May 16, 2022

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

**Re: Stakeholder Comments on Letter of Notice for Additional Feedback from Stakeholder Consultation Session 2 on the Operating Reserve Market Review ("Operating Reserve Market Review")**

The Alberta Electric System Operator ("AESO") received comments from Stakeholders in response to its April 12, 2022 *Letter of Notice for Additional Feedback from Stakeholder Consultation Session 2 on the Operating Reserve Market Review*. These comments have been posted on the AESO website.

Comments were received from the following Stakeholders:

1. Campus Energy;
2. Capital Power Corporation;
3. Enel North America;
4. Enfinite;
5. ENMAX Corporation;
6. Greengate Power Corporation;
7. Heartland Generation Ltd.;
8. Industrial Power Consumers Association of Alberta (IPCAA);
9. Market Surveillance Administrator;
10. Millar Western Forest Products Ltd.;
11. Suncor Energy Marketing Inc.;
12. TransAlta Corporation;
13. TransCanada Energy Ltd.;
14. URICA Asset Optimization;
15. Versorium Energy Ltd.; and
16. Voltus, Inc.

Thank you to all Stakeholders who participated in this part of the Operating Reserve Market Review process. The AESO will take all comments received into consideration during the development of the Operating Reserve Market Review.

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



Alberta Electric System Operator
Calgary Place, 2500, 330-5th Avenue SW Calgary, AB T2P 0L4
Phone: 403-539-2450 | Fax: 403-539-2949
www.aeso.ca
@theaeso

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| **Period of Comment:** | April 12, 2022 | through | May 13, 2022 | **Contact:** | C. Hughes |
| **Comments From:** | Campus Energy | | | **Phone:** | 587-323-3750 |
| **Date:** | 2022/05/13 | | | **Email**: | cameron.hughes@campusenergy.ca |

Instructions:

1. Please fill out the section above as indicated.
2. Add your feedback to the following comment matrix.
3. Email your completed comment matrix to rules_comments@aeso.ca.

Information from the slide deck presented during the Stakeholder session and available on aeso.ca may provide additional information that will be helpful in completing the below matrix.

Please note that the AESO will consider the feedback provided here in tandem with the feedback provided following session 1. Therefore, stakeholders should not feel obligated to repeat feedback that has already been provided.

**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

Participants submit a single-part offer to WattEx, containing a volume and a premium price. Participants do not submit an activation price. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The premium price of the highest accepted offer will set the uniform premium price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market as they do today and will earn the uniform premium price. The order of activation is less clear than today, as there is no activation price to establish a merit order. One option may be to activate providers from lowest to highest premium. If a provider is activated, they will continue to earn the premium payment. They will also earn the prevailing active reserve price. For example, if a standby provider is activated for spinning reserves during the on-peak time block, that provider will earn the active price index for on-peak spinning reserves plus the energy pool price.

In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue. The risk is activation.

| | Questions | Stakeholder Comments |
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| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | Campus isn't opposed to clearing the market at the marginal offer. The market will adjust.<br>Campus Energy isn't opposed to a public OR price cap, but doesn't see that approach resulting in any materially different outcomes from the current AESO bid approach. |

| | Questions | Stakeholder Comments |
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| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Campus Energy does not support a standing offer. If that functionality existed, it would be important that the standing offer could be withdrawn at any time for periods of time. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | Knowledge of the clearing price immediately after the auction provides sufficient transparency and openness. Prices offered into the market by a market participant should be based on generators economics and opportunity cost and should not need to consider the information of another market participant.<br><br>Knowledge of the AESO volume and bid/cap price is sufficient for our participation.<br><br>The first offer received seems like a reasonable way to break a tie under a sealed bid method. Requiring parties to fill in dollars and cents may reduce the frequency of breaking ties.<br><br>Being able to declare an offer as "all-or-nothing" would be an improvement on status quo. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | Campus Energy's views are mixed and sees pros and cons to each decision. Since ancillary volume is used to balance the market at critical junctures, it may be understandably burdensome to dispatch and monitor extremely small quantities. To ensure the AESO's systems and its controllers and compliance teams are not hampered by the administration of low volume dispatches, low volume activation levels, or limited directives it is reasonable for the AESO to allow smaller volumes to participate through aggregating agents as they have for some time. |
| *Group 2* | | |

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| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | Campus is partial to block procurement rather than an hourly procurement model and block procurement would allow Campus to better participate and at lower cost. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | Campus Energy's preference is for simultaneous CR procurement Option 2 as presented by the AESO in its presentation examples. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | Campus could support single part offers with only an activation price. Campus supports the AESO in avoiding the premium paid for standby service and to activate standby at an index to pool price.<br><br>The reserve provider should be able to participate in the energy market until activated. |

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| **Period of Comment:** | April 12, 2022 | through | May 13, 2022 | **Contact:** | Santi Churphongphun / Megan Gill |
| **Comments From:** | Capital Power | | | **Phone:** | 403.717.4639 / 403.827.3566 |
| **Date:** | 2022/05/13 | | | **Email**: | schurphongphun@capitalpower.com / mgill@capitalpower.com |

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

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| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | **Conduct Studies to Determine Price Cap and Consider Distinct Price Caps for Different OR Products**<br>Capital Power supports the AESO's proposed change to move away from equilibrium pricing to a uniform pricing approach.<br>Without additional analysis to better understand the impact the AESO's proposed change to the price cap, it remains unclear to Capital Power how the change will result in an overall net benefit in the OR Market. The AESO expressed intent to provide more comprehensive analysis |

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| | | as part of its detailed recommendation in August. However, Capital Power is of the view that this analysis is required earlier in the process to better understand if and how the proposed alternative(s) will enhance price fidelity and competition in the OR market. At a minimum, Capital Power would appreciate this information in advance of the next session.<br><br>It would be helpful for the AESO to provide stakeholders with more information about how the current AESO bid price was selected and if or how the criteria used at that time could be used to inform its evaluation of a publicly disclosed price cap.<br><br>Overall, Capital Power supports the considerations stated by the AESO for determining the OR price cap and would like to reiterate the importance of ensuring the price cap is set high enough to allow for cost recovery, even in extenuating circumstances. There may be value in considering distinct price caps for different OR products given the differing costs and value between each product in the market. The AESO should consider the specific value of each OR product when completing its studies or analyses to determine the appropriate price cap(s). |
| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | **Maintain Status Quo**<br><br>Capital Power is supportive of the AESO's recommendations to not pursue standing offers at this time. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft | **Provide Aggregate Data in Real-Time**<br><br>Capital Power is not opposed to the AESO's proposed recommendation to move to a sealed-bid format, assuming sufficient information would still be provided to market participants to ensure price discovery and competition.<br><br>Publication of the clearing price immediately after each auction is necessary to allow market participants to respond competitively in the next round or next day auction. It would be helpful for market participants to have visibility to general market information during the |

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| | recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | auction, which may include aggregated volume of bids submitted at floor price. The fully granular stack details should then be provided after the close of the auction to allow market participants the ability to respond competitively for the next round of auctions. This would support the AESO's objectives of enhancing competition and price fidelity in the OR market.<br><br>Capital Power suggests that the AESO should consult with stakeholders on what information requirements are needed before finalizing this recommendation, especially considering there may be a change to information requirements depending on the outcome of the other proposed changes by the AESO in both Group 1 and Group 2 categories. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | **Further Assess the Barriers of Entry for Smaller Resources**<br><br>Capital Power remains of the view that further analysis is needed to understand the impact of this change. Specifically, it would be helpful for the AESO to quantify and share the expected benefits and the expected costs (including administrative costs) for maintaining reliability on the system with the proposed change. It would also be helpful to understand the expected value of this proposed change compared to other alternatives, including aggregation of smaller units (i.e.. require units <5MW to aggregate keep the minimum qualification and offer size as it is today).<br><br>The MSA's Q4/2021 report shows that larger resources were directed more frequently than smaller ones over the last two years to provide contingency reserves noting "[t]his could suggest a preference by the AESO to direct larger resources than to direct many smaller resources." (pg. 35) Capital Power is concerned that if the AESO's preference is to direct larger resources (over smaller resources), then the proposed change to reduce the minimum qualification offer size may do little to increase competition in the market. The AESO should provide a response regarding the MSA's observation and be open and transparent with stakeholders regarding any guidance that is provided to System Controllers so stakeholders can better understand and evaluate the merits of reducing minimum qualification and offer size. |

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| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | **Continue OR Block Procurement**<br><br>Hourly procurement is not expected to increase Capital Power's participation in the OR market but, as suggested in the AESO's questions here, may alter the nature of its participation particularly if other changes are implemented.<br><br>In any case, Capital Power agrees with the AESO's assessment that moving to hourly reserve procurement is not required at this time to preserve market integrity. No material benefit in moving to hourly reserve procurement has been presented and, in any case, would likely require more changes to the existing framework than currently contemplated. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | **Maintain Existing Sequential Auctions <u>Without</u> Offer Carryover**<br><br>Capital Power supports the AESO's proposal to maintain sequential procurement but disagrees with the alternative to carryover spinning reserve (SR) offers into the supplemental (SUP) auction. Participants qualified to participate in the SR market today can and often do "carryover" their uncleared offers to the SUP auction when they see fit. In the event they choose to participate in the SUP auction, modifications can be made to both price and volume.<br><br>This flexibility would be removed under the AESO's proposed alternative. For example, it was confirmed at the April 7th stakeholder session that uncleared SR volumes automatically carried over under the AESO's proposed alternative could not be "pulled" from the SUP auction. It was also noted that offers & bids could only be "improved." This could add or introduce new risk to potential OR providers that may have otherwise decided not to participate in the SUP auction due to a sudden operational constraint or change in market fundamentals. SR providers would not only need to consider participation in both auctions but may elect to include a further risk premium to account for the reduced flexibility. Ultimately, imposing a defacto "must offer" requirement in the SUP auction on SR participants may dissuade new |

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| | | entry and result in higher cost. Not only is OR market participation voluntary (and should remain as such) but both outcomes would be contrary to the AESO's assessment principles of increasing competition and minimizing cost. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | **No Change to Standby Pricing & Procurement Until Further Clarity Provided and Benefit Demonstrated**<br><br>Capital Power disagrees with the AESO's view that "[i]n today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk." It is the activation price, not premium price, that acts as a means of pool price risk mitigation. However, Capital Power submits that both prices are required to account for the full scope of potential risks and costs as an OR provider. Removal of the premium would fail to reward prospective OR providers for having flexible capacity that can be made available should active volumes be insufficient. Standby products can also be activated on and off resulting in greater wear and tear on facilities as well as pose increased compliance risk. For these reasons, Capital Power submits that no changes to the current standby pricing & procurement approach should be made.<br><br>Capital Power appreciates the additional detail provided by the AESO as part of this stakeholder comment matrix. However, as discussed below, more information is required to fully understand the proposed alternatives and remains of the view that examples of the AESO's proposal be provided. In addition, it remains unclear what benefits (if any) may be realized by moving from the status quo to one of these alternatives. Capital Power is concerned that these alternatives, particularly in conjunction with any of the changes proposed above, will add unnecessary complexity and harm competition without any commensurate benefit to system reliability, the OR market and consumers.<br><br>1) <u>Single-Part Offer: Activation Price</u><br><br>Both procurement approaches propose an activation price in addition to pool price to be paid should an OR provider be activated. Please confirm whether this would apply in the event |

