March 10, 2023

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

Re: Stakeholder Comments on Letter of Notice Additional Feedback on Offer Transparency in the Operating Reserve Market Review

The Alberta Electric System Operator ("AESO") received comments from Stakeholders in response to its February 2, 2023 Letter of Notice for Additional Feedback on Offer Transparency in the Operating Reserve Market Review. These comments have been posted on the AESO website. Comments were received from the following Stakeholders:

1. Capital Power;
2. ENMAX Corporation;
3. Heartland Generation Ltd.;
4. Northland Power;
5. Suncor Energy Marketing Inc.;
6. TransAlta Corporation; and
7. Voltus Energy Canada.

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

Stakeholder Comment Matrix

Additional Feedback on Offer Transparency in the Operating Reserve Market Review

Period of Comment:	February 2, 2023	through	March 7, 2023	**Contact:**	Megan Gill
Comments From:	Capital Power			**Phone:**	403.827.3566
Date [yyyy/mm/dd]:	2023/03/07			**Email**:	mgill@capitalpower.com

Instructions:

1. Please fill out the section above as indicated.
2. Please refer back to the "related material" on the Stakeholder Engagement page on the AESO website.
3. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

In the Stakeholder Consultation Session 3 on September 8, 2022, the AESO shared the following recommendations related to offer transparency in the operating reserve market (the AESO's offer transparency recommendation):

- Move to a sealed-bid format
  - Continue to display the price and volume of the AESO bid during the auction
  - Display the total cumulative offer volume during the auction
  - Publish the clearing price and volume through Watt-Ex immediately at auction close and through the public Energy Trading System (ETS) website daily
- Publish offer price, volume, asset, and offer control party with a 60-day lag for all offered volumes

In consideration of the London Economics International (LEI) Report submitted by TransAlta on September 12, 2022 (the LEI Report), the AESO deferred further process on offer transparency until the AESO had time to review and consider the information in the LEI Report. During this time, the AESO also engaged Charles River Associates (CRA) to provide an independent assessment of the AESO's offer transparency recommendation (the CRA Report) and sought the MSA's views on the AESO's offer transparency recommendation (MSA Letter). The LEI Report, CRA Report, and MSA Letter are available on the Stakeholder Engagement page on the AESO website.

The AESO is now seeking further feedback from Stakeholders on the AESO's offer transparency recommendation.

	AESO Questions to Stakeholders	Stakeholder comments
1	Do you agree or disagree with the AESO's offer transparency recommendation? Please elaborate on your response.	**Capital Power neither agrees nor disagrees with the AESO's offer transparency recommendation.** Capital Power is not opposed to the AESO's offer transparency recommendation to move to a sealed bid format considering that the price and volume of the AESO bid will continue

	AESO Questions to Stakeholders	Stakeholder comments
		to be visible in the auction, the cumulative offer volume will be visible in the auction, and the clearing price and volume will be visible at auction close. However, Capital Power does not agree with the AESO's timing and approach to making the proposed changes. Capital Power remains concerned that the AESO is spending significant time and resources on this initiative. In our view, and as we submitted in our October 4, 2022 comments, it would be more efficient and effective for the AESO to spend its efforts (and engage market participants) on a more comprehensive review of the OR market with consideration of the interrelated activities underway. It seems the AESO did not take this feedback into consideration when it subsequently retained Charles River Associates to provide an independent assessment of the AESO's offer transparency recommendation when this expertise could have been better directed to a more comprehensive review of the Ancillary Services market. In future engagements, Capital Power would appreciate more openness and transparency on how the AESO plans to engage experts within the scope of the engagement. **Other comments** Capital Power appreciates the AESO providing further opportunity to comment on what it had previously deemed a "Final Recommendation". In this regard, we continue to seek better understanding the AESO's decision making and governance process as it relates to developing its final recommendations in this initiative and other initiatives that have significant impact for market participants.

Stakeholder Comment Matrix

Additional Feedback on Offer Transparency in the Operating Reserve Market Review

Period of Comment:	February 2, 2023	through	March 7, 2023	**Contact:**	Mark McGillivray
Comments From:	ENMAX Corporation			**Phone:**	
Date [yyyy/mm/dd]:	2023/03/07			**Email**:	MMcGillivray@enmax.com

Instructions:

1. Please fill out the section above as indicated.
2. Please refer back to the "related material" on the Stakeholder Engagement page on the AESO website.
3. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

In the Stakeholder Consultation Session 3 on September 8, 2022, the AESO shared the following recommendations related to offer transparency in the operating reserve market (the AESO's offer transparency recommendation):

- Move to a sealed-bid format
  - Continue to display the price and volume of the AESO bid during the auction
  - Display the total cumulative offer volume during the auction
  - Publish the clearing price and volume through Watt-Ex immediately at auction close and through the public Energy Trading System (ETS) website daily
- Publish offer price, volume, asset, and offer control party with a 60-day lag for all offered volumes

In consideration of the London Economics International (LEI) Report submitted by TransAlta on September 12, 2022 (the LEI Report), the AESO deferred further process on offer transparency until the AESO had time to review and consider the information in the LEI Report. During this time, the AESO also engaged Charles River Associates (CRA) to provide an independent assessment of the AESO's offer transparency recommendation (the CRA Report) and sought the MSA's views on the AESO's offer transparency recommendation (MSA Letter). The LEI Report, CRA Report, and MSA Letter are available on the Stakeholder Engagement page on the AESO website.

The AESO is now seeking further feedback from Stakeholders on the AESO's offer transparency recommendation.

	AESO Questions to Stakeholders	Stakeholder comments
1	Do you agree or disagree with the AESO's offer transparency recommendation? Please elaborate on your response.	ENMAX maintains the view that offer transparency should be maintained as it is today, given the AESO's recommendation is unlikely to materially improve the OR market's efficiency, price fidelity, or ability to attract new entrants. No sealed offer process is needed. While ENMAX appreciates the effort in making available an independent assessment of

	AESO Questions to Stakeholders	Stakeholder comments
		the AESO's offer transparency recommendation, even Charles River Associates itself acknowledged that it has not conducted an empirical analysis of the competitiveness of the OR markets or tested whether there has been anti-competitive coordination theirin. In ENMAX's view, without any substantive analysis put forth, it is difficult to support making such a change to the OR market at this time. Today, anti-competitive behaviour remains within the purview of the MSA to investigate, and the MSA has yet to state that such activities have occurred and are of a significant concern in the OR market. All that said, ENMAX anticipates that more extensive changes to the OR market may be required in the future, including the offering of new products and services, as the supply mix changes and more renewable resources come online.
	General comments on the CRA Report titled *Assessment of AESO Recommendation to Adopt a Sealed-Bid Auction for Operating Reserves*	In addition to ENMAX's response to question 1 regarding the AESO's offer transparency recommendation, we have also reviewed the CRA's Report at a high level and included some general commentary below. <u>Alignment with the energy market and the FEOC Regulation</u> In its report, Charles River Associates indicated that it supports the AESO's recommendation to adopt a sealed-bid auction for operating reserves with a 60-day delay in reporting offerings because "The resulting information revelation model would comport with that in the energy market" (page 3). It further cited the MSA's comments on offer transparency (page 19). In ENMAX's view, the desire to align OR offer disclosure with energy offer disclosure raises an interesting issue. Notably s.6 of the *FEOC Regulation* was amended after the AUC issued its decision on the Historical Trading Report (AUC Decision 21115-D01-2017). For context, at the time s.6 it was interpreted by the Commission, it read: *6(1) The ISO shall make available to the public the price, quantity and asset identification associated with each offer made to the power pool that is available for dispatch.* *(2) The ISO shall* *(a) develop information technology systems that are capable of identifying*

	AESO Questions to Stakeholders	Stakeholder comments
		and tracking the market participant that holds the offer control associated with each price and quantity offer made to the power pool, and *(b) include that information in the reporting made available to the public under subsection (1), when the ISO's information technology systems are capable of identifying and tracking that information.* *(3) The ISO shall delay making available to the public the asset identification referred to in subsection (1) and the identification of the market participant that holds the offer control referred to in subsection (2) by 60 days after they are made to the power pool.* Having since been amended by Alberta Regulations 261/2018 and 142/2019, s.6 now reads: *6(1) Subject to this section, the ISO shall make available to the public the following information associated with each offer made to the power pool that is available for dispatch:* *the price;* *the quantity;* *the asset identification;* *the electricity market participant that holds the offer control.* *(2) Repealed AR 261/2018 s6.* *(3) The ISO shall not make available to the public the asset identification and the identification of the electricity market participant that holds the offer control with respect to an offer referred to in subsection (1) until 60 days after the settlement interval to which the offer applied.* Given this, ENMAX encourages the AESO to make its own assessment of whether the offer transparency changes it is proposing align with s.6 of the *FEOC Regulation* as it now stands and would also support revisiting the publication of near real time offers in the Historical Trading Report (without market participant and asset identification included).

	AESO Questions to Stakeholders	Stakeholder comments
		Fuel Prices On page 5, Charles River Associates notes that fuel prices, particularly natural gas prices, vary over time, "But such variation is similar across generators." While little appears to turn on this point, ENMAX notes that fuel-cost variation is not similar across all OR market participants: energy storage and hydro resources are fundamentally different than gas-fired generators from a fuel-cost perspective. Information availability in Alberta and elsewhere In footnote 15 on page 5, Charles River Associates quotes von der Fehr (2013), who states: *Electricity markets are often seen as particularly conducive to tacit collusion, since participants meet very frequently – every day in the spot market – and hence have the opportunity to react quickly to changes in competitor behaviour. However, in most electricity markets, neither bids/offers nor volumes of individual market participants are publicly observable. Therefore, even if other factors tend to facilitate coordinated or collusive behaviour, lack of transparency with respect to individual behaviour makes such coordination or collusion difficult. [Emphasis added.]* ENMAX would like to highlight that Alberta's legislative framework is not the same as the legislative framework in other jurisdictions. Among the apparent differences is the availability of real and near-real-time information, one example of which is the real-time publication of generating units' outputs in the AESO's Current Supply and Demand ("CSD") report. The *FEOC Regulation* is highly relevant to this point with open competition being an obvious element. Operating reserve revenues Beginning near the bottom of p. 11, Charles River Associates states: *Although OR revenues are a fraction of total revenue for producers, they still contribute to investment costs as they form part of the value stack. In addition, this consideration is increasingly important as investment in reserve-capable*

	AESO Questions to Stakeholders	Stakeholder comments
		technology is no longer a guaranteed byproduct of investment in generation capacity (because of the growth in intermittent generation). ENMAX generally agrees with this point. That said, it is worth noting that OR revenues may be a relatively small fraction of total revenues for generators in aggregate, but they can be a large fraction of the revenues earned by some individual market participants. This fact will grow in importance, not only because an investment in nondispatchable generation is not an investment in reserve-capable technology, but also because the increasing penetration of nondispatchable generation poses several significant challenges for dispatchable units, including: (i) reduced energy sales accompanied by no material reduction in the need for the available *capacity,* and therefore no material reduction in fixed costs; (ii) increasingly variable output to match increasingly variable net demand, leading to reduced fuel efficiency and more start-stop cycles with correspondingly higher maintenance costs; and (iii) greater forecast and unit-commitment risk. ENMAX expects that future OR costs will be above generators' marginal and short-term opportunity costs, not because of anticompetitive behaviour, but because of the increasing variability and decreasing capacity factors of dispatchable generators driven by the increasing penetration of intermittent, non-dispatchable generators.

