for including the hybrid asset configuration as a market participation option for co-located variable energy resources and energy storage. Hybrid asset participation will serve to increase utilization of grid infrastructure, and subsequently enhance the value of these assets to the Alberta electric system.</i>
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	<i>Greengate supports the recommendation regarding full-range participation. Greengate appreciates and supports that energy storage proponents are granted flexibility to select half-range or full range participation. This will ensure that an energy storage asset, regardless of configuration, is capable of selecting a bidding mechanism that is suitable to the asset's intended use case(s).</i>

	Development of a Proposed ISO Rule	Stakeholder Comments
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	<i>Greengate agrees with the AESO's recommendation regarding state of charge requirements. It is encouraging that the AESO engages in technical discussions with Stakeholders to ensure the ISO rules do not result in a rapid issuance of dispatch instructions that could inflict unnecessary damage to installed equipment.</i>
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	<i>The AESO recommendation on energy storage commissioning requirements is a reasonable extension of the current requirements for commissioning of generation.</i>
9.	Do you have any additional comments?	<i>Greengate appreciates the AESO's efforts towards creating a market participation framework that supports participation and operation of energy storage assets in the Alberta electricity market.</i>

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Horst Klinkenberg
<b>Comments From:</b> Suncor Energy Inc	<b>Phone:</b> (403) 819-7125
<b>Date:</b> 2021/03/31	<b>Email:</b> hklinkenberg@suncor.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Suncor agrees that the identified issues requires rule amendments. It is not clear yet whether those must be the proposed amendments or if alternatives are possible and desirable.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Suncor agrees with the stated purpose. As a new technology it is worth considering how market participation rules that were developed to accommodate other technologies should evolve.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	Suncor is supportive of the consultation process as outlined so far.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	Suncor supports the development of the proposed Energy Storage ISO Rule Amendments to add clarity for this class of asset.
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	<p>Suncor disagrees with the recommendation. In Suncor's view, the appropriate solution is to disallow hybrid asset but to <i>settle</i> the co-located storage and VER technologies on a net basis.</p> <p>On their own both VER and storage already require special rule treatment to integrate them in a fair, efficient and openly competitive manner. By allowing these technologies to combine, the <i>uniqueness</i> and the permutations that need to be considered increase, making it ever more difficult to integrate these units while maintaining a level playing field.</p> <p>Suncor doesn't believe there to be any harm or efficiency loss from this arrangement as only the virtual market participation layer is affected and not settlement.</p>

	Development of a Proposed ISO Rule	Stakeholder Comments
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	<p>Suncor disagrees with the recommendation. In Suncor's view, the appropriate solution is to mandate full range participation using either the Absolute Zero or B-Offer methodology; which methodology is ultimately chosen, and its details, should be determined through further consultation.</p> <p>The load component of a storage asset is not like any other load in the market. It is not the byproduct of normal (economic) activity. Instead, the full range of a storage unit is used to actively participate in the electricity market. As it is the full range of a storage unit that actively participates in the market, the full range should also be treated analogous to other active market participants, which includes a must bid/offer / must comply requirement.</p>
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	Suncor agrees that some form of charge state information would constitute useful information. At this point, Suncor cannot comment on whether the detailed recommendations under 3.3.5 are reasonable or appropriate. Suncor would like to inquire if the AESO will take measures to validate that the SOC telemetry would be reflective of actual equipment state. In addition, Suncor submits that at a minimum recommendation 4 requires further stakeholder consultation.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	Suncor agrees with the recommendation to add commissioning requirements to accommodate the charge portion for energy storage.
9.	Do you have any additional comments?	As rules for storage participation are developed, it is important to not only avoid unnecessary barriers to storage and to efficiently accommodate the unique technological limitations and capabilities but to also ensure that a level playing field among market participants is maintained.