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| | | the pool price is at the energy price cap.<br><br>Please confirm that activation under each clearing approach means that an OR provider has received an AESO directive. If not, please clarify the difference between a dispatch and activation in the context of the proposed approaches.<br><br>*a. Day-ahead Clearing*<br><br>Removal of the premium price appears to shift standby products to more closely resemble active ones. Capital Power believes these products serve different but necessary roles in ensuring grid reliability and, therefore, should remain distinct. To better understand the AESO's proposed day-ahead clearing approach, Capital Power believes more information is required.<br><br>As outlined by the AESO at page 1 above, "...all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves." Please describe the difference between this and treatment of accepted active reserves. Also, please clarify that by dispatch, the AESO means that the standby volume has been activated as would be the case in the current OR market.<br><br>It is also noted that these providers would not be paid a standby premium but could participate in the energy market as they do today. In participating in the energy market while also having a standby reserve dispatch, please confirm whether the AESO would expect these providers to ensure sufficient "headroom" capacity remains. For example, if a generator with 100 MWs of available capability wanted to fully participate in the energy market but has been dispatched for 10 MWs of standby OR, would the AESO permit the generator to offer the full 100 MWs in the energy market?<br><br>*b. Real-time Clearing*<br><br>The additional AESO information provided above states that |

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| | | all "...standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time." Similar to the requested clarification above on "head room" capacity, please confirm the AESO's expectation with respect to the maximum allowable energy offer volume of a standby provider given it will automatically be dispatched for standby OR in real-time.<br><br>2) Single-price Offer: Premium Price<br><br>Additional information is required about how activation of accepted offers would occur. One potential option was discussed where activation could be determined based on order of premium price. The AESO noted under this option that the activated provider would receive; i) the premium price; and ii) the prevailing active reserve price plus pool price. Please confirm that the premium price would be paid for being dispatched and, if activated (i.e., OR provider receives directive) this is the proposed payment stream under this alternative. |
| *General Comments* | | |
| While not an OR product, transmission must-run (TMR) falls under the same umbrella as OR under the broader category of ancillary services that the AESO requires to ensure system reliability. Capital Power understands that the AESO is looking to procure TMR with the intent of having a contract executed by July 2022. As such, Capital Power suggests that the AESO consider updating the TMR reference price. Currently, the TMR reference price does not reflect carbon costs. Capital Power suggests that this be included and tendered for feedback in this or a separate consultation in advance of the July 2022 contract commencement. | | |

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| **Period of Comment:** | April 12, 2022 through May 5, 2022 | **Contact:** | Sarah Griffiths |
| **Comments From:** | Enel North America (Enel X and Enel Green Power) | **Phone:** | (416) 697-3744 |
| **Date:** | 2022/05/13 | **Email**: | Sarah.griffiths@enel.com |

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mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

Participants submit a single-part offer to WattEx, containing a volume and a premium price. Participants do not submit an activation price. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The premium price of the highest accepted offer will set the uniform premium price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market as they do today and will earn the uniform premium price. The order of activation is less clear than today, as there is no activation price to establish a merit order. One option may be to activate providers from lowest to highest premium. If a provider is activated, they will continue to earn the premium payment. They will also earn the prevailing active reserve price. For example, if a standby provider is activated for spinning reserves during the on-peak time block, that provider will earn the active price index for on-peak spinning reserves plus the energy pool price.

In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
|---|---|---|
| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | |
| 4 | Standing offers<br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's | |

| | Questions | Stakeholder Comments |
|---|---|---|
| | draft recommendation to not pursue this change at this time? | |
| 5 | Offer transparency<br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | |
| 6 | Minimum qualification & offer size<br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | As per previous comments, Enel supports the proposed changes to minimum qualification and offer size. |
| *Group 2* | | |
| 7 | Block procurement<br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would | Enel supports moving to an hourly procurement. Many resources with cost-effective MW, have strict schedules that may not align with the current blocks or are only available for shorter periods then the current blocks. This includes MW available during peak hours. By moving to an hourly procurement, access to these MW would occur. |

| | Questions | Stakeholder Comments |
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| | still be effective with hourly procurement? Are there alternatives the AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | |

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| **Period of Comment:** | April 12, 2022 | through | May 13, 2022 | **Contact:** | Jessica Halland |
| **Comments From:** | Enfinite | | | **Phone:** | 403-615-7594 |
| **Date:** | 2022/05/05 | | | **Email**: | jhalland@enfinite.com |

Instructions:

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

2. *Single-part offers – Premium Price*

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | Enfinite would like clarity regarding the proposed OR price caps. Please provide specific information on whether the proposed price caps are intended to be product specific. Given the fact that there are likely to be significant changes to the Alberta electricity market due to factors, such as decarbonization and electrification, there are likely to be several new products introduced that will need to be considered. This will lead to a more onerous process for the AESO and will require frequent updates. Enfinite would like to understand how the AESO proposes to ensure that new products receive equal |

| | Questions | Stakeholder Comments |
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| | | treatment if the AESO implements the price caps as suggested.<br><br>The Ancillary Services market is voluntary and implementing mechanism from the must offer Energy Only market may have unintended consequences. This proposal requires further analysis to demonstrate the benefits of this proposal and ensure that the effects of this change are fully considered. |
| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Enfinite is supportive of not pursuing this, or any, change to the OR market at this time. As submitted in previous feedback regarding the proposed Operating Reserve Market changes. As mentioned previously, there are issues with the timing of this engagement process as there are significant engagements and studies scheduled for 2022 that will have a material impact on the outcome of this review. As new technology drives new products to market, there will likely be required changes to facilitate these new products. Enfinite suggests that the AESO place the OR Market Review on hold until it is clear what changes need to be implemented to ensure that this market can accommodate these new products. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from | Enfinite submits that it is crucial that the AESO release more detailed offer information, particularly data relating to the supply curve, volume and price as this will assist in more competitive offer behaviour. It has been established that more robust information in the market leads to more competitive behaviour that supports the principle of FEOC.<br><br>It is imperative that participants have visibility to the market in real time. Having access to this information will affect offer behavior in subsequent auctions within the same day. Real time price discovery is critical as it will ensure that energy continues to be offered into the AS market.<br><br>Please confirm that the AESO will disclose both price and volume as it not only incentivizes market participants but is also critical to increasing competition. |

| | Questions | Stakeholder Comments |
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| | being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | Enfinite submits that this proposed market design should not be considered. It does not support the primary objective of the OR market in maintaining reliability of the grid. If anything, it obstructs the AESO from meeting this mandate.<br><br>In its Q4 2021 report, the MSA provided data that clearly shows favourable treatment to smaller assets regarding directives. The costs associated with a higher instance of directives in its current practice is punitive to larger assets, particularly storage assets. In order to maintain FEOC and ensure a level playing field for all participants, there needs to be equal treatment regarding directives from the AESO operator and the costs associated with it. Lowering this threshold further exacerbates the issue already identified by the MSA in Enfinite's view.<br><br>Further, lowering the minimum qualification and offer size is a compliance risk as smaller participants are less likely to have sophisticated compliance mechanisms in place that could likely lead to a less reliable system. Enfinite would like to further understand how the AESO intends to ensure that these participants are compliant with relevant rules and reliability standards. |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the | Enfinite submits that hourly procurement would maximize the participation of new products in the OR market. Hourly procurement is fundamental to optimizing storage assets. |

| | Questions | Stakeholder Comments |
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| | AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | Enfinite is not supportive of the AESO's first proposed alternative as market participants would not have the ability to remove their uncleared SR offers from the SUP auction. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | Enfinite reiterates its position that the timing and scope of this review should be placed on hold until the outcome of concurrent regulatory consultation is complete as it may have material impact. There are unintended consequences that will result in the implementation of these proposed market design alternatives. |

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| **Period of Comment:** | April 12, 2022 | through | May 5, 2022 | **Contact:** | Mark McGillivray |
| **Comments From:** | ENMAX Corporation | | | **Phone:** | |
| **Date:** | 2022-05-04 | | | **Email**: | MMcGillivray@enmax.com |

Instructions:

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

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mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | No comment. |
| 4 | Standing offers<br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's | ENMAX agrees that this draft recommendation should not be pursued. Even without potential changes to other design elements, the current AS offer requirements are sufficient and are unlikely to pose a barrier to participation. |

| | Questions | Stakeholder Comments |
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| | draft recommendation to not pursue this change at this time? | |
| 5 | Offer transparency<br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | In general, ENMAX does not support moving towards a sealed bid format and is of the view that offer transparency should be maintained as it is today. There does not appear to be a strong enough case to introducing such a change to the market and could lead to inefficient outcomes.<br>Given some time has passed since the AESO conducted its initial analysis, ENMAX recommends that the AESO revisit its study to determine whether the behavior it is looking to discourage has abated. Rather than introducing a fundamental change to the market, introducing some additional ex-post reporting would be less disruptive, provide benefits at a lower cost overall to the market and alleviate the AESO's existing concerns. |
| 6 | Minimum qualification & offer size<br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | Refer to ENMAX's comments on the OR Market Review Session 1 submitted to the AESO in January 2022.<br>To reiterate, a level playing field should be maintained for all participants in the OR market regardless of the minimum asset or offer size. |
| *Group 2* | | |
| 7 | Block procurement<br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would | Hourly procurement would likely maximize ENMAX's participation in the OR markets and allow for better optimization of assets between volumes for OR and energy offers. |

| | Questions | Stakeholder Comments |
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| | still be effective with hourly procurement? Are there alternatives the AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | As it stands today, there is no shortage of SUP offers and the cost to the AESO to procuring this service appears minimal.<br><br>Making such a change would complicate a relatively simple process with very little benefit to the overall market.<br><br>The costs of system and procurement would outweigh the benefits of this saturated product. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | The current practice for standby reserves and pricing procurement remains sufficient. ENMAX would suspect that moving towards a premium only market would result in more costs for the AESO.<br><br>If there is enough benefit to warrant a change, ENMAX would support a premium only market for SR/SUP, and an activation only market for RR.<br><br>This information should be shared with participants prior to implementation. |

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| **Period of Comment:** | April 12, 2022 | through | May 13, 2022 | **Contact:** | Scott Perry |
| **Comments From:** | Greengate Power Corporation | | | **Phone:** | |
| **Date:** | 2022/05/13 | | | **Email**: | Scott@greengatepower.com |

Instructions:

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**Standby Reserve Alternatives**

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*2. Single-part offers – Premium Price*

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| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | Given the extremely high levels of market share by the largest providers, Greengate is concerned about moving to a price cap from the current equilibrium pricing methodology. In the presentation, the AESO shared (slide 20) the concentration of reserve sales. Greengate questions if the proposed pricing method will achieve better outcomes than the current methodology, given current market power concentration.<br>Given concentration in this market, Greengate suggests that the focus would be best placed on providing incentives for new |

| | Questions | Stakeholder Comments |
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| | | entrants. Additional participants may be attracted to the OR market if the AESO took care of key risks facing storage, which could create significant public interest value for the AESO and loads.<br><br>Greengate recommends that the AESO focus on its public interest mandate and maintain the current pricing structure at this time. The new method carries risks for loads and for potential new entrants. |
| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Greengate agrees that it is best not to pursue standing offers at this time. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e., it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | Greengate is concerned that moving to a sealed bid auction format will reduce the visibility of offers and, for new participants, provide less information, and therefore increased risk. Pricing in this risk could lead to higher OR prices.<br><br>Market stability is appreciated for new entrants. Changes will cause uncertainty and will impact new entrants joining the market.<br><br>If the market is being manipulated (slide 34), appropriate action should be taken. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously | Greengate agrees with the AESO's proposed approach. |

| | Questions | Stakeholder Comments |
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| | submitted that the AESO should consider on this topic, please provide. | |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | Hourly procurement may be preferrable if it reduces risk for new entrants, including storage. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | Greengate supports the AESO's further investigation of moving to sequential reserve procurement for CR, but has some concerns around the change. The AESO's slide 54 states that potential savings are $1MM per year but that updated offer behavior may impact savings. If the savings are now much less than this level, the AESO should assess if the costs of updating systems and processes outweigh the relatively small prize. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | It is unclear how the changes proposed in the standby market will create value for loads by reducing costs. Can the AESO provide an estimate of the cost savings that may be achieved with the options stated?<br><br>Greengate is uncertain about the value of the change in the standby structure and therefore does not support the change in market structure. If more details can be provided regarding how the "pay as bid pricing structure distorts offer strategy incentives" (page 57), Greengate will be better able to assess the proposed alternatives for mitigating this issue. |

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| **Period of Comment:** | April 12, 2022 through May 13, 2022 | **Contact:** | Kurtis Glasier |
| **Comments From:** | Heartland Generation Ltd. ("Heartland Generation") | **Phone:** | (587) 228-9617 |
| **Date:** | [2022/05/13] | **Email**: | Kurtis.Glasier@heartlandgeneration.com |

Instructions:

1. Please fill out the section above as indicated.
2. Add your feedback to the following comment matrix.
3. Email your completed comment matrix to rules_comments@aeso.ca

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Please note that the AESO will consider the feedback provided here in tandem with the feedback provided following session 1. Therefore, stakeholders should not feel obligated to repeat feedback that has already been provided.