Stakeholder Comment Matrix

Additional Feedback on Offer Transparency in the Operating Reserve Market Review

Period of Comment: February 2, 2023 through March 7, 2023	**Contact:** Kurtis Glasier
Comments From: Heartland Generation Ltd. ("Heartland Generation")	**Phone:** (587)-228-9617
Date [yyyy/mm/dd]: 2023/02/02	**Email**: Kurtis.Glasier@heartlandgeneration.com

Instructions:

1. Please fill out the section above as indicated.
2. Please refer back to the "related material" on the Stakeholder Engagement page on the AESO website.
3. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

In the Stakeholder Consultation Session 3 on September 8, 2022, the AESO shared the following recommendations related to offer transparency in the operating reserve market (the AESO's offer transparency recommendation):

- Move to a sealed-bid format
  - Continue to display the price and volume of the AESO bid during the auction
  - Display the total cumulative offer volume during the auction
  - Publish the clearing price and volume through Watt-Ex immediately at auction close and through the public Energy Trading System (ETS) website daily
- Publish offer price, volume, asset, and offer control party with a 60-day lag for all offered volumes

In consideration of the London Economics International (LEI) Report submitted by TransAlta on September 12, 2022 (the LEI Report), the AESO deferred further process on offer transparency until the AESO had time to review and consider the information in the LEI Report. During this time, the AESO also engaged Charles River Associates (CRA) to provide an independent assessment of the AESO's offer transparency recommendation (the CRA Report) and sought the MSA's views on the AESO's offer transparency recommendation (MSA Letter). The LEI Report, CRA Report, and MSA Letter are available on the Stakeholder Engagement page on the AESO website.

The AESO is now seeking further feedback from Stakeholders on the AESO's offer transparency recommendation.

	AESO Questions to Stakeholders	Stakeholder comments
1	Do you agree or disagree with the AESO's offer transparency recommendation? Please elaborate on your response.	Heartland Generation disagrees with the AESO's offer transparency recommendation. Further, Heartland Generation questions the value in the proposed changes to the OR markets occurring at this time. There are multiple other initiatives that require AESO resources and are necessary to the Alberta electricity market's function (e.g., forthcoming Reliability Requirement Roadmap, must offer requirements for imports, process connection streamlining, etc.). The AESO should prioritize initiatives that will have measurable

	AESO Questions to Stakeholders	Stakeholder comments
		impacts on the affordability and reliability of the Alberta electricity markets; the proposed changes to the OR markets have not been shown to have a meaningful improvement. Therefore, Heartland Generation proposes that the AESO cease the consultation on the proposed OR market review, especially the recommendations of minimum qualification size and offer transparency. It is not yet known if the consultations regarding the Reliability Requirement Roadmap or the Most Severe Single Contingency will result in changes to the OR markets, including additional product definitions. Regulatory efficiency would be better served to not make changes to the OR markets that may prove redundant by these larger, more important initiatives. It is worth noting that the AESO has already confirmed at a high-level the OR markets are working as intended and do not require structural changes. **Feedback on the CRA Report** Notwithstanding, Heartland Generations reservations on the efficacy of this engagement on offer transparency and the OR market changes in general, below are the comments directly related to the provided CRA Report. Following the stakeholder submission of the LEI Report, the AESO indicated that it would engage in further consultation on the topic of offer transparency. It is disheartening to learn that unbeknownst to stakeholders the AESO commissioned a second expert to examine and provide opinion on stakeholder comments. This level of adversarial engagement (expert critique to be filed in refutation of stakeholder comments) is not uncommon for official regulatory proceedings but limits the level of effective engagement and collaboration during stakeholder consultation. Open transparency is always preferable; stakeholders could have been informed of the procured expert and relevant terms of reference prior to the expert publication. Stakeholders were unaware for several months on what form or format further engagement would take, meanwhile the AESO privately commissioned the CRA to provide comments of, in Heartland Generation's opinion, very limited efficacy on remarks made by LEI and market participants during the consultation. More open and collaborative engagement would have been preferred. The CRA Report itself does not provide additional evidence on offer transparency. At most, the paper summarizes some of the positions taken by stakeholders and provides only superficial comments. Primarily, the CRA Report criticizes multiple stakeholders for not providing empirical evidence, while justifying the lack of evidence for their own positions, and those of the AESO. Importantly, however, most stakeholders are not submitting that changes should be made to the offer transparency of the OR markets. The AESO does propose to make changes, therefore, it has the burden of proof of showing the efficacy or positive impact on competition such changes would have and the risk posed by such changes would be mitigated. The AESO has previously confirmed that the OR market currently functions; it must then show

	AESO Questions to Stakeholders	Stakeholder comments
		that a proposed change would unambiguously improve that function. This evidential step is essential when the status quo is reasonable, and changes always pose some risk of unintended consequences. The CRA Report states, “absence of evidence is not evidence of absence” (CRA Paper, page 2). However, evidence of absence is irrelevant when stating a positive claim (i.e., the AESO is proposing to change the offer transparency of the OR markets). Specifically, when the CRA or the AESO claims that offer transparency facilitates coordination among participants, this requires positive proof provided by the asserting party; this has not been given. Stating that “absence of evidence is not evidence of absence” intends to reverse the onus and asks other parties to provide evidence of a negative claim (i.e., participants would have to prove that offer transparency does not or cannot facilitate coordination among participants). The logic provided in the CRA Report is flawed as it asks for proof of impossibility or evidence of absence to satisfy the negative claim. In this instance, the negative claim is that offer transparency does not, or does not have the potential to, facilitate coordination among participants. The AESO, if it is seeking to make a change to the offer transparency should be required to provide actual evidence that supports that decision. As the AESO is making a positive claim, that offer transparency impedes the competitive function of the OR markets, it then must substantiate the claim with evidence and show its proposal (the recommended changes to offer transparency) resolves the positive claim. The LEI Report and stakeholder comments question the efficacy and appropriateness of the AESO’s proposed changes; the CRA Paper does not provide any further evidence and rather seeks to reverse the onus in criticizing participants for not providing evidence of a negative claim (“evidence of absence”). As noted by many of the academic sources, modern electricity markets generally contain conditions that may make anticompetitive coordination more likely. However, as stated in the CRA Report, “these market conditions continue to exist in AESO OR markets and are likely to persist given the AESO is not considering any structural changes to the market other than limiting data disclosure (CRA Paper, page 14).” Even if given the benefit of the doubt, this makes the offer transparency changes seem like they will have an ambiguous or negligible impact on competition. When paired with the inability of any party to adduce sufficient empirical evidence in support of the change, there are little remaining arguments to be adduced in favor of the change that are not equaled by the those opposed. There is, however, no reason to give the benefit of the doubt to the proposed changes to offer transparency as any change to a functioning market carries some risks (many of which have been identified by LEI and other stakeholders). When there is unknown efficacy, difficult to determine risk, and evidence that the OR markets are functioning, there is a strong case for the status quo.

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		Information Provided by the AESO If contrary to stakeholder concerns and the evidence provided by LEI, the AESO still intends to make changes to offer transparency, then Heartland Generation has some comments on the information that will be provided during the auction. The AESO indicated that it would provide the volume and price of the AESO bid, Heartland Generation understands that when this is combined with the other changes to AESO bid price this would mean the AESO bid volume and the current marginal offer price would be indicated during the auction. Heartland Generation also agrees with having the cumulative offer volume being stated during the auction. At auction close the cleared price and volume will be published, as indicated by the AESO, and it would be helpful for the uncleared volume of offers to also be available at auction close to inform participants of market liquidity when entering the subsequent auctions. **General Comment on Minimum Qualification Size for Operating Reserves** As a comment on the broad OR markets review, the AESO should provide commentary regarding the MSA's Compliance Review 2022. In particular, Figure 6: *Total specified penalties for contraventions of ISO Rules in 2022* showcases that most compliance issues are dealing with ISO Rule 205.6, *Supplemental Reserve Technical Requirements and Performance Standards*. In this stakeholder engagement the AESO is proposing to lower the minimum qualification size and change the dispatch tolerances. The AESO should provide analysis and commentary surrounding the vast majority of penalties being received for products procured in the voluntary OR markets, and by a very limited number of participants (the Compliance Review 2022 identifies two parties that have much higher total specified penalties for contraventions, Figure 7). Further, the AESO indicated that it would be implementing a dispatch tool that would limit the observed size bias with regard to reserve directives; this tool was anticipated to be implemented in Fall 2022. The AESO should present on the findings of implementing this solution and if there is any relationship between the implementation of this tool and contraventions of ISO Rule 205.6.

Stakeholder Comment Matrix

Additional Feedback on Offer Transparency in the Operating Reserve Market Review

Period of Comment:	February 2, 2023	through	March 7, 2023	**Contact:**	Scott Perry
Comments From:	Northland Power			**Phone:**	403 519 6194
Date [yyyy/mm/dd]:	2023/03/07			**Email**:	Scott.perry@northlandpower.com

Instructions:

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

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The AESO is now seeking further feedback from Stakeholders on the AESO's offer transparency recommendation.

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1	Do you agree or disagree with the AESO's offer transparency recommendation? Please elaborate on your response.	Northland disagrees with the AESO's recommendation. In Northland's view, the ease of entry is the most important aspect of determining the long-term competitiveness in Alberta's OR markets. Overall, this transparency recommendation appears unlikely to have a meaningful impact on the competitive outcomes in the OR market. Although incumbent OR market participants can currently use the available bid

	AESO Questions to Stakeholders	Stakeholder comments
		information more readily and quickly than under the proposed sealed bid format and 60-day transparency, it's not clear that the proposal will have any impact on the perceived risk to new entrants. The OR market is relatively small and new entrants are limited to 80 MW of capacity per new unit, while some existing incumbents, including hydro assets and some gas assets, have exceptions, allowing them to use higher volumes. This asymmetry is and will continue to favor incumbents until they either face the same limits as new entrants or new entrants are allowed more capacity to sell into the OR market, like the incumbents. The current focus on offer transparency appears to be focused on reining in competitiveness risks in the current market with little consideration of the larger importance of new entrants to its competitiveness as highlighted by the MSA. The analysis from all parties on this transparency proposal have so far focused far more on the qualitative aspects of the current OR market and the available theory on competitive markets, instead of quantitative data about the competitive nature of Alberta's OR markets. Considering the information deficit, Northland believes other types of information could have and should be collected by the AESO and considered as it determines how to improve the competitiveness of the OR market: - It does not appear that the AESO has collected information from prospective entrants to the OR market on their perceptions of risk in the OR market to supplement this reasoning. Based on Northland's experience, reducing offer transparency may raise the risk perception of the OR market.

Period of Comment: February 2, 2023 through March 7, 2023	**Contact:** Horst Klinkenborg
Comments From: Suncor Energy Marketing Inc.	**Phone:** (403) 819-7125
Date [yyyy/mm/dd]: 2023/03/07	**Email**: Horst.Klinkenborg@suncor.com

	AESO Questions to Stakeholders	Stakeholder comments
1	Do you agree or disagree with the AESO's offer transparency recommendation? Please elaborate on your response.	Suncor appreciates the opportunity to provide feedback on this initiative. In Suncor's view, this file does not warrant pursuing at this time and it should be closed as industry time and resources are better spent on other files. A starting point for this consultation was an AESO advice to the minister of Energy from 2019[1] that proposed that there *might* be a negative market power effect on OR market efficiency. Subsequently, the AESO conducted some historical analysis that did not show any empirical evidence of inefficiencies in the market, did however reveal that the hydro PPA expiry did not materially impact the market,[2] and that prices in the OR market stayed either stable or, in one product, even decreased.[3] The electricity industry is facing significant important initiatives. For example: • The AESO's unilateral decision to change the MSSC determination is hampering participants' investment decisions and needs to be resolved expeditiously. The associated consultation so far involved two sessions and an options paper over the span of 16 months with next steps being another three months away.[4] • In front of the AUC, the AESO stressed the need for regulatory efficiency and pointed to the 32,000 MW of projects in the AESO's project list to argue that a generic proceeding is unnecessary to address the concerns of ten generators,

[1] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Session-1-Slides.pdf, Slide 27
[2] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Session-1-Slides.pdf, Slide 37
[3] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Session-1-Slides.pdf, Slide 38
[4] https://www.aesoengage.aeso.ca/evaluation-of-mssc