<b>Period of Comment:</b> February 17, 2021 through March 31, 2021	<b>Contact:</b> Craig Barnes
<b>Comments From:</b> TERIC Power Ltd. (“TERIC”)	<b>Phone:</b> 403.660.5236
<b>Date:</b> 2021/03/31	<b>Email:</b> craig.barnes@tericpower.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<i>TERIC believes that energy storage is playing a key role in the energy market and that it will continue to develop. Ensuring the rules allow for various purposes and configurations will foster grid stability, commercial opportunities, and, ultimately, a vibrant and reliable electricity market.</i>
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<i>TERIC believes that the purpose of some of the proposed rule amendments are required, it also believes that in some cases the adjustment of tariffs may suit the same purpose without having to change a rule. See our specific comments re: rule changes in answers to 5, 6, 7, and 8 below.</i>
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	<i>TERIC agrees that consultation with market participants &amp; stakeholders is an appropriate course of action to gather understanding and insight from those that will be affected by various rule changes.</i>
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	<i>TERIC believes that an appropriate level of pragmatism be employed with a recognition that storage technology is developing rapidly and has already made its way into the current market design and rules. Any rule changes must keep in mind the assets that have already been installed and are operating under the current structure to maintain a fair, efficient, and openly competitive environment.</i>
5.	Do you agree or disagree with the AESO’s recommendation regarding hybrid asset participation? Why or why not? Please comment.	<i>TERIC agrees that hybrid assets should be able to participate; however, the definition and applicability of a “hybrid asset” should be genericized to allow for a variety of configurations, beyond what is contemplated as “Energy Storage”. The configuration should allow for other dispatchable forms of electricity production, such as a simple-cycle turbine supporting a solar installation or a battery storage facility supporting a non-renewable generation source.</i>
6.	Do you agree or disagree with the AESO’s recommendation regarding full-range participation? Why or why not? Please comment.	<p><i>TERIC does not necessarily agree with the recommendation to change the ISO Rules. TERIC believes a more efficient method would be to address the needs from a tariff perspective to “level the playing field”, so to speak.</i></p> <p><i>When discharging to the grid, an Energy Storage facility receives Energy payment minus Line Loss. Alternatively, when charging from the grid, an Energy Storage facility pays Energy, Line Loss, Distribution &amp; Transmission charges. The disparity between charging and discharging could be equalized through effective rate design rather than changes to ISO Rules.</i></p>

	Development of a Proposed ISO Rule	Stakeholder Comments
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	<i>TERIC agrees. The AESO's requirement for the System Operator to have visibility on the state of charge for Energy Storage facilities is reasonable to maintain grid stability.</i>
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	<i>TERIC agrees. Modifying the commissioning rules rather than the AOR definition given that commissioning is not part of standard operating practice.</i>
9.	Do you have any additional comments?	<i>TERIC has no further comments at this time.</i>

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Mark Thompson
<b>Comments From:</b> TransCanada Energy Ltd. (TCE)	<b>Phone:</b> 403-589-7193
<b>Date:</b> 2021/03/30	<b>Email:</b> markj_thompson@tcenergy.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	TCE agrees that the ISO Rules were not developed with the unique attributes of energy storage in mind and that certain rules need to be amended to allow for the optimal operation storage assets in Alberta and the efficient operation of the market.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	TCE agrees that stakeholder consultation for the development of energy storage rule amendments is necessary as this will help to ensure that potential issues are identified and managed appropriately.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	TCE agrees that at this point it is appropriate for the AESO to propose a flexible consultation approach at this time. TCE recommends that the AESO develop a more detailed consultation approach once it has heard from stakeholders and proposes draft rule amendments.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	
5.	Do you agree or disagree with the AESO’s recommendation regarding hybrid asset participation? Why or why not? Please comment.	TCE supports the AESO’s recommendation that allows for hybrid configurations that uses the variable energy block mechanism. This would provide the necessary flexibility for certain storage technologies to efficiently participate in the Alberta electricity market. The variable energy block mechanism provides hybrid configurations a relatively easy way to communicate the variable components of its offers to the AESO.
6.	Do you agree or disagree with the AESO’s recommendation regarding full-range participation? Why or why not? Please comment.	<p>TCE agrees that full-range participation should be optional. As stated in our October 30, 2020 comments, mandatory full-range participation would significantly and unnecessarily limit the flexibility of a storage asset during its charging phase. Allowing for half-range participation in the energy market is key for the efficient operation of storage assets. If participating full-range, TCE agrees that the linked asset approach is appropriate as it minimizes complexity.</p> <p>At this point in time, a requirement to communicate charging levels to the AESO for half-range participants seems reasonable. However, the communication of charging levels must not be onerous for the market participant and must be treated as confidential information similar to the treatment of other loads within Alberta.</p>

	Development of a Proposed ISO Rule	Stakeholder Comments
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	TCE agrees that a storage asset's state of charge should be determined by the market participant subject to an approved definition and that this information should be treated as confidential.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	TCE supports the AESO's recommendation that storage assets submit 2 offer blocks during commissioning for inflow and outflows at the respective price collars.
9.	Do you have any additional comments?	TCE has no further comments at this time.