**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

2. *Single-part offers – Premium Price*

Participants submit a single-part offer to WattEx, containing a volume and a premium price. Participants do not submit an activation price. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The premium price of the highest accepted offer will set the uniform premium price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market as they do today and will earn the uniform premium price. The order of activation is less clear than today, as there is no activation price to establish a merit order. One option may be to activate providers from lowest to highest premium. If a provider is activated, they will continue to earn the premium payment. They will also earn the prevailing active reserve price. For example, if a standby provider is activated for spinning reserves during the on-peak time block, that provider will earn the active price index for on-peak spinning reserves plus the energy pool price.

In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | Heartland Generation had anticipated the AESO would provide information to market participants on the level of the proposed OR price cap. The principles and considerations are high-level and therefore easily aligned with market efficiency; however, there is little content for specific comment until more details are presented. The AESO should include in the next session details on how the OR price cap(s) were derived and justified, as well as a mechanism to adjust the price cap level over time to account for inflation/market conditions. |

| | Questions | Stakeholder Comments |
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| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Heartland Generation is supportive of the AESO not pursuing the inclusion of standing offers. It was unclear how equal standing offers would be cleared as they would theoretically come in at the same time. Further, there was clear potential risks regarding the delivery of OR products through the inclusion of standing offers. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | Heartland Generation is opposed to decreased market transparency in general and with regard to this specific proposal. In general, transparency of offers in as close to real time will allow better price formation and informed competition between market participants. It is clear from the principles of fairness, efficiency, and openly competition that the intent is for information to be widely available to all market participants (i.e., fair and open) and that this will lead to increased efficiency. The AESO is attempting to reverse the onus on providing information to the market; the burden of proof should be on why certain information should be withheld from market participants (e.g., citing concerns with confidentiality and/or unduly lessening competitive advantages). The AESO has failed to demonstrate the explicit need to withhold information from the market that is currently public. It is worth noting that the AESO has multiple times indicated that the OR market is working and that structural changes are not warranted.<br><br>Further, the OR market is a completely voluntary and is cleared day-ahead. The offer information that is currently available allows participants to view the supply offer curve (i.e., liquidity) of the OR market. This information better informs participation and allows competition to be better reflected in market conditions (competitive offers are more efficient when reflective of market information). Therefore, removing offer transparency from the voluntary market may harm participation and lead to overall less efficient and less competitive outcomes from fewer participants and/or less informed participation.<br><br>Heartland Generation is not supportive of the draft recommendation. However, if a sealed bid format is being dictated, the information that should be released by the AESO in as close to real-time as possible is the clearing price, the clearing volume, and some indication of the supply curve. Market participants should be able to adapt their offers from the |

| | Questions | Stakeholder Comments |
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| | | closing of one market into their offer strategy in the subsequent markets. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | Heartland Generation remains concerned that the AESO's entire Operating Reserve Market Review is out of sync with industry concerns, as demonstrated by this initiative. The AESO does not appear to be fully addressing the concerns of market participants, or those questions raised by the Market Surveillance Administrator (MSA) regarding directives varying by asset size (e.g., directive bias). It is irresponsible to suggest lowering the qualification and offer size despite the evidence clearly indicating that large assets receive a different directive level. The AESO should be looking to bifurcate the market into large and small providers, as the extent to which directives varies indicates that reserve providers are actually selling two different levels of service.<br><br>This initiative indicates a breakdown of stakeholder engagement and trust between the AESO and market participants. The AESO needs to at a minimum shelf this initiative while it collects its own data using the new directives interface for system controllers. The AESO should then publish data and analysis and hold a stakeholder engagement session regarding market participants and MSA concerns. There are massive concerns with this initiative (directive bias, inconsistency with other markets, reliability, dispatch compliance, penalty/enforcement risks, etc.) which have not been addressed. Heartland Generation remains concerned about explicit market harm and unintended consequences from the pursuit and implementation of this initiative. |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? | Heartland Generation is not supportive of changes to block procurement, at this time. There is little information about what a proposal to change block procurement would look like, and no information on the impacts to market function of the proposal. Therefore, like the AESO has stated, changes to block procurement are not required for market integrity. |

| | Questions | Stakeholder Comments |
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| | Are there alternatives the AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | The AESO indicated that the rationale behind this proposal to reduce the frequency of price inversions when the supplemental reserves (SUP) clearing price exceeds the spinning reserve (SR) clearing price. However, on slide 50, the data indicates that even with the AESO doing nothing the frequency of price inversions has reduced by two thirds in the past four years. Therefore, this initiative to chase the remaining infrequent instances seems unwarranted. The trend is clearly downward every year, indicating there may be even fewer than 30 observations in 2022.<br><br>Heartland Generation agrees with the AESO's conclusion that the frequency of these price inversions is likely declining due to increased competition from new entry in the SUP market. One explanation for SUP clearing higher than SR, in the past events, is due to higher volume clearing in the SR market, meaning there is less volume left in the SUP market (the higher price reflects this scarcity). However, the AESO's solutions would not address this impact, as all or nearly all of the offers in the SR market cleared, therefore this would leave little to no uncleared offers to move into the SUP market.<br><br>Heartland Generation is not supportive of changes to contingency reserve procurement as there seems to be little gain from the stated objective (to reduce price inversions). Further, competitive forces are already addressing the limited concerns with price inversions, the introduction of an administrative solution risks undue complexity and unintended consequences. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium | Heartland Generation has several concerns about the proposed standby reserves pricing and procurement. This proposal introduces more complexity and compliance risk for OR providers.<br><br>The AESO stated that option 1 could use hourly settlement similar to the energy market. The OR market is voluntary and should not be treated the same way as the energy market, where participation is predicated on "must offer, must comply".<br><br>The AESO asked specifically if there is direct or opportunity costs as "the rationale for the premium payment will depend on whether an asset that is |

| | Questions | Stakeholder Comments |
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| | price that can aid in comparing alternatives 1 and 2? | dispatched for standby reserves (and can still participate in the energy market) **faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves** [emphasis added]." There is an implied opportunity cost. If an asset is participating in the energy market, but it would require a premium to participate in the standby, the current bid can reflect that risk. Removing this two-part bid for standby would decrease flexibility and limit a provider's ability to reflect the opportunity cost of being activated on standby (leaving the energy market).<br><br>Given the amount of uncertainty and complexity of the proposals, Heartland Generation recommends that the AESO hold a further session detailing the proposals and allowing stakeholders to ask questions. It would be helpful for the AESO to walk through full market examples (bids, offers, clearing) at the next session. |
| * | Other comments or concerns (**question added by Heartland Generation**) | Heartland Generation remains concerned that the AESO's OR Market Review is disjointed from its intent to increase market efficiency and performance of the OR market. Each initiative that has been proposed has lacked clear justification and evidence that a change is warranted, and in some cases, proposals have been made despite clear evidence of market participant concerns (i.e., minimum qualification and offer size).<br><br>Further, the AESO has not clearly mapped out how this initiative interacts with ongoing consultations on Most Severe Single Contingency (MSSC) and flexibility roadmap (including net-demand variability). While the AESO may intend to deal with these initiatives in isolation, it is clear that there will be interactions between the consultations. Furthermore, a siloed approach lacks a complete vision of what is trying to be achieved through an OR market review.<br><br>Currently, this OR Market review seems without clear direction, where a lot of proposals and topics are raised but without the underlying justification or efficacy of the solution being indicated. The AESO has stated that this review is focused on incremental changes and that the OR market continues to function with no structural changes anticipated. Heartland Generation is concerned that the current changes and proposals could lead to unintended consequences and the undermining of the competitive nature of the OR markets. For the same reason that the AESO has stated |

| | Questions | Stakeholder Comments |
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| | | that benefits from these proposals may be difficult to quantify, the potential harm may also be difficult to predict and/or foresee. It is for that reason that Heartland Generation remains supportive of changes/proposals that are soundly backed by quantitative analysis and measured implementation, including the attributable costs and benefits. The FEOC operation of the market relies on measured and justified changes, which are predictable and incremental. |

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| **Period of Comment:** | April 12, 2022 through May 13, 2022 | **Contact:** | Richard Penn |
| **Comments From:** | Industrial Power Consumers Association of Alberta | **Phone:** | 403-903- 7693 |
| **Date:** | 2022/05/13 | **Email**: | Richard.penn@ipcaa.ca |

Instructions:

1. Please fill out the section above as indicated.
2. Add your feedback to the following comment matrix.
3. Email your completed comment matrix to rules_comments@aeso.ca.

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | IPCAA would like to thank the AESO for conducting this session.<br><br>The AESO's proposed principles are acceptable.<br><br>IPCAA agrees with the AESO's recommendations to:<br>• set the uniform price at the marginal offer price and |

| | Questions | Stakeholder Comments |
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| | | • a transparent bid cap market |
| 4 | Standing offers<br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | IPCAA disagrees with the AESO's recommendation not to pursue standing offers.<br><br>Although participants have indicated that they may not require standing offers it would seem a useful addition at little cost, especially for small OR providers. Providing the tools to increase competition in any market segment is worthwhile.<br>There have been concerns about market participants using standby offers and not removing them. IPCAA believes that the penalties of not supplying OR will ensure standby offers will be removed when necessary. |
| 5 | Offer transparency<br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | IPCAA agree's with the AESO's recommendation to move to a sealed bid format.<br><br>IPCAA is of the view that information should not be released until post procurement to foster a more competitive outcome.<br>Publishing information after the fact will continue to help foster a competitive environment.<br>Tie-breaking should be based on the earliest time of submission, first offer received. |

| | Questions | Stakeholder Comments |
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| 6 | Minimum qualification & offer size<br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | IPCAA agrees with the AESO's recommendation to move to the minimum qualification and offer size to 1 MW.<br>IPCAA believes this will increase competition by attracting small OR providers. |
| *Group 2* | | |
| 7 | Block procurement<br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | IPCAA is of the opinion that the AESO should undertake further analysis to determine if Hourly reserve procurement will encourage further cost savings and encourage greater levels of competition. |
| 8 | Contingency reserve procurement<br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | IPCAA is supportive of the AESO's proposed sequential alternative for contingency reserve procurement. |
| 9 | Standby reserves pricing and procurement<br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can | While IPCAA believes that a single-part offer with an activation price indexed to the pool price may be the best approach, the AESO should undertake further analysis. |

| | Questions | Stakeholder Comments |
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| | still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | |

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| **Period of Comment:** | April 12, 2022 | through | May 5, 2022 | **Contact:** | Mark Nesbitt |
| **Comments From:** | Market Surveillance Administrator | | | **Phone:** | 403-538-3447 |
| **Date:** | 2022/05/05 | | | **Email**: | mark.nesbittt@albertamsa.ca |

Instructions:

1. Please fill out the section above as indicated.
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**Standby Reserve Alternatives**

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With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

2. *Single-part offers – Premium Price*

Participants submit a single-part offer to WattEx, containing a volume and a premium price. Participants do not submit an activation price. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The premium price of the highest accepted offer will set the uniform premium price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market as they do today and will earn the uniform premium price. The order of activation is less clear than today, as there is no activation price to establish a merit order. One option may be to activate providers from lowest to highest premium. If a provider is activated, they will continue to earn the premium payment. They will also earn the prevailing active reserve price. For example, if a standby provider is activated for spinning reserves during the on-peak time block, that provider will earn the active price index for on-peak spinning reserves plus the energy pool price.