	AESO Questions to Stakeholders	Stakeholder comments
		representing over 7,000 MW of installed capacity.[5] However, in light of an expected increase of applications under section 15(2) of the *Transmission Regulation*, it is important to address these concerns urgently. • The AESO needed four months to review a suggested rule proposal intended to address a FEOC concern and decided that is was not a priority. After clarification that the existing rule undermines fair and open competition and is not in the public interes, the AESO needed another six months to determine that compared to other files, fixing the broken rule is not a priority.[6] Respectfully, in this context, the OR review is not worth pursuing. The AESO set as its objective to "[a]ssess opportunities to enhance competition and price fidelity in the existing OR markets to improve efficiency" despite the market functioning at the highest level;[7] that is, at best, there could be incremental efficiency gains. Changes to a functioning market should only be undertaken with extreme caution, as the downside risk of disturbing the market is significantly greater than the potential benefits. While there is in principle nothing wrong with carefully looking for improvements, this should not occur when the industry is facing various high priority issues. Suncor is disappointed that over the same period where the above referenced high priority items received low levels of attention, time and money was spent on three OR review sessions and a consultant report, and is further disappointed that the AESO continues to pursue this file despite the findings from these sessions and the report. The AESO proposed some market changes that supposedly improve the market. There is no evidence for this proposition but the AESO did provide some supporting arguments. Stakeholders largely disagreed and were supported in their position by a report from London Economics International LLC that provided arguments in favour of not making the proposed changes. Despite the non-compelling nature of the proposed changes and conflicting higher

[5] Exhibit 27776-X0136 and Exhibit 27776-X0150
[6] https://www.aeso.ca/rules-standards-and-tariff/iso-rule-proposals/proposal-to-amend-definitions-of-maximum-capability-and-acceptable-operating-reason/
[7] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Session-1-Slides.pdf, Slide 9

	AESO Questions to Stakeholders	Stakeholder comments
		priority initiatives, the AESO commissioned Charles River Associates (CRA) to provide an "Assessment of AESO Recommendations to Adopt a Sealed-Bid Auction for Operating Reserves"[8]. The report is effectively a summary of stakeholder positions with an assessment as to which arguments CRA considers more compelling. In its critique of stakeholder positions opposed to the AESO's proposal, CRA is critical of the lack of supporting evidence,[9] sees however no concern with the lack of evidence on their or on the AESO's behalf. Not only does there seem to be a double standard regarding evidence, CRA also curiously remarks that "absence of evidence is not evidence of absence."[10] Generally, the opposite is considered correct: A lack of evidence in favour of a proposition is generally viewed as an indication that the proposition is likely not true – otherwise there should be *some* evidence supporting it. Respectfully, the CRA report is not adding anything meaningful to this file. There may or may not be benefit to the AESO's proposal. On the other hand, the proposal may or may not cause harm. There are arguments for both sides and none appear to Suncor as being particularly compelling to risk distorting a functioning market place to chase potential minor benefits. As stated before, changes to a functioning market are dangerous and should only be undertaken in light of compelling evidence and arguments. Without evidence of the benefits of the proposal and conflicting arguments as to whether the proposal would indeed provide benefits or more likely cause harm, the risk of further pursuing the proposed changes is quite simply too high even if industry and the AESO didn't have more pressing issues on their hands. In 16 months, the the AESO was unable to make a compelling case in favour of its proposal, which Suncor views as unnecessary and potentially dangerous. Respectfully, in light of the more pressing matters for the industry, the OR review should be concluded without any changes at this time.

[8] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Sealed-Bid-Additional-Feedback/CRA-AESO-OR-Assessment-FINAL-01.11.2023.pdf
[9] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Sealed-Bid-Additional-Feedback/CRA-AESO-OR-Assessment-FINAL-01.11.2023.pdf, PDF pages 15 & 17
[10] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Sealed-Bid-Additional-Feedback/CRA-AESO-OR-Assessment-FINAL-01.11.2023.pdf, PDF page 2

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March 7, 2023

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Re: Additional Feedback on the Operating Reserve Market Review

On February 2, 2023, the AESO issued a letter of notice[1] seeking additional feedback from stakeholders on the Operating Reserve ("**OR**") Market Review and the AESO's recommendation to move from an open to a sealed bid auction format and to release offer information after 60 days.

TransAlta Corporation ("**TransAlta**" or the "**Company**") provides the attached Stakeholder Feedback Report and a Rebuttal Analysis of the Charles Rivers Associates ("**CRA**") Report ("*Assessment of AESO Recommendations to Adopt a Sealed-Bid Auction for Operating Reserves*") from London Economics International LLC ("**LEI**"). LEI's Report provides an independent, expert evaluation of the AESO's proposal and a review of the CRA's opinions and the pertinent economic theory. LEI's conclusions are that the status quo supports market efficiency and competition.

TransAlta recommends that the AESO withdraw or cancel its recommendation on offer transparency. The facts show that the OR market is more competitive than it has ever been and competition has increased from new participants and new qualified resources. Furthermore, the results show that the operating reserves market has exhibited more competitive results than the average pool prices over 2020 to 2022., under the open auction format with offer data transparency. This strong evidence indicates that the status quo, with existing offer transparency, is supporting robust competition, new entry and market efficiency.

Price discovery is even more important to the operating reserves compared to the energy market because operating reserves are procured on a forward basis when the market faces great uncertainty about future market conditions. In the face of this uncertainty market participants must be able to properly assess and value opportunity cost in their operating market offers in order to create market efficiency,

[1] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Sealed-Bid-Additional-Feedback/Letter-of-Notice-for-Additional-Feedback-OR-Sealed-Bid.pdf

and offer transparency ensures that competition occurs whenever possible and reduces the risk of undersupply.

If the AESO's recommendation are implemented, TransAlta expects that participants will be more likely to make suboptimal decisions due to poor quality information and the likelihood of undersupply will significantly increase. TransAlta is highly concerned about undersupply given that the Company face disproportionate risk of being conscripted into service in the event this occurs. Further, TransAlta expects that due to weaker competition, OR prices will be higher, resulting in cost increases for consumers.

Overall, the objective facts and historical data do not support the case for change as framed by the AESO. The operating reserves market is functioning well and is more competitive than it has been historically.

TransAlta recommends that the AESO withdraw its proposal for a sealed-bid and 60-day delay on OR offer data.

Please feel free to reach out to myself or Akira Yamamoto if you have any questions. We can be reached at laurag_arnold@transalta.com or akira_yamamoto@transalta.com.

Yours truly,

TRANSALTA CORPORATION

Laura Arnold
Vice President, External Affairs, Sustainability and Market Policy

Energizing the future.

TransAlta Submission

Additional Stakeholder Feedback on the AESO's Offer Transparency Recommendation

March 7, 2023

Executive Summary

TransAlta Corporation ("**TransAlta**") opposes the AESO's recommended changes to the operating reserves market (to move from an open to a sealed-bid auction and release offer information after 60 days instead of immediately) because these changes will remove any meaningful price discovery, negatively impact the ability for market participants to make efficient decisions, weaken competition response and ultimately lead to higher OR costs for ratepayers.

TransAlta questions whether there is actually a problem to be solved at all. TransAlta has reviewed competition and operating reserve outcomes since 2019 to test the validity of the concerns raised in the AESO's report to the Minister of Energy. Our review found that the AESO's finding from that report are out-of-date and not reflective of current competition in the operating reserves market. A review of the historical data shows that active operating reserves prices are more competitive than they have ever been and competition has increased from both new participants and new qualified resources. Furthermore, the results also show that the operating reserves market had exhibited more competitive results than the average pool prices over 2020 to 2022.[1] These results occurred under the current design of an open auction and real-time release of offer data in the auctions and indicate that the existing model supports robust competition, new entry, and market efficiency.

Price discovery is even more important to the operating reserves than it is to the energy market because operating reserves are procured on a forward basis when the market faces great uncertainty regarding future market conditions. In the face of this uncertainty market participants must be able to properly assess and value opportunity cost in their operating market offers in order to create market efficiency. Offer transparency ensures that competition occurs whenever possible and reduces the risk of undersupply.

The AESO's proposal would significantly hinder price discovery. More specifically, without timely information about the offer curve competition will be less robust, participants' ability to offer a more economic (lower priced) offer will be materially reduced, leading to higher prices. In addition, the lack of offer visibility will result in participants making suboptimal operating decisions that would negatively impact the market from achieving productively efficient results, and the operating reserves market may be undersupplied. TransAlta is highly concerned with this outcome because its of fleet assets face a high risk of conscription if the AESO faces undersupply situations.

The objective facts and more recent historical data do not support a case for change. The operating reserves market is functioning well and is more competitive than it has been historically and does not align with the concerns that the AESO raised in 2019.

[1] See Appendix 1 which summarizes the MSA's quarterly findings in Q4 2020, Q4 2021 and Q4 2022 in which the MSA found that the OR markets were more competitive compared to the pool price changes over the same periods of time.

TransAlta recommends that the AESO withdraw its proposal for a sealed-bid and 60-day delay for releasing operating reserve offer data. Additionally, TransAlta recommends that the AESO cancel any further work under its operating reserves market review initiative and, to the extent that it does move forward with any changes, only those recommendations that receive unanimous support should be pursued.

Contents

Introduction

On February 2, 2023, the AESO issued a letter of notice[2] seeking additional feedback from stakeholders on its Operating Reserve ("**OR**") Market Review and more specifically on the AESO's recommendation to move from an open to a sealed bid auction format and to release offer information after 60 days. To support its recommendation, the AESO engaged Charles Rivers Associates ("**CRA**") to provide an assessment[3] of the proposed changes and to review and rebut the London Economics International LLC. ("**LEI**") report titled *"Independent Evaluation of Proposed Changes to Alberta's Operating Reserve Market Format and Information Release Policies"*[4] which was publicly released on September 7, 2022 on the AESO's website.

TransAlta's provides this submission and the attached LEI rebuttal report as its feedback to the AESO's request.

TransAlta's Response to the AESO Question to Stakeholders

The AESO posed the following question to stakeholders in its stakeholder comment matrix: **Do you agree or disagree with the AESO's offer transparency recommendation?** (Please elaborate on your response.)

TransAlta disagrees with the AESO's offer transparency recommendation (i.e., to move from an open to a sealed bid auction format and to release offer information after 60 days).

There is no evidence that the current auction format or offer transparency timeline creates or contributes to any abuse of market power or inefficiency in the operating reserves market. Nor is there any evidence that the AESO's recommendations will have any desirable effect in terms of increasing competition or mitigating inefficient market outcomes. On the contrary, the AESO's recommendations will remove any meaningful price discovery, negatively impact the ability for market participants to make efficient decisions, weaken competition response, disadvantage potential new market participants, and ultimately lead to higher OR costs for ratepayers.

[2] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Sealed-Bid-Additional-Feedback/Letter-of-Notice-for-Additional-Feedback-OR-Sealed-Bid.pdf

[3] https://www.aeso.ca/assets/LARA-Rules-and-ARS/OR-Sealed-Bid-Additional-Feedback/CRA-AESO-OR-Assessment-FINAL-01.11.2023.pdf

[4] https://www.aeso.ca/assets/LARA-Rules-and-ARS/LEI-TransAlta-Final-Report.pdf

The AESO's Findings are Out of Date and Not Reflective of Competition in the OR Market

The AESO cited its *"Market Power Mitigation Advice to Minister"* report[5] (the "**2019 Report**"), dated November 29, 2019, as a key reason for proposing the OR Market Review and its recommendation to change to a sealed-bid auction and delay the release of offer information. In that report the AESO conducted a review of historical data including market participant shares by contracted volume from 2013-2019, involvement by market participant in 2019, projections of qualified volumes post-Power Purchase Arrangement ("**PPA**") expiry (in 2021), and market concentration ratios. The AESO's findings were that the offer control for OR products was more concentrated than for energy and was expected to increase with the expiry of the PPAs, vaguely alludes to offer behaviour and price setting which did not align with market fundamentals on selected occasions, and makes claims that because OR prices are indexed to energy prices an increase in the exercise of market power in the OR markets is unlikely to result in long-term dynamic efficiency gains.