<p><b>Period of Comment:</b> February 17, 2021 through March 17, 2021</p> <p><b>Comments From:</b> TransAlta Corporation</p> <p><b>Date:</b> 2021/03/17</p>	<p><b>Contact:</b> Akira Yamamoto</p> <p><b>Phone:</b> 403-267-7304</p> <p><b>Email:</b> akira_yamamoto@transalta.com</p>
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Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	<p><b>Yes, Energy Storage ISO Rule Amendments should follow a stakeholder engagement process including a letter of notice.</b></p> <p>TransAlta expects that the changes proposed in the AESO’s recommendation paper will require ISO Rule changes that should be consulted on like any other ISO Rule amendment. The AESO’s stakeholder engagement process should include a letter of notice that outlines the issues that it is attempting to address with its proposed amendments.</p>
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	TransAlta agrees that the ISO Rule should be amended to allow for energy storage participation. We cannot comment on the purpose of or the proposed Energy Storage ISO Rule Amendments because those have not been provided yet.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	TransAlta agrees that further stakeholder consultation is required on any proposed Energy Storage ISO Rule Amendments.

	Development of a Proposed ISO Rule	Stakeholder Comments
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	<p><b>Hybrid asset participation should be prioritized.</b></p> <p>TransAlta’s view is that providing certainty to hybrid participation, as has already implicitly been done by the AESO, is critical and should be prioritized. While we struggled with the AESO’s choice to include this in the scope of this engagement, we ask the AESO to remove the regulatory uncertainty about already permitted hybrid asset participation.</p>
5.	Do you agree or disagree with the AESO’s recommendation regarding hybrid asset participation? Why or why not? Please comment.	<p><b>Hybrid assets that have metering to permit separate facility offers should be permitted to offer energy storage separately from the co-located generating facility offers.</b></p> <p>TransAlta requests that the AESO confirm that hybrid assets that have elected to be metered such that the behind the fence storage asset is separated for the purposes of Energy Trading System submissions from the co-located generating facility will continue to be allowed to make offers separately (without combining into hybrid asset offers). Market participants that have made this choice have invested capital to accommodate separate metering and should not be required to offer their units as a hybridized single asset.</p> <p><b>The assumption that the co-located generating facility will always offer at zero may not hold in the future.</b></p> <p>TransAlta agrees that the AESO’s recommendation works with the way an energy storage asset and renewable generating facility that are treated as one hybrid facility operate today. More specifically, renewable assets are likely to offer all of their generation at zero dollars and all of their generation to a hybrid asset could be assumed to be in the lowest offer block.</p> <p>We note that this assumption may not hold in future. Renewables can be offered at a non-zero price and could utilize that offer discretion in the future. Furthermore, there appear to be other hybrid assets that could co-locate energy storage and a dispatchable (thermal) resource and will have priced offers. For this reason, we recommend that the AESO consider how it may modify its proposed approach to contemplate priced offers for a hybrid asset in the future.</p>

	Development of a Proposed ISO Rule	Stakeholder Comments
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	<p><b><i>The linked-asset approach is the best of the AESO's proposed alternatives.</i></b></p> <p>TransAlta agrees that a linked-asset approach provides the flexibility to allow a market participant to bid/offer the full-range of an energy storage asset. We strongly prefer this voluntary approach to the other mandatory bidding approaches the AESO considered. Additionally, we believe that this approach captures the spirit of reducing administrative burden and eases participation for energy storage providers.</p>
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	<p><b><i>The requirements for state of charge appear onerous.</i></b></p> <p>We understand the AESO's concept of "state of charge" but have concerns that the framework may create situations where many Available Capability (AC) restatements are required to follow system controller dispatches.</p> <p>For example, a 10 MW battery with a few kWh of stored charge could provide 10 MW of capacity for a few seconds/minutes and then have no further energy to provide the 10 MW on a sustained basis. While the asset would likely be offer high in the merit order to avoid dispatch, if the battery was called upon it would be fully discharged in seconds/minutes and would have to restate its AC to 0 MW with an accompanying AOR of 0% state of charge. Subsequently, after a small recharge the battery would have to restate its AC back to 10 MW and could encounter a situation where it is restating its AC from full to 0 in very short timespans.</p> <p>From our experience with the wind generating facility pilot project, we found that we were forced to make many AC restatements which was not only a significant burden on our wind control center staff but also overwhelmed the system controllers with a large volume of AC restatements. We are concerned that in developing recommendation the AESO has had small regard for the practical challenges/issues with complying with these requirements. We ask the AESO to consider developing a framework where these types of AC restatements can be avoided.</p> <p><b><i>The AESO should not impose new SCADA requirements on in-service energy storage assets</i></b></p> <p>TransAlta is concerned that the AESO is describing a new SCADA requirement by suggesting that it requires state of charge as a SCADA data point. We note that our energy storage project was brought online in compliance with the requirements that the AESO had prescribed at that time. We do not support new requirements being imposed on energy storage projects that are already online.</p>