In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | |
| 4 | Standing offers<br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's | |

| | Questions | Stakeholder Comments |
|---|---|---|
| | draft recommendation to not pursue this change at this time? | |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | The MSA submits that the principles considered when drafting the *Fair, Efficient and Open Competition Regulation* should also be considered here: namely, "to strike an appropriate balance between market participant commercial information sensitivity and adding to a transparent and information-rich environment to support a fair, efficient and openly competitive market."[1]<br><br>The publication of operating reserve offer information 60 days after the relevant delivery date would align with the publication of energy offers to the power pool, section 6 of the *Fair, Efficient and Open Competition Regulation*, and the Alberta Utilities Commission decision in proceeding 21115 regarding the Historical Trading Report.[2] Before coming to a conclusion on offer publication, stakeholders may find it useful if the AESO undertakes an economic analysis of the impact of offer price information on the operating reserve market and presents this information for public discussion. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement | |

[1] Alberta Utilities Commission Exhibit 21115-X0082, Opening statement of the MSA, Appendix A: Alberta Department of Energy white paper on implementation of policy enhancements, dated January 8, 2008, PDF page 44.
[2] Alberta Utilities Commission Decision 21115-D01-2017 (May 17, 2017).

| | Questions | Stakeholder Comments |
|---|---|---|
| | would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | |

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| **Period of Comment:** | April 12, 2022 through May 13, 2022 | **Contact:** | Dave Cartwright |
| **Comments From:** | Millar Western Forest Products Ltd. | **Phone:** | 780-778-2036 Ext. 4269 |
| **Date:** | 2022-05-09 | **Email**: | DCartwright@millarwestern.com |

Instructions:

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | N/A |
| 4 | Standing offers<br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's | We support AESO's decision to not pursue this change at this time. |

| | Questions | Stakeholder Comments |
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| | draft recommendation to not pursue this change at this time? | |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | Having offer visibility allows a Facility to know in advance whether procuring reserves is possible. There are instances when the MW's being procured for a given day are already filled at significant pricing (-999.99) well in advance of the market closing. This information is valuable as it allows Facilities to make operating decisions, and what power programs they may participate in, ahead of the market closing.<br><br>Having the ability to have an offer block being fully accepted, and not partially filled, would enable participation. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | N/A |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would | We believe the current block procurement strategy (eg. on and off peak hours) would maximize our participation in reserves due to the commitment certainty for operations. |

| | Questions | Stakeholder Comments |
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| | still be effective with hourly procurement? Are there alternatives the AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | N/A |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | N/A |

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| **Period of Comment:** | April 12, 2022 | through | May 5, 2022 | **Contact:** | Horst Klinkenborg |
| **Comments From:** | Suncor Energy Marketing Inc. | | | **Phone:** | (403) 819-7125 |
| **Date:** | 2022/05/05 | | | **Email**: | horst.klinkenborg@suncor.com |

Instructions:

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | Suncor is supportive of removing the equilibrium price mechanism and setting the uniform at the marginal offer instead.<br>Suncor does not believe there to be a need for a price cap. The market is sufficiently competitive to prevent market power abuse. Given the voluntary nature of the market and the AESO's procurement requirement, the risk of not clearing sufficient volumes due to a too low cap is not justifiable. |

| | Questions | Stakeholder Comments |
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| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Suncor agrees that standing offers should not be pursued at this time. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | Suncor is only supportive of a sealed bid format, if immediately after market close the entire offer stack is made visible to the market to inform participation in subsequent auctions occurring on the same day. Otherwise, the current open format is preferred.<br><br>The OR market is not comparable to the energy market where pricing and dispatch levels of all participants are available in real-time. This information is considered by participants when offering into the next auction, *i.e.* the energy market 2+ hours out.<br><br>Equal offers should be pro-rated among participants. If straight proration is not possible, then the split that is closest to the pro-rata outcome should be selected. If there is not a unique split meeting this criterion, the AESO should randomly decide between all splits that best meet the criterion.<br><br>Inflexible blocks would not significantly impact Suncor's ability to participate. However, Suncor is concerned about how an implementation of inflexible blocks could impact the market. As such, inflexible blocks should not be considered without further consultation. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | Suncor submits that until the AESO's size-bias when directing units has been adequately addressed, *i.e.* until ex-post analysis shows that there is no longer a bias, it would be irresponsible and unjustifiable to decrease the current minimum qualification limit. |
| *Group 2* | | |
| 7 | Block procurement | Suncor sees no benefit from moving to a day-ahead procurement |

| | Questions | Stakeholder Comments |
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| | Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | for hourly reserves. If there is any benefit from hourly procurement, it should be done in real-time, which would constitute a major change. Any consideration of this would likely require a major stakeholder initiative.<br><br>Hourly procurement should not be considered at this time. There is insufficient information to evaluate various hourly procurement alternatives. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | Suncor does not believe either approach should be pursued. OR participation is voluntary and should remain so. That includes that participants willing to offer SR should not be mandated to offer SUP or to be limited in their choice of offer price if they do elect to participate. While any unit capable of providing SR can provide SUP, the products are not the same and a provider should have the choice to only participate in SR.<br><br>Suncor further believes that neither alternative would address the AESO's observed inversions as uncleared SR offers would inherently have a higher offer price than cleared SR offers. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | Suncor opposes the first alternative and can potentially support the second alternative where standby providers compete for the premium and receive the prevailing activation price when activated, depending on the implementation details.<br><br>A standby provider is providing the AESO with an option that has value, even if it is not exercised, which justifies the premium.<br><br>Without a premium, a standby provider that is not activated receives no revenue despite incurring overhead cost. While such a provider can still participate in the energy market, remaining ready to be activate comes at a cost – particularly since it also attracts penalties in cases of non-compliance. |
| *Other* | | |

| | Questions | Stakeholder Comments |
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| 10 | Are there additional issue that should be considered during the Operating Reserve Market Review? | Suncor has several concerns around the conscription of ancillary services, which should be considered as part of this process.<br>• Anecdotally, the frequency of conscription seems to have increased. It would be helpful if the AESO could provide some statistics related to conscription to aid in identifying whether there is a concern related to market procurement.<br>• The process for market participants to receive payment for the conscripted service is cumbersome and inappropriate and should be revisited.<br>• The payment for conscripted reserves is insufficient. At a minimum, the payment should be the greater of the corresponding active and standby product value for the full hour for any hour in which conscripted volumes are dispatched, which it is currently not. More appropriately, conscripted participants should receive a premium over the payment received by participants that willingly contracted to provide the service. |

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| **Period of Comment:** | April 12, 2022 | through | May 13, 2022 | **Contact:** | Akira Yamamoto |
| **Comments From:** | TransAlta Corporation | | | **Phone:** | 403-267-7304 |
| **Date:** | 2022/05/13 | | | **Email**: | akira_yamamoto@transalta.com |

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With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

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| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | ***Price caps should be highest for regulating reserves and lowest for supplemental; the caps should be reflective of the value of lost load and the capability of the reserve product to avoid shortages***<br>The OR price caps should be reflective of the value of the reserve product in avoiding load shed. In this respect, the price caps for the highest value reserve product (regulating reserve) with the most stringent requirements should be higher than the lowest value contingency reserves product (supplemental) – this is generally consistent with the current approach. |

| | Questions | Stakeholder Comments |
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| | | The price caps for the OR markets should reflect their value independent of the energy market – they need to reflect the shortage pricing and should not be capped at the pool price offer cap. Going forward, as the market becomes dominated by zero dollar offer renewables with more frequent instances of supply surplus, tying OR market pricing to energy market pricing could impose more price uncertainty risk that could discourage OR participation. For these reasons, TransAlta strongly believes that the OR market price caps need to be able to reflect the difference between the price for energy and the price for reliability. Otherwise, the market will not be able to provide the appropriate signal to incent investment into reliability over the long run.<br><br>The best approach would be to derive these cap levels with consideration of the cost to consumers and the electricity system as a consequence of an operating reserve deficiency. For example, this could be derived from the value of lost load and the unique capability or value of using the specific reserve product in addressing or otherwise reducing the probability of scarcity and shortage events.<br><br>***The economic principles are sound but the AESO should be measured in hypothesizing considerations for a market design that is clearly functioning and competitive***<br><br>TransAlta generally agrees with the economic principles and we agree that the framework for operating reserves should be open and transparent. We also agree that the AESO's discretion and role in the market should be limited to ensure predictability and stability in the market. We note that the considerations that the AESO has inserted beside each economic principle are not economic principles but rather hypotheses about how changes might impact each economic principle. We also note that they are all untested hypotheses. TransAlta recommends that the AESO take care in terms of conflating its "considerations" as economic principles and it should generally avoid treating a functioning market design as a test bed for market design experiments. |
| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | ***Standing offers should not be pursued; the AESO should provide historical statistics about conscription rates which we believe are increasing and could be signaling an important issue with operating reserves***<br><br>Yes, TransAlta supports the AESO's recommendation not to pursue standing offers. However, our support for this recommendation is not based upon the AESO's proposed changes to other design elements such as block procurement or standby procurement. TransAlta sees no benefit in pursuing standing offers and we see the proposal as increasing the risk of more conscription when less reliable supplier "standing offer" resources clear procurements and take on reserve commitments that they are not prepared to honour. Based on this view, we do not support standing offers at this time or in the future, irrespective of whether the AESO pursues any other changes that it has proposed in this operating reserves market review. |

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| | | Additionally, TransAlta raises the concern that we are seeing rising conscriptions. A pattern of increasing conscription could indicate an issue with the AESO procurement approach including patterns of under-procuring volumes, an overreliance on poorly performing resources, and/or a preference by the AESO to circumvent the competitive process. Any or all of these issues would be significant concerns that ought to be a focus of this review rather than the poorly scoped changes that comprise the list of items that the AESO has selected for this review.<br><br>TransAlta has specifically requested conscription data with respect to our own assets, which we have yet to be provided. Further, TransAlta asks that the AESO publish statistics on the historical rates of conscription as we are concerned with the lack of transparency regarding conscriptions, which may highlight a more pressing and important concern about the way operating reserves are working today. More specifically, we request the AESO provide at least five (5) years of historical data including the amount of operating reserves conscripted, and by asset type (e.g., hydro, coal, gas, etc.) and asset size (e.g., small (≤ 10 MW), medium (>10 MW, ≤ 50 MW) and large (> 50 MW)). |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received. | ***The AESO's proposal for sealed bid should be rejected***<br><br>TransAlta does not support the implementation of the draft recommendation to adopt a sealed-bid format for the OR market. The adoption of a sealed-bid format removes the only scarcity price signal participants have (i.e., offers price and volumes within the auction) which reduces competition and increases levels of real-time directives and risks of conscription.<br><br>The AESO's justification to recommend a sealed bid does not consider the myriad of other options that could have been pursued to address any real concern with latency. In fact, the AESO's proposal raises significant concerns about market transparency, price signals and providing information during the auction process that encourages competition. These concerns are likely to result in reduced competition and market inefficiency.<br><br>The latency concerns raised by the AESO could be addressed by activity-based requirements that require suppliers to put in offers earlier but preserve the dynamic of the auction process. During the stakeholder session the AESO admitted that it could consider a descending clock format like that which is used by Regulated Rate Option providers who also conduct their auction on the WattEx platform. However, the AESO has predetermined that other auction formats are more complex and excluded any consideration of them. We view the latency issue as rare and infrequent, and certainly not at a level that would justify the complete abandonment of the auction process in favour of an opaque, non-transparent seal bid format. The AESO's views on the significance of its concerns are undercut by its own admission and historical and current evidence that the operating reserves market functions, has robust competition and new entry, and provides |