While the AESO rationalizes its proposals based on this report, the AESO has not updated its analysis since that time to consider whether the trends that it observed in that report have continued or to confirm if its claims about what could potentially occur post-PPA expiry came to fruition. From our participation and observations of the market since that report and the MSA's quarterly reports (see Appendix 1), the OR markets have changed in several key aspects that have increased their competitiveness since 2019. Notably, these changes have occurred under the current open auction format and with offer transparency, which we view as significant contributing factors that have encouraged competition and ensured the success of the voluntary operating reserves market.[6]

Key Market Changes:

- **Increased Competition**: The AESO began procuring roughly 10% less in active regulating reserves starting on June 1, 2020. This reduction in procurement volume increased supplier-on-supplier competition in the auction for this product.

- **Lower Prices**: Active index prices have shown a significant decline since 2019. Moreover, the average cost of OR has increased significantly less than the

[5] AESO-Market-Power-Mitigation-Report-Nov-29-2019.pdf

[6] As stated in CRA's report: "The AESO has not conducted rigorous empirical analysis of whether the visibility of market data has resulted in coordinated outcomes, citing the difficulty of finding a natural experiment that could be used to compared market outcomes with and without data visibility, and the difficulty of isolating the effects of data visibility from many other factors that affect prices." (p. 7). It should be noted that the Historical Trading Report stopped being published on May 18, 2017 and presents a real-world, Alberta-specific data set to perform an analysis of whether the visibility of market data resulted in coordinated or inefficient outcomes. It should also be noted that while the MSA has observed high prices and increase offer behaviour and market power in the energy market (where there is delayed offer transparency) in Q3/Q4 2022. In contrast to the energy market, the operating reserves market and competition has significantly increased since 2019 and remained highly competitive even in Q3/Q4 2022.

increase in pool price over the same timeframe, which indicates that there is strong competition in OR markets.

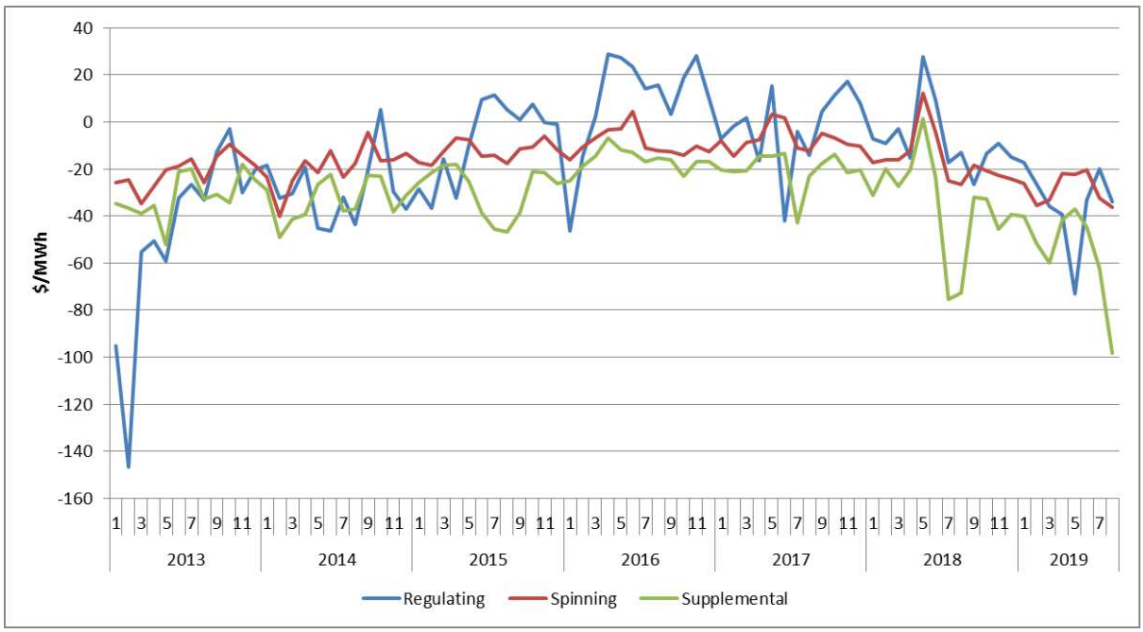
- **More Assets:** The number of assets that are qualified to participate increased in all operating reserves markets. Supplemental and spinning reserves saw the largest increases in new qualified assets but regulating reserves also saw an increase in new qualified assets since 2019. This indicates that the markets are attracting new assets and competition remains robust and very healthy.

- **New Resources:** There was new participation from new resources such as battery and load resources. These new resources offer at lower cost and have both increased in participation in share of the OR. This indicates that the barriers to entry are low and that new types of resources are seeing and pursuing opportunities to participate in the market and are able to effectively strongly compete for market volumes.

Active Operating Reserves Prices are More Competitive Since 2019

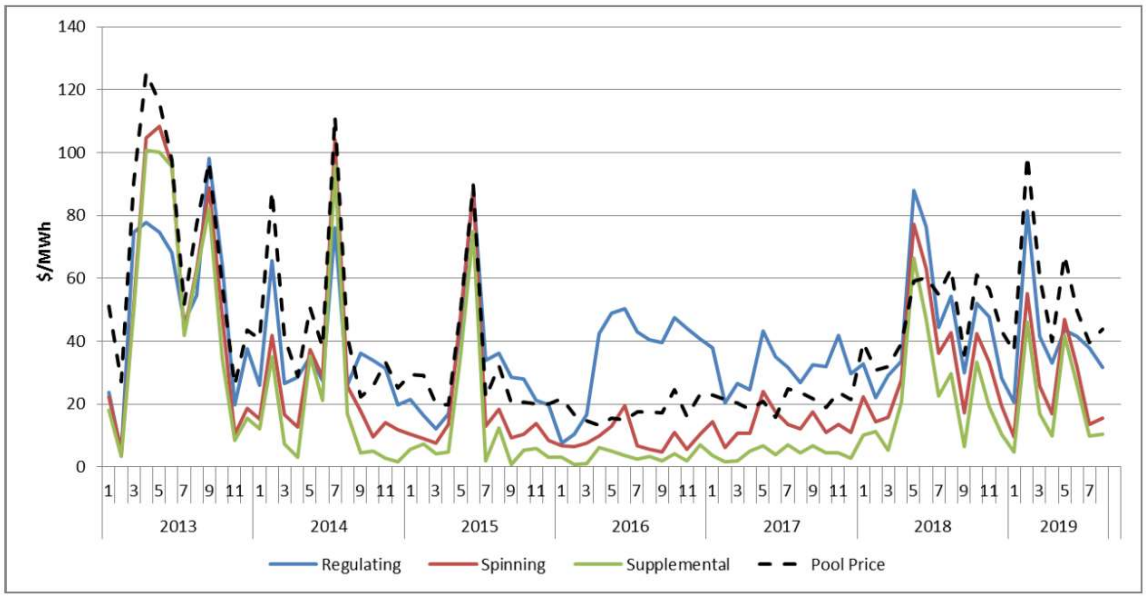
The AESO 2019 Report analyzed the cleared prices of active OR products from 2013 to 2019.[7] The AESO's figures are reproduced below for ease of reference:

Figure 1: Cleared OR prices (active) monthly average 2013 to 2019



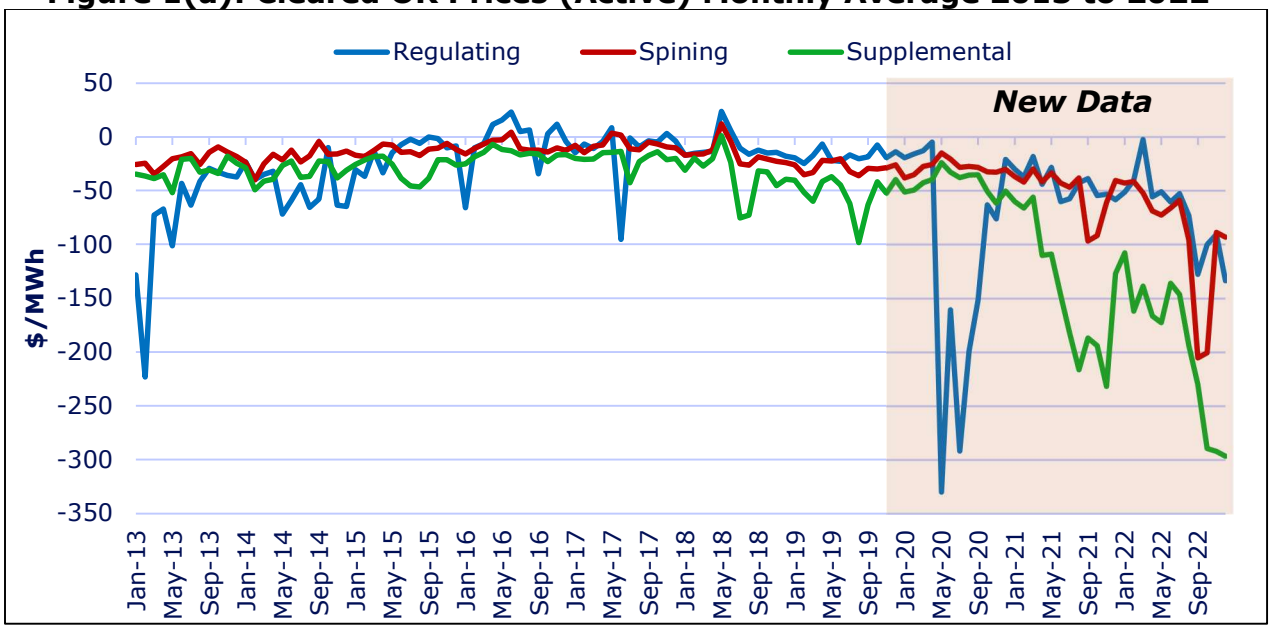
[7] P.2 (Pdf p. 39), Appendix E: Operating Reserve (OR) Market Review, Market Power Mitigation Advice to Minister, AESO, November 29, 2019 (https://www.aeso.ca/assets/Uploads/AESO-Market-Power-Mitigation-Report-Nov-29-2019.pdf).

Figure 2: Settled OR prices (active) monthly average 2013 to 2019



TransAlta has updated the AESO's analysis to include data since 2019 and post-PPA. Figure 1(a) shows the cleared OR prices (active) monthly average from 2013 to 2022, with the new data highlighted. Figure 2(a) shows the Settled OR Prices (active) monthly average from 2013 to 2022 and figure 2(b) shows the settled OR prices (active) monthly average from 2022 to 2022.

Figure 1(a): Cleared OR Prices (Active) Monthly Average 2013 to 2022



As shown in the pink shaded area, from 2019 to 2022 cleared active OR prices have declined significantly compared to the historical period that the AESO assessed in its 2019 Report. Moreover, the monthly average prices reflect a general trend of

reductions and have set new record lows in the most recent three-year period. This indicates that the OR markets are highly competitive under the existing auction format and offer transparency and the pricing since 2019 and post-PPA expiry is showing a general trend of lower OR prices relative to the pool prices.