	Development of a Proposed ISO Rule	Stakeholder Comments
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	<p><b><i>The commissioning requirements should be rationalized to ensure consistency with other source and sink assets' requirements.</i></b></p> <p>We question why the AESO is proposing a requirement for energy storage to make offers for the energy storage asset when it is testing its ability to charge. We are mindful that there is no such requirement on load facilities when they are being commissioned nor is there a requirement when a generator takes station service load when they are commissioning their generating facility. We ask the AESO to reconsider whether this is a necessary requirement for energy storage assets and if it has any consistency with the requirements for other sink or source assets.</p>
9.	Do you have any additional comments?	<i>No additional comments at this time.</i>

<b>Period of Comment:</b> March 1, 2021 through March 31, 2021	<b>Contact:</b> Megan Gill
<b>Comments From:</b> The Office of the Utilities Consumer Advocate (UCA)	<b>Phone:</b> 403.819.5383
<b>Date:</b> 2021/03/31	<b>Email:</b> Megan.Gill@gov.ab.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

**The AESO is seeking Stakeholder comments regarding the following questions related to the development of proposed amendments to ISO rules to enable energy storage (“Energy Storage ISO Rule Amendments”):**

	Development of a Proposed ISO Rule	Stakeholder Comments
1.	Do you agree or disagree that the issue identified in the letter of notice requires the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Agree. The current ISO rules did not contemplate the integration of energy storage devices that could function as either energy sources or sinks, particularly when used in combination with variable energy sources. The ISO rules should clearly define Energy Storage Resources. The ISO Rule amendments should also consider the possibility of Energy Storage owned by distribution or transmission companies for the purpose of providing ancillary services, and the treatment thereof, to ensure all options are evaluated, and the lowest cost overall solution is selected.
2.	Do you agree or disagree with the potential purpose of the proposed Energy Storage ISO Rule Amendments? Why or why not? Please comment.	Agree. Amendments and clarifications are required to maximize participation in a FEOC market, encourage optimal asset developments and ensure reliable system operation.
3.	Do you agree or disagree with the proposed consultation activities? Why or why not? Please comment.	Agree. The consultation allowed a thorough and open exploration of the issues raised by energy storage developments, including potential market and system benefits and challenges, as well as the connections and overlap with related issues such as ancillary services and transmission tariff amendments.
4.	Do you have any comments in relation to the prioritization of the development of the proposed Energy Storage ISO Rule Amendments or the related timeline? Please comment.	It is the UCA's view that the proposed timeline is reasonable.
5.	Do you agree or disagree with the AESO's recommendation regarding hybrid asset participation? Why or why not? Please comment.	<p>Agree. Allowing hybrid assets will significantly improve supply flexibility and increase market participation. The rules can be designed to accommodate hybrid assets while maintaining dispatch visibility and reliability. It is the UCA's view that the administrative costs of additional ISO rule complexity and IT upgrades incurred by the AESO should be fully recovered from the market participants.</p> <p>Also, the UCA submits that for those assets with the capacity of 1 to 5 MW that participate in the energy market voluntarily and follow the "must offer, must comply" rule, either as an independent asset or hybrid, the AESO must carefully consider how and if these assets are allowed to opt-out. The opt-in could be a one-time mechanism that signals to the market that a new entrant will be added to the supply stack. Opting out provisions may cause an unlevelled playing field to other market participants and potentially greater price volatility in the energy market, with the fluctuation of the available supply stack.</p>

	Development of a Proposed ISO Rule	Stakeholder Comments
6.	Do you agree or disagree with the AESO's recommendation regarding full-range participation? Why or why not? Please comment.	<p>Agree. Optional full range participation rather than half-range operation is important for dispatch visibility, supply adequacy, marginal price forecasting, and management of regulating reserve costs. Mandatory participation would restrict flexibility, but when not bidding, energy storage charging levels must be communicated to prevent problems associated with unpredictable supply/demand responses.</p> <p>As full-range participation will drive significant IT costs, it is important to ensure that these incremental costs are recovered from energy storage market participants.</p>
7.	Do you agree or disagree with the AESO's recommendation regarding energy storage state of charge requirements? Why or why not? Please comment.	Agree. The state of energy charge is a critical art of dispatch visibility required to ensure stable system operation and price forecasts.
8.	Do you agree or disagree with the AESO's recommendation regarding energy storage commissioning requirements? Why or why not? Please comment.	Agree. Yes, special arrangements are necessary for testing bi-directional energy storage capabilities as current rules recognize only discrete generators and loads.
9.	Do you have any additional comments?	None.