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| | Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | price signals so that participants can make their own informed decisions to participate.<br><br>***Removing day-ahead offer transparency does not support competition and will impact the procurement of sufficient operating reserve volumes leading to increased instances of conscription***<br><br>As noted in its previous comments, in the AESO's analysis of historical pricing, OR prices have remained constant or declined. This does not support a conclusion that there is any collusion between market participants or behaviour that drives up prices. Rather, the availability of full offer visibility on WattEx drives strong competitive tension and has the effect of driving offers and prices down.<br><br>Providing clearing price information following procurement does not enable participants to adjust offer price or volume within the auction process itself which may lead to insufficient volumes being offered and the need for the AESO to conscript in real-time. The AESO should be wary of eliminating the availability of offer price and quantity information, as they have done in the energy market, as the operating reserves market and its procurement is significantly different.<br><br>Relevant key differences between these markets are: (1) the energy only market has mandatory participation requirements through the "must offer, must comply" requirement and the operating reserves market is voluntary; (2) operating reserve products are premium products compared to energy and are necessary to ensure the ability to meet real-time supply and demand balance; (3) the operating reserves market is day-ahead whereas the energy market is real-time; and (4) the operating reserves market procures block products whereas the energy market is hourly energy and dispatches based on system marginal price intra-hourly. These key differences need to be taken into account because they imply that the markets have different risks, obligations and access to information, and they dictate different conclusions about the information needs of participants.<br><br>More specifically, the operating reserves market needs greater transparency because participation is not assured and market participants evaluate for themselves whether the opportunities are attractive enough to pursue. The requirements for reserves products are more stringent than energy, which also means that the risk of supplying them is also commensurately higher. Day-ahead decisions face greater uncertainty than real-time decisions; day-ahead decisions require greater foresight and entail making guesses about future conditions whereas close to real-time decisions can be made with better or more available information about real-time conditions. Energy market participants can adjust offers every hour T-2 whereas OR providers can trade up to 6+ days ahead of execution. The AESO provides complete information on energy market supply, publishing in real-time the availability of all fuel types with hourly granularity for the next week. For example, the Current Supply and Demand Report on the AESO website provides participants detailed |

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| | | information regarding the current supply and demand volumes in real-time. In contrast, there is very little information that is available in the day-ahead timeframe in which OR trades but for offer prices within the auction.<br><br>Transparency of offer prices and quantity information prior to the closing of the day-ahead procurement is the only signal participants have that the market requires addition supply. The transparency of offer prices acts as a scarcity signal indicating the price levels and offered supply volumes which helps participants to evaluate the potential magnitude of the opportunity to earn revenues and attractiveness (competitiveness) of the market with respect to supplying a reserve product. The AESO's proposal to only publish price and total volume does not provide sufficient information to potential suppliers, as the supplier has poor information about the supply stack and without that information may make a poor evaluation of its own competitiveness against the offers of other supplier in the supply stack. Offer price transparency as currently occurs within the dynamics of the day-ahead auction process also provides a bridge of additional information to suppliers to evaluate/re-evaluate their expectations about next day real-time pricing.<br><br>To provide more context to the concerns that we have with the AESO's proposal, we offer an example in which OR is being traded for a 4-day extended weekend package. We use this example because a multi-day package requires a market participant to make determinations over an extended period and a resultant under-supply in the market can result in a highly concerning, multi-day deficit. Under the current approach, market participants can see the supply stack and, any time prior to the close of the auction, respond to any potential undersupply by adding additional volume while competing on offer price against other participants. Under the AESO's proposed seal-bid approach, the market participant has no price signal or information about the supply stack and cannot/will not respond any undersupply condition. In fact, the first time that the market would even know that it was undersupplied is after the market closed. The AESO is then forced into a position where it must conscript resources to meet its 4-day needs. While the AESO plans to release some information after the fact, this information is of no use to prevent or mitigate the consequence of an under-procurement and has limited information value to suppliers because it could only be responded to in the next auction for that product (even this information is not helpful because supply conditions can vary dramatically from auction to auction). The AESO's proposal imposes an unnecessary lag in information release such that it significantly and adversely impacts market efficiency, dilutes any value in the information provided because it is poor quality information and drives poor decision making that could imperil system reliability.<br><br>TransAlta cannot reconcile how the AESO can identify the importance of OR price signals, both as a guide for efficient capacity allocation and as an indication of the scarcity of reserves, at the same time that it proposes removing OR price signals in their entirety with the sealed bid format. By |

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| | | removing offer price as a scarcity signal the incentive to offer when the market needs more supply is lost. The removal of this scarcity signal goes against the AESO's stated purpose of reliability and leads to an increase in directives in real-time. The overall effect of removing offer transparency reduces competition and reliability, increases the risk of under-procuring OR, and will result in the higher likelihood of conscription. Again, we reiterate that patterns of rising conscription is a concern and a matter that the AESO should be providing information on as this could be a sign of dysfunction in AESO procurement processes and practices, and OR utilization. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | ***The AESO has not sufficiently explained why the current aggregation approach for small resources does not work***<br><br>Under the existing market design, small resources can be aggregated to participate in the operating reserves market. This approach does not require operating reserves thresholds to be modified, allows for the qualification of small resources in the operating reserves market and allows aggregators the ability to customize their own technological platforms to enable small resource participation without forcing the AESO to change its existing system, practices or approach in operating reserves. There is currently no barrier for small resource participation that demands the AESO to make any changes.<br><br>We further note that the aggregation participation model that Alberta currently has is aligned with the model that Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) in the US are implementing in response to FERC Order 2222 to level the playing field and permit DER participation, and not the direct DER participation model that the AESO is proposing. The DER participation model is difficult to manage, necessitates other changes and likely higher cost than this aggregation approach (the aggregation approach has already been implemented and requires no additional cost).<br><br>In fact, a significant percentage of specified penalties that are associated with operating reserves performance are related to small providers.[1] The AESO should be concerned with this pattern of performance, whether it is being reasonable about its tools to effectively manage a system that dispatches very small units and monitor compliance, and should seriously consider whether small resources are reliable enough as operating reserves providers. At the very least, the AESO should not be dismissing the costs for monitoring and investigating compliance with respect to small providers given this historical experience. |

[1] Voltus Energy Canada Ltd. and EnerNOC Ltd., which are two aggregators of small operating reserve providers, account for approximately 47% or $142,000 of the all specified penalties for ISO Rule violations for operating reserves (ISO Rules 205.3, 205,4, 205.5 and 205.6) from 2017 to 2021.

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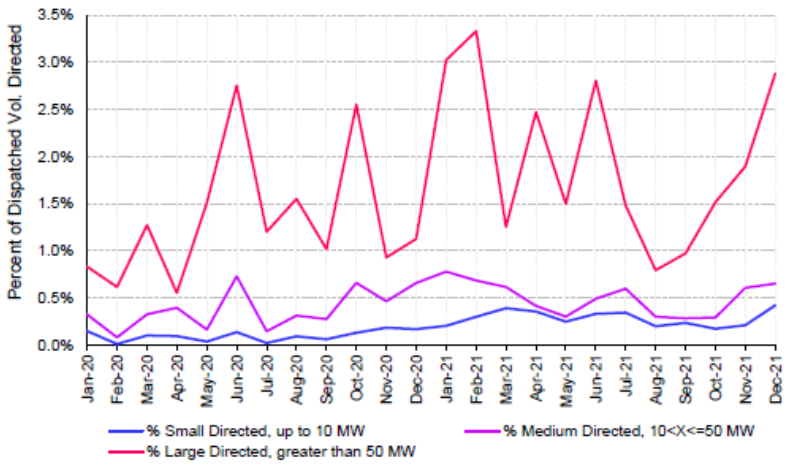
| | | ***The historical data on directive rates clearly demonstrates that there are significant differences between the products provided by large and small providers***<br><br>The Market Surveillance Administrator (MSA) published concerning statistics in the Quarterly Report for Q4 2021[2] (the "MSA Q4 2021 Report") that substantiate the significant issue that TransAlta has raised in our previous submissions in the DER market participation consultations and session 1 of this initiative.<br><br>The AESO's "directives are most frequently issued to contingency reserves resources that are larger".[3] The directive rates for large resources appear to be up to 6-13 times higher than small resources.<br><br>*Figure 29: Dispatched contingency reserve directed by size (Jan. 2020 to Dec. 2021)*<br><br>  <br><br>Directive rates also appear to discriminate based on technology type. The MSA states, "Hydro assets were generally directed more frequently than other fuel types, while load assets were directed less. Battery assets, which are highly responsive but generally smaller in size, were not directed with significantly higher frequency compared to other fuel types, suggesting that asset size is also important."[4] |

[2] https://www.albertamsa.ca/assets/Documents/Q4-2021-Quarterly-Report.pdf
[3] Page 36, MSA Q4 2021 Report.
[4] Page 34, MSA Q4 2021 Report.

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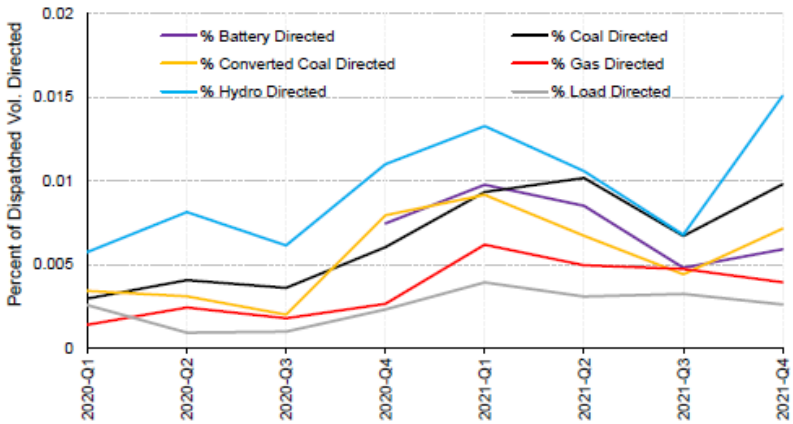
| | | *Figure 28: Dispatched contingency reserve directed by fuel type and quarter (Q1 2020 to Q4 2021)*<br>  <br><br>During session 2, the AESO suggested that it has initiated "interface updates" to assist system controllers in issuing directives to providers and then argued that it was under no obligation to issue directives equally to contract providers. The AESO offered no details about what the "interface updates" are or how those updates would address any concerns about fairness of directives particularly in light of the AESO's view which contradicts any acknowledgment of the issue including a reluctance to provide explanation as to clear patterns of directive preference between asset sizes.<br>***If the AESO continues down this path, a new pricing framework should be implemented to reflect the vastly different operating reserves services provided by large providers***<br>The AESO cannot use the same pricing mechanism if the operating reserves products themselves have such different directive rates. If the AESO chooses to continue down this path, the AESO should immediately commence design of a new pricing construct for operating reserves products that clearly reflects the higher value and risk for large assets versus small assets. |
| *Group 2* | | |
| 7 | Block procurement<br>Please comment on whether block procurement or hourly procurement would | ***A change to hourly procurement will require substantial changes and should not be pursued at this time***<br>TransAlta does not see any reason to modify from the current block procurement to an hourly |