Figure 2(a): Settled OR Prices (Active) Monthly Average 2013 to 2022

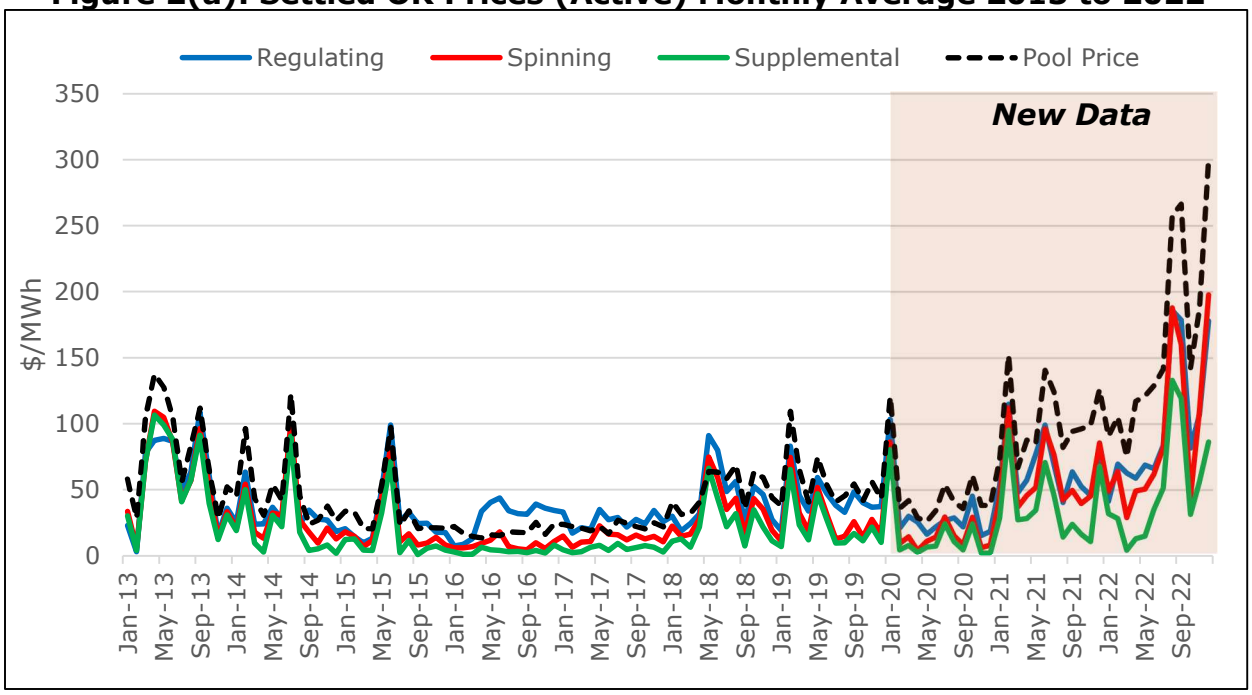
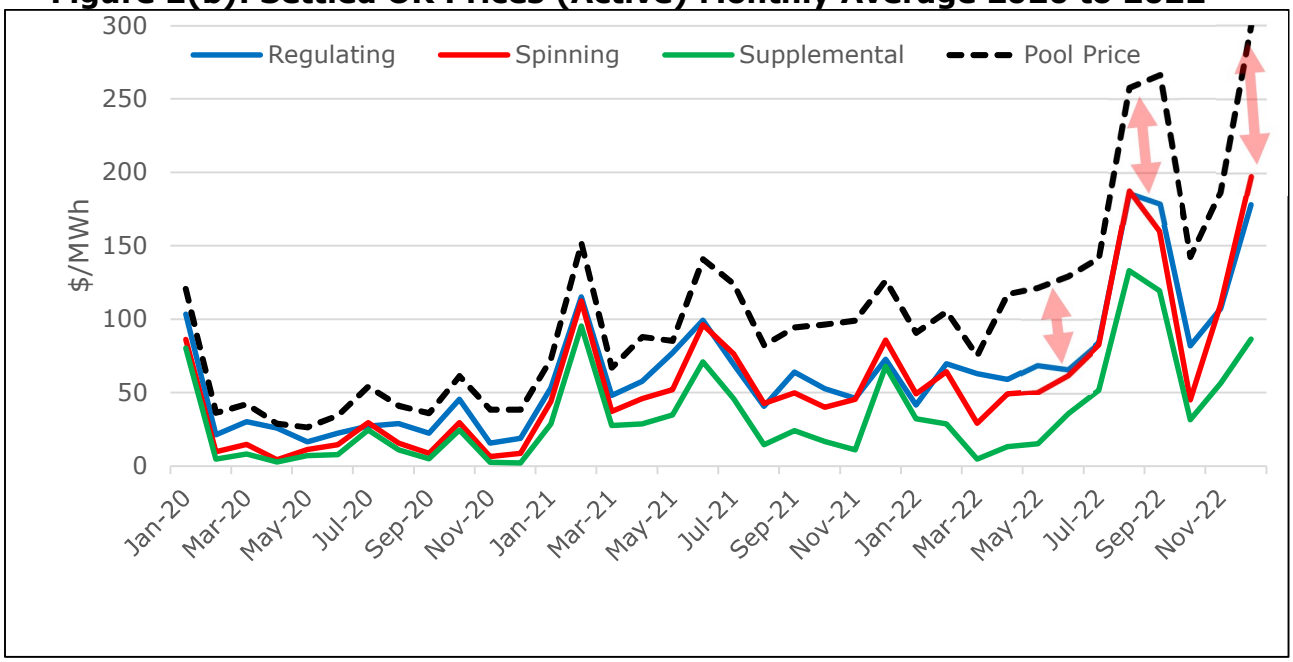


Figure 2(b): Settled OR Prices (Active) Monthly Average 2020 to 2022



As shown in figure 2(a) and more clearly in figure 2(b), there is a widening divergence between pool price and the settled OR price. This divergence is important to note as it indicates that active OR prices, which are indexed to pool prices, were more competitive and exhibited smaller changes than the energy market price.

Competition Increased from New Participants and Qualified Resources

In its 2019 Report the AESO also analyzed the qualified resources data by participant. The AESO stated: "All *[sic]* the current PPAs are set to expire by 2021, and the assets and associated offer control will be returned to the original, pre-regulation owners. Following this change, market concentration in the OR markets is expected to increase."[8]

However, the AESO's prediction did not account for increased participation and qualifications of new resources or retirements of facilities such as Sundance 4 and Keephills 1.[9] While we have limited data on qualified volumes,[10] publicly available information indicates that the number of qualified resources has increased and new participants and asset types are strongly competing in the OR markets.

In the **regulating reserves** market, there have been at least four new assets that have qualified: Keephills 3 (KH3), Battle River 5 (BR5), Cloverbar 2 (ENC2) and Cloverbar 3 (ENC3). Notably, Cloverbar 2 and 3 are owned, operated and controlled by Capital Power and Battle River 5 is controlled by Heartland Generation.

In the **spinning reserves** market, there were at least six new battery assets that have qualified: Summerview (SUM1), Crossfield 3 (CRS3), eReserve1 Rycroft (ERV1), eReserve2 Buffalo Creek (ERV2), eReserve3 Mercer Hill (ERV3), and eReserve5 Hughenden (ERV5). The eReserves batteries are owned by Teric Power Ltd., a new participant to the OR market, and Summerview is owned by TransAlta's subsidiary, Canadian Hydro Developers, Inc. In addition, four thermal assets have qualified: Keephills 3 (KH3), Genesee 3 (GN3), Fort Hills 1 (FH1), and Poplar Creek (SCR5). Keephills 3 is owned and operated by TransAlta, Genesee 3 is owned and operated by Capital Power, and Fort Hills 1 and Poplar Creek are owned and operated by Suncor.

[8] P. 5, (Pdf p. 42), Appendix E: Operating Reserve (OR) Market Review, Market Power Mitigation Advice to Minister, AESO, November 29, 2019 (https://www.aeso.ca/assets/Uploads/AESO-Market-Power-Mitigation-Report-Nov-29-2019.pdf).

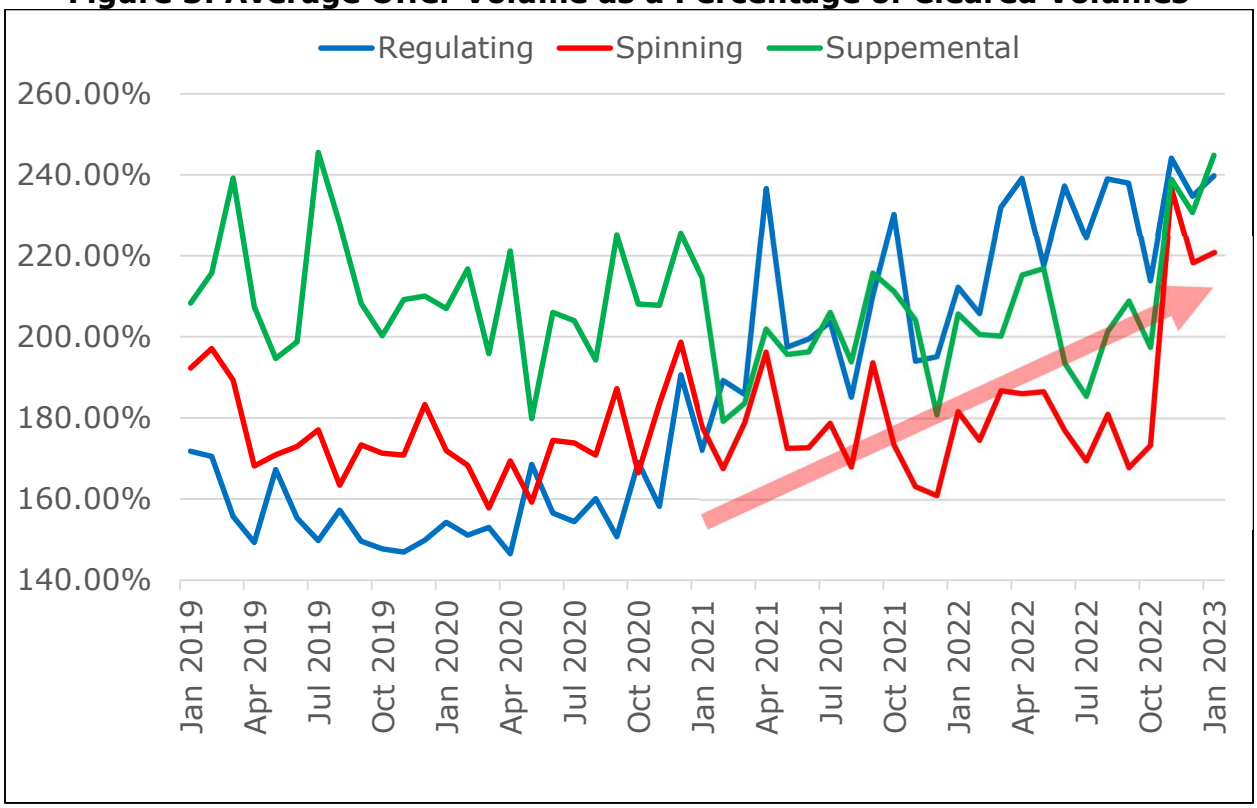
[9] These retirements are from TransAlta's portfolio and would decrease the qualified capacity that TransAlta has offer control over.

[10] Market participants have limited visibility to the qualified volumes. Only the MSA and AESO have this information.

The **supplemental reserves** market has significantly increased with the entry of new load customers and other assets. The market has increased to include 15-18 load participants and approximately 63 other qualified assets.

As shown in Figure 3, the total offered volume is more double (200%+) the cleared volume for each OR product. This surplus of competing resources in the OR markets is indicative of a market that is heavily contested and continues to attract more resources.

Figure 3: Average Offer Volume as a Percentage of Cleared Volumes



Our current estimates of the number of qualified assets and market participants are provided in the table below:

Table 1: OR Markets Number of Qualified Assets and Market Participants

OR Product	Number of Assets	Number of Market Participants
Regulating	20	7
Spinning	45	17
Supplemental	77	30

Going forward, there are several large gas facilities (i.e., Kineticor's Cascade Project, Capital Power's Genesee 1 and 2, and Suncor's Inglis Island Cogeneration) that are expected to achieve commercial operations in the next couple of years. These facilities are dispatchable and will have to comply with the requirements to have

automated generation control. We believe that these are likely candidates to enter OR market and increase competition even more in the near future. Notably, Kineticor would be a new participant in the OR market.

The AESO 2019 Report also highlighted the top four companies by market share for 2013 to 2019. The AESO's table is reproduced below.

Table 2: Market participant share by contracted volume (%) 2013 to 2019

	Total (contracted MW as percent of total contracted MW)	Regulating (contracted MW as percent of total contracted MW)	Spinning (contracted MW as percent of total contracted MW)	Supplemental (contracted MW as percent of total contracted MW)
ATCO	19%	11%	22%	22%
ENMAX	10%	21%	8%	3%
TransAlta	2%	0%	3%	4%
TransAlta Hydro	39%	47%	41%	29%
Balancing Pool	2%	1%	3%	0%
Other	28%	19%	24%	42%

TransAlta has attempted to reproduce market shares by maximum offered volumes in Table 2(b) below (we do not have access to the AESO's data sources such as qualified volumes but using maximum offered volumes would likely reflect qualified volume but may be lower, as such, the market share estimates would be conservative/low). As shown in the table, the market is not dominated by one market participant but rather market share is heavily contested among the top three firms and there is growing share from Capital Power and other (new) participants.

Table 2(a): Market Participant Shares by Maximum Offered Volume (%) 2022

	Regulating		Spinning		Supplemental	
Participant	**Share**	**Change in Percentage Points Since 2019**	**Share**	**Change in Percentage Points Since 2019**	**Share**	**Change in Percentage Points Since 2019**
Heartland /ATCO	24%	**+13**	25%	**+3**	17%	**-5**
ENMAX	18%	**-3**	12%	**+4**	5%	**+2**
TransAlta	40%	**-7**	27%	**-17**	24%	**-9**
Capital Power	7%	**+7**	15%	**+15**	9%	**+9**
Other	10%	**-9**	21%	**-3**	45%	**+3**

*Offer control for Jointly owned assets attributed to participant that is also operator

Overall, these trends in new entry (qualification), new participation, and competition show that the OR markets in their current format are successfully attracting new assets and participants. The conclusion that can be drawn is that the OR markets have low barriers to entry, continue to successfully attract new entrants, and market outcomes are highly competitive and are comparably more efficient than the energy market. These results do not support a conclusion that there are any market power issues or efficiency issues in the OR market. Nor do the historical results support the need to change key features such as the auction format and real-time transparency in offers in the OR procurement mechanism.

Price Discovery Enhances Competition and Market Efficiency

At the highest level, markets function better in an information-rich environment than in an information-deprived environment. The OR markets are not as information rich as the real-time energy markets because they are procured on a forward basis (i.e., day ahead or several days forward) and data and information about fundamentals such as weather, supply and demand become known in real time (and are more predictable when the real-time energy market offers are made). Offer transparency helps to fill this information void in the OR markets, allowing market participants see and respond to offers from their competitors, aids in addressing uncertainty by providing useful information about other market participants' expectations, and facilitates productively efficient outcomes through participants making informed decisions about committing to the OR market and the opportunity cost of doing so.

LEI's Report[11] provides a comprehensive explanation of the open auction process including clearing, offers, and the important role price discovery plays under the current design, resulting in a well-functioning, competitive OR market.

More specifically, offer transparency and the open auction format promote participation and competition in the auction process. This occurs because the auction format itself drives competitors to compete prices down (not up) to the benefit of load paying customers. The auction format, which only permits offers to be revised with lower offer prices or increased quantities in the last five minutes of each auction, is leveraged to maximize competitive tension between suppliers to exert downward pressure on offer prices and culminates in lower clearing price. Furthermore, this format ensures that offer information cannot be used to push offer prices upward at the expense of the market and paying load customers at the benefit of the suppliers.

From a practical perspective, transparency in offer information and the open auction format help participants make informed decisions about participating in the market. The existing offer transparency is anonymized[12] and the shape of the offer curve

[11] Section 3.4.4, LEI Report, August 31, 2022.

[12] Market participants do not know who submitted the offer. The CRA suggests on page 6 of its report that one bidder can "unmask" another bidder's offer such that the second bidder offers at a price that is lower or a volume that is higher than "agreed level" and the first bidder could seek to punish the second bidder. Not only is the CRA's example highlighting collusive conduct that is strictly prohibited under the *Fair, Efficient and Open Competition Regulation*, but also suggests that the offer information that is available to OR providers participating in the auction include

including quantities and prices provide valuable information to a market participant about the opportunity to compete in the OR market.

For example, a market with thin volumes of offers prices for one OR product that a market participant expects that they can compete against provides key information that the market participant will use to formulate its own offer strategy. Conversely, an offer curve that has significant volumes all at heavily discounted offer prices for an OR product that is below the opportunity cost of the market participants may encourage that participant to seek out other OR products or otherwise commit more volume in the energy market. Moreover, with the current open auction format these decisions can be made during an auction so that efficient decisions can be made dynamically in each auction, which is enabled through visibility to offers of other participants. These all aid the market to make productively efficient commitment decisions.

More generally, CRA ignores several key factors that support the need for a price discovery process in OR markets that is needed (and more so than the energy market) and the current market design provides that through an open auction format with real-time offer transparency. These factors include:

- **Productive efficiency in the OR market is different than the energy market:** In the energy market, productive efficiency is achieved with the dispatch of the lowest to highest operating cost units to meet demand. In the OR market, productive efficiency is achieved when OR is provided by the lowest opportunity cost units in the market. While avoidable costs like avoided fuel are considered in OR offers, an equally if not higher consideration is quantifying the opportunity cost of committing in the OR market (a decision that impacts future operational decisions). To optimize both markets, the lowest cost units should be dispatched in the energy market and the units with the higher cost should be committed to the OR market based upon lowest to highest opportunity cost. To produce productively efficient results, market participants must make good decisions in terms of evaluating opportunity cost and reflecting those in their offers.

- **Lowest opportunity cost is an evaluation of future energy prices, a common value trait in the forward OR procurement process:** Not only is the pool price in real time impactful because it determines the price the OR provider gets paid (and this can be zero), a OR resource's opportunity cost is largely determined based upon future real-time energy prices, which are unknown and uncertain when OR procurements occur (day-ahead or up to six days forward). This is particularly true for hydroelectric resources and applies to batteries and other types of energy storage. The key reason that price discovery through real-time offer transparency is necessary in the OR process is to permit a process of price discovery to inform how this trading and forecast

information about the offeror. This is not the case and does not occur. The real-time offer information that is visible in the OR auction process does not provide information that identifies the offeror.

risk is evaluated by other market participants. This is not the same as the "costs" that are reflected in energy market offers (i.e., fuel costs, other variable costs and other risk premiums that must be incorporated). This is the "common value trait" (e.g., future energy price) that OR providers must consider and evaluate in their offers in the OR market. This is not a private value; assigning the wrong value has impacts on whether market outcomes are efficient or not. For example, if a market participant incorrectly assumes that future energy prices are going to be high and consequently its opportunity costs will be high if cleared in the OR market, it could choose not to offer at all or offer at a level that is too high to clear the market despite having lower opportunity cost than its rivals. This would also result in a productively inefficient result because the participant's offer falsely reflected a higher opportunity cost but it was the more efficient supplier as compared to its competitors. Price discovery supports informed participation in the market, improves assessments of opportunity cost, and underpins better/more efficient decision-making by participants.

- **The OR market is voluntary market that needs transparency to reduce the risk of insufficient offer volumes:** Unlike the energy market, which imposed "must offer, must comply" obligations on all supply resources, the OR markets are voluntary. There are no obligations on any providers to offer into the OR markets. This raises the real risk that on any given day for any given product, the AESO may have insufficient offers to clear its required volumes. This risk is concerning because OR are critical premium services that system controllers use to maintain system reliability and are needed to address any unexpected imbalance in supply and demand, including emergency system events. This has not been an issue historically because the existing auction format has supported liquidity and because all qualified participants have real-time offer transparency and can respond if the market appears short of offers to clear the requirement for any product. The adoption of the sealed bid with no real-time offer transparency significantly increases the risk that the market is undersupplied.

Price Discovery Would be Hindered and OR Costs to Consumers Would Increase if the AESO's Recommendations were Implemented

The "latency" concern that the AESO has highlighted to justify its proposal is overstated and exaggerated. The AESO has not provide any information about the historical issues that it has had with latency[13] (e.g., frequency) to even understand the problem other than that it could occur. Furthermore, the AESO, CRA and others have interpreted this latency issue to mean that there are no offers made until the very last minute of the auction. This is not the case. Offers are made throughout the auction process and offers are often made early in the auction process. We estimate that the majority (~55%+) of offers for volumes sold since 2019 were

[13] We understand this to be very rare and infrequent.

submitted more than a minute before close, which is ample opportunity for another market participant to react and update its economic offer(s). While offer activity does pick up as the auction nears its close, the offers that are submitted in the last minute represent a small portion of the actual volume sold. Moreover, an uptick in activity near the close of the auction is not unusual for an auction format in which competitors strive to have their offers cleared without being undercut by their competitors.

More importantly, the concern with latency is that it creates an increased risk of the AESO not procuring its OR requirement. But even on this point, the AESO proposed change to sealed bids actually increases the risks of the AESO under-procuring its OR requirement. Without information about participation and the offers being made within an auction, market participants have little to no information to inform their participation or respond when if offered quantities are insufficient to meet the AESO's requirement. This will result in suboptimal participation decisions, a loss of efficiency, and weaken competition.

The AESO's proposal to only provide price and volume instead of a more fulsome information set including bids, offered volumes, and clearing price and volume are insufficient to understand the offer curve and consequently provide poor quality information for market participants to assess opportunities to sell OR. The shape of the offer curve provides details about the quantity and prices of the offers that allow participants to see gaps in the curve that they could compete for. For example, a market participant would likely see more opportunities and compete more aggressively if the offer curve is thin or has clusters that present large gaps where a resource might be able to undercut its competition and clear volumes for itself.

The information disclosure that the AESO has proposed would provide no information about the offer curve. Moreover, the proposed timing of its release after the auction would eliminate any realization of the benefit of more competition within the auction. The market participant would have none of this information available to it under the AESO proposal and may misinterpret the high volume of offers relative to cleared volume and lower price from a previous auction to mean that it has limited opportunity to compete in the next OR market and choose an alternative use of its resource. There is almost no likelihood that participation and outcomes would ever be more efficient in this blind approach to market commitment and offering compared to the current approach. In other words, the solution (creating a market environment with poor information) will create higher risks of suboptimal decisions and poorer market efficiency outcomes.

TransAlta expects that the benefits of price discovery enabled through the sealed-bid format and real-time availability of offers was – and remains - a significant factor for the stronger competitive outcomes observed in OR market when compared to the energy market.[14] To estimate this potential benefit, we observed that actual OR

[14] It should also be noted that the energy market is a sealed-bid format and delays the release of offer data 60 days.

prices were between 17% to 83% lower[15] than they would have otherwise been if OR prices simply mirrored the change in pool price from 2020 to 2022.

Table 3 below provides a counterfactual of what active OR prices would have been if they simply reflected the change in average pool price. As shown in the green highlighted rows, the prices of spinning, supplemental and regulating would have all be significantly higher than actual OR prices from 2020 to 2022, with the exception of spinning and supplemental reserves in 2020.

Table 3: Actual and Counterfactual Active OR Prices from 2020 to 2022

	2020	2021	2022
Spinning – Actual	$22.62	$64.41	$98.16
Supplemental – Actual	$17.67	$42.96	$56.29
Regulating - Actual	$28.00	$64.33	$97.36
Average Pool Price	$46.72	$101.93	$162.46
Y-o-Y Change in Average Pool Price	$(8.16)	$55.21	$60.53
Spinning – Counterfactual*	$21.79	$77.83	$124.94
Supplemental – Counterfactual*	$16.09	$72.88	$103.49
Regulating – Counterfactual*	$32.82	$83.21	$124.86
Spinning – Difference Actual vs Counterfactual	$(0.83)	$13.42	$26.78
Supplemental – Difference Actual vs Counterfactual	$(1.58)	$29.92	$47.20
Regulating – Difference Actual vs Counterfactual	$4.82	$18.88	$27.50

*Counterfactual Price = Previous Year Actual Price + Y-o-Y Change in Average Pool Price

For context a 20% increase in OR price would translate to an increase of approximately $68 million/year in additional ancillary service costs that would need to be recouped from load customers between 2020 to 2022.