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| | maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | procurement approach. In fact, we see a significant amount of additional complexity, and system development will be needed to enable hourly procurement. Our initial thoughts are that hourly procurement for a market participant will increase the complexity of making offers and coordinating operating reserves and energy offers, and increase the resource needs required to actively participate in the market which will in turn erect a barrier to entry.<br><br>We are also concerned that hourly procurement diminishes the value and certainty provided by the current block procurement approach that makes offering operating reserves attractive associated with block procurement because it raises the risk that an asset is accepted in some hours but not in others. Moreover, we expect that hourly procurement could further result in greater conscription of more reliable providers and further widen the differences in directive rates between small and large providers<br><br>OR providers are likely to respond by pricing in additional premiums to address this risk as well as recoup the additional resourcing costs necessitated by shifting to hourly procurement.<br><br>We ask the AESO to provide significantly more detail about the exact mechanics of hourly procurement with specific illustrative examples so that we can understand the proposal and provide helpful comments. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | ***The operating reserves market should remain a voluntary market; the AESO's proposal to force an unsuccessful spinning reserves volume into supplemental reserves should be rejected***<br><br>The operating reserves market is a voluntary market and should, in principle, remain a voluntary market. The AESO's recommendation to impose a new requirement that a provider that is unsuccessful in the spinning reserve procurement be required to participate in the supplemental reserve procurement violates the voluntary nature of the market design.<br><br>The AESO's proposal amounts to conscription and imposes upon market participants' right over the discretionary use of their assets. A participant may have many reasons, including operating and risk consideration reasons, why they chose spinning reserves and do not want to participate in supplemental reserves. For example, a participant that operates an energy constrained asset may prefer to reserve its capacity and energy for another time period when it may have greater value. But under the AESO's proposal it could be forced to clear with a supplemental reserve obligation, which would necessitate the market participant to commit its assets to low value uses and/or otherwise rebalance its portfolio in a suboptimal optimization in order to meet an obligation that they had no interest in taking in the first place. This type of loss of discretion for the market participant increases its risk with respect to participating in the operating reserves market and could |

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| | | dissuade participation. Another example could be a participant may have violations of the supplemental reserves performance requirements and do not want to face escalating penalties for repeated offences for that category of reserve. These concerns cannot be resolved with the AESO's proposal to allow the provider to increase its volume or decrease its price in supplemental reserve, the provider doesn't want to a supplemental reserve obligation and would prefer not to participate in that product.<br><br>Overall, the AESO's proposal undermines the existing structure of the standby reserve procurement process. The AESO should not be designing a market construct that forces market participants, that may prefer to offer and supply the most stringent and valuable reserves products (i.e., regulating and spinning), to offer the least valuable reserve product with the least stringent technical and performance requirements. There is no dearth of suppliers or lack of competition in the supplemental reserve product that may suggest an issue that needs to be addressed with the AESO's proposal. Furthermore, this regulatory overstep will drive inefficient market outcomes and squander the use of resources that are efficiently incentivized under the current structure to seek out their highest value use. Infringing on the voluntary nature of the reserve market is highly consequential and is likely to deter participation in the standby markets, reduce competition, and could negatively impact system reliability.<br><br>***The AESO should provide the data and analysis it used to estimate a $1 Million/year savings for sequential procurement***<br><br>Furthermore, we doubt that the AESO's estimate of a $1 Million/year saving is realistic or representative of an ongoing savings. We ask the AESO to provide its data and analysis of its estimated potential saving ($1 Million/year) using the sequential approach. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still | ***The AESO should provide illustrative examples of its proposal so that they can be fully understood before requiring market participants to express their support for either alternative***<br><br>At the outset, TransAlta supports the current approach, which we believe encourages operating reserves participation, supports competition and achieves the desired objective of procuring sufficient standby reserves to maintain reliability. The blended price approach that includes premium and activation price components allows participants to set a premium that is attractive enough to incentivize participation to offer into the market and the fixed activation offers price certainty in the event of activation independent of pool price. The pay-as-bid pricing structure ensures that loads pay the least cost by only paying suppliers the price they deem they require through their offers and does not require loads to pay all suppliers the highest marginal price. |

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| | participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | The AESO's proposed alternatives are not clear and do not appear to be fully fleshed out. TransAlta asks the AESO to provide illustrative examples that walk stakeholders through the mechanics of what is proposed and the problem that they are seeking to address. We note that the current approach was developed by the AESO, is understood by participants and has been in place for a considerable amount of time. To claim that the approach creates uncertainty and price risk, is too complex and distorts offer strategies, ignores the fact that these were known potential risks when this design was selected and that these alternatives could have been considered and implemented before. The AESO has failed to explain what has changed to raise concerns or doubt about the sustainability of the design, what is broken now or likely to break in the future and why it is necessary at this time to adopt a different approach.<br><br>TransAlta provides the following preliminary views on the AESO's proposals. As explained above, we may not fully understand the AESO's proposals and reserve the right to provide further comments once the AESO responds to our request for illustrative examples that better explain the proposed alternatives.<br><br>• Single part offers with only an activation price provides limited incentive to participate and would likely drive down supplier interest and competition.<br><br>• To compensate for the lack of premium and the uncertainty around being activated, the activation price would require a significant premium to active markets. If anything, the combination of clearing price and lack of a premium could drive up the cost of standby reserves.<br><br>• The activation price only proposal drives greater complexity and likely requires new investment into the AESO's settlement tool and process. As noted by the AESO it will require the development of a new process to determine an activation price index, and participants will need to update their own systems and processes to enable the tracking of cash flows in real time. Ironically, the imposition of these changes is being justified in the name of simplicity when in fact this proposal would add complexity and drive unnecessary cost.<br><br>• Single part offers with only a premium price may provide an incentive to participate but a higher price cap would have to be raised as a premium is necessary to compensate suppliers for not being able to set their own activation price.<br><br>• The proposal to use the prevailing active reserve price is problematic because that price is determined by participants that are offering block products and have the certainty of earning that price over all hours of the block product. The standby provider does not have that certainty therefore the use of active reserve price imposes a new risk on suppliers. The premium would need to be even higher and certainly higher than the current approach.<br><br>• The lack of activation prices to determine activation order combined with the AESO's proposal to activate based upon premium and to base activation compensation on the active reserves |

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| | | price reduces any benefit from paying a uniform premium price that reflects the higher offer. Typically, such a model would incentivize suppliers to offer as low as possible but suppliers could actually seek higher premium prices to compensate for the unnecessary risks that they are forced to accept because they can't determine their own activation offer price as contemplated in the current model.<br><br>Overall, TransAlta supports the continuation of the existing model. We are not convinced that there is any need to change at this point and without further justification for the need for change we see this as an unnecessary market initiative.<br><br>***There are direct and opportunity costs associated with providing standby reserves***<br><br>Yes, there are other opportunity costs associated with providing standby reserves including the forgone opportunity to sell active reserves in the same or different operating reserve products. Units with a standby commitment are often running in a comparable state of readiness as they would for active reserves. There are also direct costs associated with labour, fuel and systems that are incurred to be ready when a standby reserve is activated. This includes the need to run an asset at a higher level than it would otherwise run at without the standby reserve obligation, which consumes fuel or water and is suboptimal operating level relative to the real-time energy price but for the compensation it receives (through the premium) in the standby market. |

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| **Period of Comment:** | April 12, 2022 | through | May 13, 2022 | **Contact:** | Mark Thompson |
| **Comments From:** | TransCanada Energy Ltd. (TCE) | | | **Phone:** | 403-589-7193 |
| **Date:** | 2022/05/13 | | | **Email**: | markj_thompson@tcenergy.com |

Instructions:

1. Please fill out the section above as indicated.
2. Add your feedback to the following comment matrix.
3. Email your completed comment matrix to rules_comments@aeso.ca.

Information from the slide deck presented during the Stakeholder session and available on aeso.ca may provide additional information that will be helpful in completing the below matrix.

Please note that the AESO will consider the feedback provided here in tandem with the feedback provided following session 1. Therefore, stakeholders should not feel obligated to repeat feedback that has already been provided.

**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

Participants submit a single-part offer to WattEx, containing a volume and a premium price. Participants do not submit an activation price. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The premium price of the highest accepted offer will set the uniform premium price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market as they do today and will earn the uniform premium price. The order of activation is less clear than today, as there is no activation price to establish a merit order. One option may be to activate providers from lowest to highest premium. If a provider is activated, they will continue to earn the premium payment. They will also earn the prevailing active reserve price. For example, if a standby provider is activated for spinning reserves during the on-peak time block, that provider will earn the active price index for on-peak spinning reserves plus the energy pool price.

In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | As per our comments on this initiative dated January 7, 2022, our feedback will depend on the proposed price cap. TCE does not disagree with the proposed principles. However, while parties may agree with the principles, they may not agree that the proposed price cap aligns with those principles. |
| 4 | Standing offers<br>In light of potential changes to other design elements, such as block | Yes, TCE is generally indifferent with respect to whether or not standing offers are made available for operating reserves. |

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| | procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | TCE reiterates its prior comments and requests further information. Specifically, under the AESO's proposal, will the AESO continue to release its volume targets for each of the products in the same manner that it does today? |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | The comments TCE provided after the first session remain unresolved.<br><br>Is the AESO able to partially dispatch a 1 MW facility for regulating reserves or would the dispatch become a binary on-off decision for such units? |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured | TCE has no comment at this time. |

| | Questions | Stakeholder Comments |
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| | simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | TCE does not support the AESO's proposed sequential alternative. TCE notes that the AESO's proposal mitigates the identified issue, but does not solve it. Our concern is that this alternative will remove generator flexibility.<br><br>The current procurement provides a small window between the auctions and allows generators to act on new information that may arise. The AESO's proposal would remove that window. This may require a generator to unnecessarily FM a facility, which would cause the AESO to be short of MWs.<br><br>Overall, the issue identified by the AESO appears to be very small and would likely be corrected by market forces over time. TCE submits that the loss of generator flexibility is a larger concern. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | Linking these products to pool price makes them more attractive to market participants, which should improve the competitiveness of the products. |

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| **Period of Comment:** | April 12, 2022 | through | May 5, 2022 | **Contact:** | Tory Whiteside |
| **Comments From:** | URICA Asset Optimization | | | **Phone:** | 403.689.7243 |
| **Date:** | 2002/05/05 | | | **Email**: | Tory.whiteside@urica.ca |

Instructions:

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

*2. Single-part offers – Premium Price*

Participants submit a single-part offer to WattEx, containing a volume and a premium price. Participants do not submit an activation price. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The premium price of the highest accepted offer will set the uniform premium price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market as they do today and will earn the uniform premium price. The order of activation is less clear than today, as there is no activation price to establish a merit order. One option may be to activate providers from lowest to highest premium. If a provider is activated, they will continue to earn the premium payment. They will also earn the prevailing active reserve price. For example, if a standby provider is activated for spinning reserves during the on-peak time block, that provider will earn the active price index for on-peak spinning reserves plus the energy pool price.