Going further, we can use information provided from the MSA's Q4 2022 Report to compare actual results against a counterfactual of what the average pool price would have been without any price markup over marginal costs. This counterfactual price applied the Lerner Index percentages, which quantify the average market markups, calculated using historical data and published by the MSA, to the actual average pool prices from 2020 to 2022.[16]

Table 4: Actual and Counterfactual Active OR Prices from 2020 to 2022

	2020	2021	2022
Spinning – Actual	$22.62	$64.41	$98.16
Supplemental – Actual	$17.67	$42.96	$56.29
Regulating - Actual	$28.00	$64.33	$97.36
Average Pool Price	$46.72	$101.93	$162.46

[15] Spinning and supplemental reserves were -4% and -9% in 2020.

[16] P.4, MSA Q4 2022 Report: Quarterly Report for Q4 2022 (albertamsa.ca)

Lerner Index (%) (see footnote 13)	24%	37%	36%
Counterfactual Perfectly Competitive Pool Price	$37.68	$74.40	$119.46
Y-o-Y Change in Counterfactual Pool Price	$(5.20)	$36.72	$45.05
Spinning – Counterfactual*	$24.75	$59.34	$109.46
Supplemental – Counterfactual*	$19.05	$54.39	$88.01
Regulating – Counterfactual*	$35.78	$64.72	$109.38
Spinning – Difference Actual vs Counterfactual	$2.13	$(5.07)	$11.30
Supplemental – Difference Actual vs Counterfactual	$1.38	$11.43	$31.72
Regulating – Difference Actual vs Counterfactual	$7.78	$0.39	$12.02

*Counterfactual Price = Previous Year Actual Price + Y-o-Y Change in Counterfactual Perfectly Competitive Pool Price

As shown in Table 4, the actual prices achieved in OR were generally lower (they were 1% to 56% lower[17] for all OR products with the exception of spinning reserves in 2021) than what the prices would have otherwise been if the OR prices reflected perfectly competitive pool prices in 2020 to 2022. This clearly shows that OR markets are competitive and producing price outcomes that benefit consumers.

While it is difficult to parse out the contribution that the open auction format and real-time offer transparency to the actual outcomes over the period, from an active OR market participant's perspective, we believe that these were meaningful contributors to the stronger competition in the OR markets during this period. At a minimum, the contribution was positive and aided in producing lower OR prices than would have otherwise been achieved.

While TransAlta could be a beneficiary of higher OR prices as a large supplier of OR, we also have a long-term interest in ensuring the success of the OR market in Alberta. Additionally, TransAlta may also experience a higher level of conscription than other OR providers – we cannot validate this fact because the AESO does not publish any data about OR conscriptions or provide any information about its conscription practices, but since 2020 TransAlta has been conscripted 69 times. Conscription is an out-of-market action taken by the AESO when OR requirements are insufficient or undersupplied for other reasons. Our understanding is that the AESO does not consider the previous day's offers when it chooses to conscript resources and has no regard for a resource's competitive offers or opportunity cost. This is a practice and process that should be worked on to improve the OR market rather than the AESO's proposal to remedy what is not broken.

TransAlta supports sound and efficient market designs and opposes the adoption of a sealed-bid auction format and 60-day in the release of offer information. The AESO's proposal is unnecessary, will undermine the current well-functioning competitive OR market, and should be withdrawn.

[17] Spinning reserves was -8% in 2019.

CRA's Summarization of Stakeholder Feedback is Misleading and Unhelpful

The CRA frames and summarizes stakeholder feedback in way that attempts to create a false narrative that is about the interests of large participants that oppose reducing OR market visibility and smaller or other market participants. This is not the case.

The concerns about the AESO's proposal to reduce offer transparency was shared by all participants that are active in those markets and the proposal was strongly opposed. This includes TransAlta Corporation, Heartland Generation Ltd., ENMAX Corporation, Capital Power Corporation, Suncor Energy Marketing Inc., TC Energy, Enfinite Power, Greengate Power, Independent Power Producers Society of Alberta, URICA Asset Optimization (which acts for many small participants), and Millar Western Forest Products. Campus Energy Partners and Voltus Energy Canada expressed that they did not require offer transparency, but their statements were not expressed as support for the AESO's proposal but rather their acceptance that the proposal would have limited impact on the way they participate in OR if the proposal was implemented.

It should also be noted that the stakeholders that the CRA labeled as "other market participants" included parties that are not market participants at all: they do not participate in the OR markets and likely have limited knowledge or experience how the markets function from a practical perspective.

The other parties were influenced by the way the AESO engaged and presented its materials in the Operating Reserves Market Review. More specifically, the AESO proposed solutions at the outset of the consultation in session 1. Thereafter, in session 2, the AESO sought to establish the problem that it had proposed its solution to address. At no time during the entire consultation thus far has the AESO substantiated with evidence that "problems" exist in OR market (e.g., use of offer information to collude or abuse market power) or provided any data or factual information that would help stakeholders to understand the significance of the "problems" it identified. Instead, the AESO represented the problems as though they were founded in evidence rather than as hypothetical and theoretical. Notably, the AESO claimed that it had conducted a "comprehensive" review of relevant academic literature (without providing the academic literature references that were reviewed or any other helpful evidence that could confirm that the literature reviewed was relevant) to support its recommendations.

The other parties likely accepted that the AESO's claims there could be a potential problem and, even if the identified "problem" wasn't real, because the proposed solution would not affect them. If these parties were presented with the facts that show the OR market is more competitive than it was in 2019, they may have also understood that the AESO's proposal is not beneficial to them and would have agreed that no further time and effort should be spent on this initiative.

Clearly, the views of the market participants that actively participate and supply OR are highly relevant and more important to consider over views of parties that have no or limited impact or are otherwise poorly informed due to the structure of AESO's consultation approach. Moreover, it is clear that the majority, if not all, of OR market participants agree that offer transparency should continue to be made available and is important in decision making for OR market participation.

Conclusions & Recommendations

In summary, the data and objective facts do not support a case to change from the status quo. The data shows that the OR market is attracting new entry, participation, and resources, is highly competitive, and produces outcomes that are more competitive than the energy market. Furthermore, it is clear from the stakeholder comments that OR participants do not support the AESO's proposal and more specifically the proposal to remove offer transparency.

TransAlta recommends that the AESO withdraw its proposal for a sealed-bid and 60-day delay on OR offer data. The AESO should also consider cancelling any further work under its operating reserves market review initiative and, to the extent that it does move forward with any changes, only those recommendations that receive unanimous support should be pursued.

Appendix 1: Excerpts from MSA Reports

The MSA's quarterly reports since 2019 have confirmed TransAlta's observations of, new entry and market share changes that indicate that the OR markets are highly competitive and counter the AESO's predictions about the OR market post-PPA as stated in their 2019 Report. More specifically, the MSA made the following observations about the state of the OR markets:

MSA Q4 2020:

The total cost of OR in 2020 was $148 million, which was 23% lower than the $193 million total in 2019, and 36% lower than the $240 million total in 2018. Decreasing costs associated with the procurement of active reserves was the major source of cost reductions. **In 2020 the average cost of active reserves was $21.94/MWh, a decline of $8.16/MWh compared to the average cost of $30.55/MWh in 2019.** As shown in Table 16, **the decline in average costs has been observed in all three active OR product markets.** In spinning and supplemental markets, the decline in average costs was similar to the decline in average pool prices, indicating that overall costs in these markets have fallen largely due to the decline in pool prices.

Table 16: Average cost ($/MWh) of active OR products by year (2018 to 2020)

Product	2018	2019	2020	2020 - 2019
Spinning	$36.44	$29.95	$22.62	($7.33)
Supplemental	$26.89	$24.25	$17.67	($6.57)
Regulating	$39.95	$40.98	$28.00	($12.98)
Active OR	**$33.67**	**$30.55**	**$21.94**	**($8.62)**
Avg Pool Price	**$50.35**	**$54.88**	**$46.72**	**($8.16)**

In the regulating reserves market the decline in average costs has been $12.98/MWh year-over-year, which is a larger decline relative to average pool prices. In 2020 the AESO procured 1,940 TWh of active regulating reserves, which is 10% lower than the total procured in 2019. Starting on June 1, 2020 the AESO began purchasing 20 MW per hour less regulating volume because they are now able to manage the reliability of the system using less than had previously been the case. All else equal, using less regulating reserves provides for greater price fidelity, meaning a closer response between changes in the supply/demand balance and dispatches in the energy merit order. On the supply-side of the regulating reserve market, the MSA has observed a

greater volume of highly-discounted offers, particularly in the offers for on-peak reserves from the start of May to the end of October.[18]

MSA Q4 2021:

In 2021, both total and average OR costs were more than double those in 2020. Total OR costs in 2021 were $339 million, compared to $148 million in 2020. Table 4 shows the year-over-year average cost changes for active OR products. As shown, the higher average costs were largely driven by higher pool prices. The general correlation between OR costs and pool price is expected because the opportunity cost of providing OR is often forgoing the sale of energy, and for active reserves prices are directly indexed to pool price.

Table 4: Average cost ($/MWh) of active OR products

Product	2021	2020	2021 less 2020
Spinning	$64.41	$22.62	$41.79
Supplemental	$42.96	$17.67	$25.29
Regulating	$64.33	$28.00	$36.33
Avg. pool price	**$101.93**	**$46.72**	**$55.22**

Although average OR costs rose substantially in 2021, these increases were significantly less than the increase in pool price. Table 4 shows that while there was a $55.22/MWh increase in average pool price, the costs of spinning, supplemental and regulating reserves increased by significantly less. **This suggests that OR markets were more competitive in 2021 than in 2020.**

In 2021, competition in the spinning and supplemental reserve markets was driven by new OR providers offering OR at lower costs. From 2020 to 2021, the share of spinning reserve dispatches from battery resources increased from 1% to 13%. The share of supplemental reserve dispatches from load resources increased from 35% to 45%. Increased participation from battery and load resources in OR markets strenghtens competition because these resources generally offer their capacity at relatively low prices. Batteries and loads have opportunity cost profiles that are different from most generators.[19]

[18] P. 41, MSA Q4 2020 Quarterly Report (https://www.albertamsa.ca/assets/Documents/Q4-2020-Quarterly-Report.pdf).

[19] P. 27, MSA Q4 2021 Quarterly Report (https://www.albertamsa.ca/assets/Documents/Q4-2021-Quarterly-Report.pdf).

MSA Q4 2022:

In 2022, total OR costs were $499 million, compared to $339 million in 2021 and $148 million in 2020. This is the highest annual total cost for OR since the beginning of the market. The higher OR costs in 2022 reflect higher pool prices during the year.

OR costs and pool prices are positively correlated because the opportunity cost of providing OR is usually foregoing the sale of energy. This is particularly true for active OR products since active prices are indexed directly to pool price. Table 8 shows the year-over-year change in average cost for active OR products.