In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | While the change to remove equilibrium pricing and set the uniform price at the marginal offer price would require this modification. However, the AESO didn't provide any clarity as to how this mechanism would work from a functional sense. URICA agrees would suggest that the AESO's considerations while theoretically sound are open ended. Without some idea of what the evaluation of these principles will look like from a quantitative perspective, URICA is unclear as to how the current proposed price methodology can be objectively evaluated. |

| | Questions | Stakeholder Comments |
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| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Yes – the "potential" changes, which URICA are not in favor of, will only increase the risk of using standing offers. Therefore, URICA wholeheartedly supports the draft recommendation to not pursue this change. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | Historically participants in the Operating Reserves market have been able to see the real time offers from other participants and the resulting offer stack – moving to a sealed bid format would take away this information – seeing the clearing price without actual offer info would be like participating in the ICE NGX market and not seeing anything but the settled prices for the day. Currently reporting on commodities and OR for non-participants provides a similar level of detail, while entities participating in these trading markets generally see a greater level of detail that guides their participation and offers.<br><br>As previously noted by URICA, moving to a sealed bid format is unlikely to lead to greater market efficiency given that participants under the Sealed Bid format would only be able to consider their own costs in their offers and would have reduced transparency to competitive forces in the market. In this situation, there is no visibility of competitive forces at play, and in fact, the Sealed Bid methodology could lead to a less efficient outcomes. Therefore, URICA believes that if the AESO is determined to move to the Sealed Bid approach that the reporting provided should have a greater level of detail than the existing operating reserve price reports including offer prices and volumes similar to the information available to market participants today.<br><br>Moving down this pathway without a plan to break ties, seems to support that this change has not been fully fleshed out and cannot be guaranteed to promote market efficiency – it would be URICA's belief that changing the minimum qualification and offer size would be an initial step in the process and that reviewing the results of those initial changes prior to determining the need for a sealed bid process would be prudent. |

| | Questions | Stakeholder Comments |
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| | | URICA would not directly see more appeal to participate based on offers only being fully accepted vs. not accepted. However, giving entities the opportunity to mark their offers as inflexible blocks could have benefits to other participants. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | While URICA is not against allowing a reduction to minimum qualification & offer size and is supportive of this change from a holistic perspective in that it may allow a larger group of assets (generation and load) to participate in the market. URICA still believes that this will not provide any long term efficiency as the economies of scale and cost/benefits of participation in the market are not supportive of smaller assets making the investments to stay in the OR market over the long term. |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | The AESO has continuously stressed that the proposed design changes are expected to enhance competition and ensure that the operating reserve markets are functioning efficiently in the short and medium-term. To this end, many of the Group 1 initiatives are focused on trying to simplify the OR bidding/participation processes and theoretically enhance efficiency. To this end, URICA is confused as to why the AESO is considering introducing an hourly simultaneous process that no one has seen/used before while trying to simplify frameworks to enhance participation. This change seems somewhat counterintuitive at this time, especially as the potential cost/savings have not been determined. Moreover, at this point the details of how this would work are extremely vague. URICA does not support a move to hourly procurement at this point in time. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the | No – in general this concept is somewhat irrational based on the structure of the market. Currently the Energy market is a must offer market and the Operating Reserves market is a may offer market. Assuming that the volumes and pricing offered into the Spinning Reserve market will then be a forced must offer into the Supplemental Reserves market this does not align with the |

| | Questions | Stakeholder Comments |
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| | AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | construct of the market; furthermore, URICA is confused as to why this mechanism is necessary – the AESO is basically taking an edge case where SUP clears above SR and determining that this requires a change to the procurement structure. The AESO's comment that the current sequential auction format is "susceptible" to this outcome is a bit of stretch based on the market results over the last 17 months. Also, as the AESO is reducing minimum volumes for participation, this should exacerbate the current downward pricing trends in the SUP market. In fact, the AESO states, "The frequency of these price inversions has been declining, likely due to new entry in SUP creating more competition" In general, URICA believes that this change is not required and the AESO should continue with the existing procurement structure. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | URICA believes that the rationale for changing the existing formula has not been clearly established by the AESO. Outside of the fact that the AESO believes that the pricing received for Standby activations is greater than Pool Price – which is an unavoidable outcome from the pay-as bid pricing structure and day ahead price risk of the existing real time energy market versus the day ahead OR market.<br><br>URICA believes that deeper analysis needs to be performed by the AESO and shared with market participants in order to address any potential market inefficiency that exists within the existing structure before moving forward with any proposed changes.<br><br>However, if the AESO moves ahead with this change, URICA would prefer to move towards Option 2 – in this form the known activation price would reduce risk, that said if day ahead active prices are not attractive, this structure could reduce participation on many days. Again, further analysis and examples including data and market outcomes are required to evaluate the options presented. |

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| **Period of Comment:** | April 12, 2022 | through | May 5, 2022 | **Contact:** | Murray Hnatyshyn |
| **Comments From:** | Versorium Energy Ltd. | | | **Phone:** | 403-437-9563 |
| **Date:** | 22 April 2022 | | | **Email**: | murray@versoriumenergy.com |

Instructions:

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**Standby Reserve Alternatives**

Based on feedback received in the session, more detail is provided here on the pricing and procurement alternatives for standby reserves.

*1. Single-part offers – Activation Price*

Participants submit a single-part offer to WattEx, containing a volume and an activation price, which is indexed to the energy pool price. Participants do not submit a premium price offer and no premium is paid. In this way, the submitted offers are similar to offers for active reserves. The AESO has suggested two alternative mechanisms for how to clear the market: day-ahead and real-time.

With day-ahead clearing, the standby market will function similarly to the active market. The AESO will procure a forecasted volume day-ahead from the offers submitted to WattEx. The activation price of the highest accepted offer will set the uniform activation price for all accepted offers. In real-time, all standby reserve providers whose offers are accepted will be dispatched to provide standby reserves. Dispatched standby reserve providers will participate in the energy market (if applicable) as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated to provide reserves in order of merit as they are today (from the lowest activation price offer to the highest activation price offer). If they are activated, they will be paid the uniform activation price index that was determined in the day-ahead market plus the energy pool price.

With real-time clearing, all standby reserve providers that offer into the day-ahead market will be dispatched to provide standby reserves in real-time. Dispatched standby reserve providers will participate in the energy market as they do today; however, they will not receive a premium payment. Dispatched standby reserve providers will continue to be activated in merit order as they are today (from the lowest activation price offer to the highest activation price offer). Instead of using a day-ahead activation price, the activation price will be determined in real-time based on the highest offer price of the activated providers. All activated providers will earn this uniform activation price index plus the energy pool price. A settlement tool and process will likely be necessary to determine the activation price index when the marginal activated provider changes within the hour. This settlement could

mirror the hourly settlement used in the energy market.

2. *Single-part offers – Premium Price*

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In the AESO's view, the primary consideration for comparing these alternatives is the basis for the premium payment. In today's market design, standby reserve providers face energy pool price risk and the premium payment acts as compensation for this risk. However, by indexing the activation price to the energy pool price, this risk is mitigated. Therefore, the rationale for the premium payment will depend on whether an asset that is dispatched for standby reserves (and can still participate in the energy market) faces any direct or opportunity costs compared to an energy provider that is not providing standby reserves. The AESO is not aware of any such costs and is seeking feedback on this issue.

| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | The AESO's proposed principles and considerations are reasonable.<br>In determining the OR market price cap, the AESO should also consider:<br>- Setting the price cap high enough to allow for the recovery of unit start up costs over the shortest traded product block, i.e. over the AM or the PM super peak period. |

| | Questions | Stakeholder Comments |
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| | | - The price cap should also be high enough to accommodate positive index transactions where needed. For example, the cap should not limit the market from clearing at a price equivalent to the hourly pool price +$X/MWh. |
| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | We support the recommendation to not pursue standing market offers. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | *Information*<br><br>We support the approach of publishing the clearing price for each product immediately after the market for that product clears. The AESO should provide at a minimum<br><br>- the total volume offered for each product in each trading block (ie. on peak/ off peak for each OR product).<br><br>- the total volume of product purchased by the AESO.<br><br>*Clearing tied offers*<br><br>The AESO should clear offers that allow for partial selection in advance of all or nothing offers.<br><br>With sealed offers, there is less incentive to submit offers just prior to the trade window closing and as a result the approach to providing priority to first submitted offers is no longer necessary.<br><br>*All or nothing offers*<br><br>All or nothing offers should only be allowed for operational reasons. |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously | We are supportive of the move to allowing for smaller participation size in the OR market. More participants in the market will<br><br>- Enhance competition. As long as the AESO has the ability to effectively manage the procurement, operational dispatch and |

| | Questions | Stakeholder Comments |
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| | submitted that the AESO should consider on this topic, please provide. | compliance of delivery of smaller sized participants the AESO should continue to pursue this market change.<br>- Provide equitable market access: Allowing smaller sized providers to participate in the market provides another potential revenue stream for these providers and establishes a more equal footing in the market for all eligible suppliers.<br>The AESO needs to ensure that all qualified suppliers are providing the product that the AESO is purchasing. Suppliers that continue to demonstrate that they do not provide the service when called upon should be temporarily removed as eligible OR providers.<br>There was discussion during the last session regarding the rates of direction for different types of OR providers and the performance of market participants that have been activated.<br>- When providers are directed, additional revenue streams are paid to those assets. The AESO must ensure that activation is fair and equitable and must take whatever measure or complete system upgrades to allow for equitable activation rates for all providers. We request the AESO report on the equity of directives across OR suppliers later in 2022 after the system changes that the AESO referenced in the April 7th presentation are implemented.<br>- The AESO should also put in place effective consequences for providers that do not deliver on their obligations. Liquidated damages should reflect replacement costs of the product and providers that continue to be unreliable could be temporarily removed from the market. |
| *Group 2* | | |
| 7 | Block procurement | Block procurement is easier to participate in and requires less |

| | Questions | Stakeholder Comments |
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| | Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | administration from participants. This approach should stay in place as long as it meets the needs of the AESO. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | Sequential and mandatory clearing gets close to a must offer approach to the OR market. While assets that can provide spinning reserve are qualified to provide supplemental reserve, it should be the market participant's decision whether they wish to have their noncleared spin volumes be available for clearing in the supplemental market.<br><br>The AESO should design the system that allows market participants to declare that their non-cleared spinning offers be considered in the supplemental market. This would make participation easier for market participants. |
| 9 | Standby reserves pricing and procurement<br><br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br><br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br><br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | We prefer the Premium Price approach.<br><br>This approach aligns the cleared market price in the active OR market with the standby market.<br><br>We also support paying the highest accepted offer to all standby market participants. In contrast to paying each seller their offered premium, we believe the common premium approach will provide incentive for the AESO to procure volumes in the active market. It will also incentivize market participants to offer at lower prices.<br><br>Standby market participants should be provided a reasonable amount of time to be able to consider the settled active OR market price and determine their premium costs.<br><br>The AESO should provide the following information to facilitate participation in the standby market<br><br>- Total volumes offered for each product in each on/ off peak |

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| | | standby product<br>- The cleared premium price<br>- Ongoing reporting of hours / day for which standby reserves have been activated. |

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| **Period of Comment:** | April 12, 2022 | through | May 5, 2022 | **Contact:** | Nicole Irwin-Viet |
| **Comments From:** | Voltus, Inc. | | | **Phone:** | (857) 321-0314 |
| **Date:** | 2022/04/29 | | | **Email**: | nirwin@voltus.co |

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| | Questions | Stakeholder Comments |
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| **Each of the following fields includes one of the AESO's market design alternatives. For group 1, the AESO is seeking feedback on the draft recommendation, while for group 2, the AESO is seeking feedback on the proposed alternative(s).**<br>**Where the AESO is seeking feedback on a specific element of the proposal, it has noted this in the question box. If you have suggestions for further quantitative analysis that the AESO should consider, please be specific regarding the methodology, assumptions, and data to be used.** | | |
| *Group 1* | | |
| 3 | Equilibrium pricing & AESO bid price<br>Do you have any feedback on the AESO's proposed principles and considerations for determining the OR price caps? | Voltus opposes the AESO's proposal to remove equilibrium pricing and set the uniform price at the marginal offer price. The market is generally functioning well, including the current equilibrium pricing for Active Operating Reserve products.<br>Voltus analyzed a scenario under which (1) all participants' offer behavior remained the same, (2) but the marginal offer was not averaged with typical AESO bid prices ($5/MW Off Peak and |

| | Questions | Stakeholder Comments |
|---|---|---|
| | | $40/MW On Peak). This analysis showed that the AESO would have paid approximately $205K CAD for a MW of Active Supplemental Operating Reserve in 2021 that was offered 24/7, which was only 60% of the actual 2021 payment, $337K CAD per MW (see Attachment A). Has the AESO conducted a similar analysis of how offer behavior might be expected to change, and how much the total cost of Active Operating Reserve would change under the proposed removal of equilibrium pricing?<br><br>**Voltus requests that the AESO share publicly an analysis of expected outcomes under the proposed change away from equilibrium pricing, including impact to total cost of Active Operating Reserve and examples of expected offer behavior and market clearing outcomes under the existing and alternative approaches.** This will help stakeholders understand the assumptions AESO is operating under regarding this proposed change, and enable stakeholders to comment on whether those assumptions are reasonable.<br><br>In that vein, Voltus maintains that there is no evidence that eliminating equilibrium pricing would produce cost savings for Operating Reserve procurement, or improve market efficiency and price fidelity. Notably, having reviewed other stakeholders' comments from the prior session, other participants have stated they would likely adjust their offer behavior to account for the removal of equilibrium pricing (e.g. see TransAlta Corporation's response, p. 57-58)[1]. Such behavior could offset the AESO's anticipated benefits.<br><br>The use of marginal offer rather than equilibrium pricing will increase volatility and uncertainty around price outcomes for participants who are considering offering into the Active Operating Reserve market. The equilibrium price calculation averages in the AESO bid price, which narrows the range of discount to Pool Price outcomes. At an AESO bid price of $40/MW, the discount to Pool |

[1] https://www.aeso.ca/assets/LARA-Rules-and-ARS/Stakeholder-Comment-Letter-OR-Session-1-Additional-Feedback.pdf

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| | | Price can range from ($40 - $999.99)/2 = -$479.99 to $40 per MW. The equilibrium pricing thereby mitigates market volatility. If the bid price were not averaged in, the discount to Pool Price could range as low as -$999.99, and up to the new publicly disclosed price cap. Volatility itself creates market complexity that is a barrier to entry and prevents competitors from entering the market. Alberta already has high and volatile energy costs. While volatility in Operating Reserve payments can of course arise based on Pool Prices, equilibrium pricing provides valuable price stabilization.<br><br>Given that market pricing would be a significant change that has not been supported with a "a clear justification" or cost-benefit analysis, Voltus does not support this change at this time and worries it could cause an "unnecessary disruption to market stability."[2]<br><br>Voltus approves of the general principles and considerations that AESO has outlined for determining the OR price caps. |
| 4 | Standing offers<br><br>In light of potential changes to other design elements, such as block procurement and standby procurement, do you support the AESO's draft recommendation to not pursue this change at this time? | Voltus supports the AESO's recommendation to not move forward with standing offers. |
| 5 | Offer transparency<br><br>The AESO's intent is to continue allowing participants to see the clearing price immediately following each procurement in WattEx. This information is also published as part of the operating reserve price reports, which are updated daily. If you are of the view that more detailed offer information is needed to establish a competitive offer strategy, please explain why.<br><br>What other information should be released by the AESO, and in what time period, to support the implementation of the draft | Voltus is of the view that more detailed offer information is not needed to establish a competitive offer strategy. It is helpful to continue to allow participants to see the clearing price in WattEx immediately following each procurement and publishing this information daily as part of the operating reserve price reports. Voltus supports the AESO's intent on this front.<br><br>If the AESO moves to a sealed bid format, Voltus suggests that the market break a tie between equal priced marginal offers by continuing to favour the first offer received. Tie-breaking should not be required for non-marginal offers, although Voltus would like the |

[2] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Session-1-Slides.pdf at slide 32.

| | Questions | Stakeholder Comments |
|---|---|---|
| | recommendation?<br><br>If the AESO were to pursue a sealed bid format, do you have suggestions for how the market would break a tie between equal priced offers? The current practice favours the first offer received.<br><br>Please describe whether the ability to prevent your offer block from being partially filled (i.e. it would only be fully accepted or not accepted) in the day-ahead market would enable you to participate more easily. | AESO to describe any other scenarios for which it expects a need for tie-breaking to arise.<br><br>Being able to prevent our offer block from being partially filled would enable Voltus to participate more easily. Our market assets correspond to an aggregation of individual customer sites, and Voltus does not assign priority among those sites (i.e. if only half of an asset's MW were to clear, Voltus does not currently have a way to distinguish which customer sites should remain committed). |
| 6 | Minimum qualification & offer size<br><br>The AESO has received stakeholder feedback on this topic through the DER Market participation initiative and session 1 of this initiative. If you have any additional comments that your organization has not previously submitted that the AESO should consider on this topic, please provide. | As previously expressed, Voltus supports the AESO's proposal to decrease the minimum qualification and offer size to 1 MW for all Operating Reserve products. This will increase competition and diversify the number of resources that can provide Operating Reserves, and should thereby reduce pricing. |
| *Group 2* | | |
| 7 | Block procurement<br><br>Please comment on whether block procurement or hourly procurement would maximize your participation in the OR markets.<br><br>Currently, in the day-ahead market, super peak RR is procured after on and off peak RR. For all other reserves, time blocks are procured simultaneously. Do you believe that simultaneous procurement would still be effective with hourly procurement? Are there alternatives the AESO should consider? | Voltus supports the move to hourly procurement of Operating Reserve products. Hourly procurement would maximize Voltus's participation in the OR market, and hence would decrease Operating Reserves costs for the AESO. Demand Response assets consist of end-use customer sites that reduce load when called upon in a directive. Each site has its own schedule of operations that draw electricity from the grid, corresponding to available curtailable load that can be offered into the market. Hourly procurement would allow customer sites to offer varying MW amounts in certain hours, rather than being constrained by their lowest availability across the on- or off-peak block. Hourly procurement will be more cost-efficient from a system perspective for this reason, as well.<br><br>Under hourly procurement, simultaneous procurement could be problematic. Voltus suggests that the market be cleared in a series of sequential hours across the day. It could be disruptive or confusing to customers if they are committed for a patchwork of hours across the day, which could happen if they offered into a |

| | Questions | Stakeholder Comments |
|---|---|---|
| | | consecutive block of hours, e.g. HE8-HE12, but then only cleared for HE9 and HE11. Market participants should be able to adjust their offers for later hours based on the outcome of procurement for earlier ones. |
| 8 | Contingency reserve procurement<br><br>Do you support the AESO's proposed sequential alternative for contingency reserve procurement? Are there other alternatives the AESO should consider?<br><br>If the AESO were to pursue the proposed sequential alternative, are there any new impacts or interactions the AESO should consider related to offer transparency? | https://www.aeso.ca/assets/LARA-Rules-and-ARS/Operating-Reserve-Market-Review-Session-2-Presentation-2022-03-31-Updated-2022-04-04-v2.pdf<br><br>Voltus prefers that the AESO continue to procure Spinning Reserve (SR) and Supplemental Reserve (SUP) through separate sequential auctions. As demonstrated in the AESO's Session 2 slides, the incidence of price inversions between SR and SUP has been steadily declining over the past few years due to increased competition in the SUP market.[3] We believe that this trend will continue as more new participants enter SUP with the minimum size threshold reduction to 1 MW and move to hourly procurement.<br><br>The AESO should allow time to observe the mitigating effects of these other changes on the incidence of price inversion, before determining that a transition to carrying uncleared SR volumes forward into the SUP procurement is warranted. This is particularly warranted given the declining frequency of inversions under the current market design. After observing the effects of other market changes in this proceeding, AESO could revisit its current SR and SUP procurement strategy.<br><br>That may involve linked sequential auctions, simultaneous clearing, or even, like other markets have done, exploring whether SR should have a frequency response requirement and the two products can be consolidated. The eastern US RTOs do not require SR to be frequency responsive, and some markets are having early discussions about having one Contingency Reserve product without a frequency response requirement. This is worth discussion between the AESO and stakeholders at a future date, given the barrier presented by requiring frequency response for |

[3] https://www.aeso.ca/assets/LARA-Rules-and-ARS/Operating-Reserve-Market-Review-Session-2-Presentation-2022-03-31-Updated-2022-04-04-v2.pdf at slide 50.

| | Questions | Stakeholder Comments |
|---|---|---|
| | | SR. However, Voltus recognizes that such issues may be a bit premature at this time: thus, we recommend waiting regarding any changes to the current contingency reserve procurement process. |
| 9 | Standby reserves pricing and procurement<br>Do you support one or both of the AESO's proposed alternatives, which are described in more detail above? Are there other alternatives the AESO should consider?<br>Are there direct or opportunity costs associated with providing standby reserves that have not been activated (i.e., the reserve provider can still participate in the energy market)?<br>Are there any other considerations related to the premium price that can aid in comparing alternatives 1 and 2? | Voltus supports the second of the AESO's proposed alternatives (move to single-part offers with only a premium price). This approach has admirable simplicity relative to the current complex pricing mechanism. It also creates a sensical relationship between Active and Standby offers and pricing. |

**ATTACHMENT A:** The following table and chart are calculated using historical Pool Price and Active Operating Reserve index data. Assuming AESO buy bid prices of $40/MW on peak and $5/MW off peak, marginal offer clearing prices are calculated assuming all offer behavior remains constant.

**Active Supplemental OR Average Pricing and Total Payment**

| | Equilibrium Pricing | | Marginal Offer | |
|---|---|---|---|---|
| | Average SUP Payment ($/MWh) | Total SUP Payment ($/MW) | Average SUP Payment ($/MWh) | Total SUP Payment ($/MW) |
| Jan-2020 | $80.33 | $59,769 | $65.01 | $48,369 |
| Feb-2020 | $4.68 | $3,259 | $1.79 | $1,246 |
| Mar-2020 | $8.26 | $6,140 | $3.33 | $2,477 |
| Apr-2020 | $2.81 | $2,021 | $1.59 | $1,144 |
| May-2020 | $6.98 | $5,191 | $0.00 | $0 |
| Jun-2020 | $7.72 | $5,561 | $1.55 | $1,118 |
| Jul-2020 | $24.53 | $18,248 | $16.69 | $12,420 |
| Aug-2020 | $11.10 | $8,259 | $6.64 | $4,939 |
| Sep-2020 | $4.87 | $3,506 | $1.05 | $753 |
| Oct-2020 | $24.41 | $18,164 | $14.94 | $11,115 |
| Nov-2020 | $2.42 | $1,748 | $0.55 | $399 |
| Dec-2020 | $2.25 | $1,671 | $0.23 | $171 |
| Jan-2021 | $28.68 | $21,339 | $17.95 | $13,356 |
| Feb-2021 | $95.33 | $64,059 | $64.43 | $43,299 |
| Mar-2021 | $27.50 | $20,430 | $16.64 | $12,365 |
| Apr-2021 | $28.56 | $20,562 | $13.77 | $9,915 |
| May-2021 | $34.69 | $25,811 | $20.86 | $15,521 |
| Jun-2021 | $70.85 | $51,013 | $50.58 | $36,419 |
| Jul-2021 | $45.98 | $34,208 | $22.68 | $16,872 |
| Aug-2021 | $14.52 | $10,805 | $4.81 | $3,581 |
| Sep-2021 | $24.18 | $17,410 | $12.87 | $9,266 |
| Oct-2021 | $16.65 | $12,389 | $7.32 | $5,443 |
| Nov-2021 | $11.24 | $7,980 | $2.13 | $1,510 |
| Dec-2021 | $67.99 | $50,584 | $50.33 | $37,444 |
| Jan-2022 | $32.05 | $23,847 | $18.90 | $14,065 |
| Feb-2022 | $28.59 | $19,214 | $10.49 | $7,050 |
| Mar-2022 | $4.61 | $3,428 | $0.07 | $50 |
| 2020 | | $133,536 | | $84,151 |
| 2021 | | $336,591 | | $204,994 |
| 2022 YTD | | $46,489 | | $21,165 |