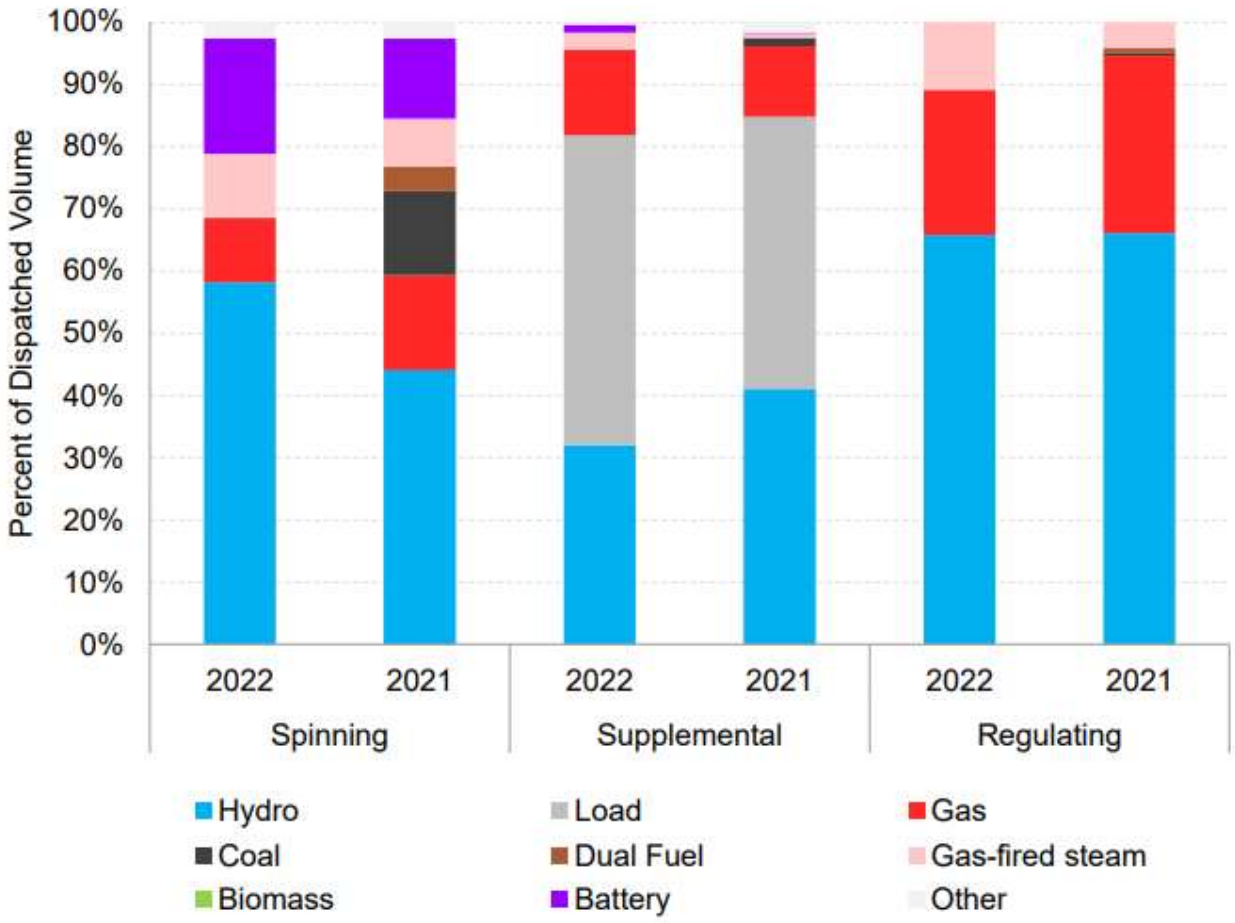
Table 8: Average cost ($/MWh) of active OR products

Product	2022	2021	Difference (2022 - 2021)
Spinning	$98.16	$64.41	+$33.75
Supplemental	$56.29	$42.96	+$13.33
Regulating	$97.36	$64.33	+$33.03
Avg. Pool Price	**$162.46**	**$101.93**	**+$60.53**

The increase in the average cost of active OR products was less than the increase in pool price year-over-year. As shown in Table 8, pool price increased by $60.53/MWh while the costs of spinning, supplemental, and regulating reserves increased by less, which suggests OR markets were more competitive in 2022. The OR markets became increasingly competitive in the second half of the year, with on-peak spinning and supplemental products setting record lows for equilibrium prices in Q3 and Q4.

Figure 57 shows the dispatched volume of spinning, supplemental, and regulating reserves by fuel type for 2021 and 2022. As shown, coal accounted for 14% of spinning reserve dispatches in 2021 but only for 0.13% in 2022 due to several coal-to-gas conversions that occurred since 2021. The reduction in coal volume was offset by an increase in hydro and battery dispatches.

Figure 57: Operating reserves dispatched by product and fuel type (2021 and 2022)



Battery assets made up 19% of spinning dispatches in 2022, reflecting the increased presence and participation of new battery assets in the market.

Load provision of supplemental reserves increased from 44% in 2021 to 50% in 2022. Of all OR products, loads are only capable of providing supplemental reserve since it does not require providers to be continuously synchronized to the grid and providing frequency response.[20]

[20] PP. 55-56, MSA Q4 2022 Quarterly Report (https://www.albertamsa.ca/assets/Documents/Q4-2022-Quarterly-Report.pdf).

Rebuttal to Charles River Associates' ("CRA") Assessment of AESO Recommendations to Adopt a Sealed-Bid Auction for Operating Reserves

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March 7, 2023

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List of Acronyms

AESO	Alberta Electric System Operator
AGC	Acting Generation Control
AUC	Alberta Utilities Commission
BESS	Battery Energy Storage Systems
CRA	Charles River Associates
ETS	Energy Trading System
FEOC	Fair, Efficient, and Openly Competitive
HTR	Historical Trading Record
LEI	London Economics International LLC
MSA	Market Surveillance Administrator
MW	Megawatts
NETA	New Energy Trading Arrangements
OR	Operating Reserves
PPA	Power Purchase Arrangement
PSI	Pivotal Supplier Index
RR	Regulating reserves
SR	Spinning reserves
SUP	Supplementary reserves
TAC	TransAlta Corporation

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1 Executive summary

London Economics International LLC ("LEI") was retained by TransAlta Corporation ("TransAlta" or "TAC") to prepare an independent, expert evaluation of Alberta Electric System Operator's ("AESO") proposal to change the format of the procurement process for Operating Reserves ("OR") from the current sequential open auction format to a sealed bid format. In conjunction with the move to a sealed bid format, the AESO is also proposing to conceal all the offer data from market participants for 60 days. This is a significant change to the information that OR market participants currently have available: they can see the offer prices and quantities of all active market participants in real-time (but not the identity of those making the offers). LEI prepared a report, dated August 31, 2022, that described in detail the problems surrounding AESO's proposed changes, based on key characteristics of the OR market in Alberta, economic theory, and most importantly, given the AESO's intended goals. For example, during stakeholder consultations, the AESO explained that its overarching goals for the OR market is to ensure price fidelity and market efficiency, including dynamic efficiency. These goals will not be achieved under the AESO's proposed changes to auction format and information release policies. In the August 31, 2022 report, LEI concluded that changing to a sealed bid auction and reducing information available for market participants to refine their offers would be detrimental to the efficiency of the active OR markets and would work counter to the AESO's goals of motivating new entry.

The AESO retained Charles River Associates ("CRA") to review LEI's August 31, 2022 report. CRA submitted a written assessment dated January 11, 2023, supporting the AESO's proposed changes to format and information release policies, citing to hypothetical concerns over market vulnerabilities to "anticompetitive coordination" (we refer to CRA's written assessment as the "CRA report").[1] CRA's conclusions are not justified. The CRA report concedes that they have "**not conducted** an empirical analysis of whether there is evidence of collusion or anticompetitive coordination in Alberta's OR markets" (emphasis added).[2] Indeed, to the best of LEI's knowledge, no one - not even the Market Surveillance Administrator ("MSA") - has presented evidence of coordinated effects in the Alberta OR markets. Moreover, the economic theory that CRA has leveraged to support its position comes from economic theory and empirical research focused on other industries and circumstances that are not directly transferrable to the OR markets, as we discuss further in Section 3 of this rebuttal report. The authors of the CRA paper have never traded OR products, nor studied - by their own admission – market dynamics in the Alberta OR markets. The absence of practical experience leads CRA to overlook the functional features of the current market design that supports fair, efficient, and open competition. In summary, CRA's support for a sealed bid auction and reduced transparency hinges on unproven, conjectural concerns with market participant behavior and economic theories that do not correlate with the facts of the OR markets in Alberta.

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[1] Baziliauskas, Andy and Adonis Yatchew. Charles River Associates. *Assessment of AESO Recommendations to Adopt a Sealed-Bid Auction for Operating Reserves.* January 11, 2023. Pg. 2.

[2] Ibid.

2 CRA's conclusions rest entirely on hypothetical and unrealistic arguments around collusion in the OR markets

Neither AESO, nor CRA, have carried out an in-depth analysis of the OR markets in Alberta to justify the claim of anti-competitive behavior in the market (firms exercising market power) and the need for a different auction format. The CRA report relies on industry structure information provided by AESO in its original stakeholder materials, which is outdated. CRA has alleged concerns of market power in the OR market spilling over into the energy market through cross-market signaling but offer no factual foundation for such concerns. The MSA's quarterly reports have indicated the active OR auctions are workably competitive, and in fact increasingly competitive in recent years.[3] Simply put, the facts do not support the theoretical arguments put forward by CRA.

2.1 Are the active OR markets in Alberta suffering from lack of competition?

All evidence suggests that the active OR markets are competitive in spite of the levels of concentration. On November 30, 2021, AESO acknowledged in its first stakeholder session for the Operating Reserve Market Review that the impetus for the market review and various proposed changes began at the direction of the Minister of Energy because of the uncertainties around the industry structure of the OR markets back in 2019 – before the Hydro Power Purchase Arrangements ("PPA") expired at the end of 2020. Since the expiration of the Hydro PPA in 2020, the MSA has not made any observations about the lack of competitiveness of the active OR markets in Alberta in its quarterly reviews.[4] In fact, the MSA has observed increasing competition in recent years. Moreover, there are clear and undisputed facts about the contestability of the active OR markets as evidenced by new entry, which LEI presented in the August 31, 2022 report and TransAlta summarizes in its corporate submission dated March 7, 2023.

2.2 CRA mistakes economic comparative advantage for market power concerns

Before we critically consider the economic literature that CRA relies on its assessment, it is important to understand the basic facts. The number of market participants at any time in the active OR markets is limited by the number of operating resources in the energy market, and also by the economic opportunities expected for the next day's energy market. Resources selected to provide active OR products must be able and willing to provide energy quickly if called upon (directed) by the AESO. This means that only a subset of available generating resources are likely to be able (technically capable to provide energy quickly) and willing (because of the opportunity costs) to participate in the OR markets. Some resources may not expect to be dispatched in the energy market and have start-up times of an hour or longer; these generating resources would

[3] MSA. *Quarterly Report for Q3 2022. pg. 53*; MSA. *Quarterly Report for Q4 2022. pg. 55.*

[4] MSA. *Quarterly Report for Q1 2021*; MSA. *Quarterly Report for Q2 2021*; MSA. *Quarterly Report for Q3 2021*; MSA. *Quarterly Report for Q4 2021*; MSA. *Quarterly Report for Q1 2022;* MSA. *Quarterly Report for Q2 2022;* MSA. *Quarterly Report for Q3 2022;* MSA. *Quarterly Report for Q4 2022.*

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not have the ability to respond to AESO's instructions to produce energy quickly. Other generating resources may be planning to sell all their capacity into the energy market and therefore they would face a high opportunity cost in terms of foregone energy market profits and would not be competitive in the OR markets. Hydroelectric resources with storage capacity, which are currently owned by TransAlta, are especially well-positioned to provide regulating reserve ("RR") and contingency reserve services. They typically do not sell all their capacity in the energy market in order to be able to store water for use in higher priced periods at a future date. This means that they have a low opportunity cost for offering some of their capacity into the OR markets. Similarly, battery energy storage systems ("BESS") are also well-positioned economically to sell some of their capacity as contingency reserves.[5] However, there are far fewer BESS providers in Alberta as compared to the legacy hydroelectric capacity of the Bighorn, Bow River, and Brazeau assets. This partially explains why the market share of hydroelectric resources (and TransAlta) is so high in the Alberta OR markets.

The resulting level of concentration of ownership of resources that provide OR by definition may be higher than the concentration of the energy market. However, that fact alone, does not make the active OR markets uncompetitive. Indeed, the legal framework in Canada (and in other jurisdictions around the world) draws a bright-line distinction between a situation where market participants may have a large market share, i.e., possess market power, and where market participants abuse market power through the exercise of their dominance to restrain competitive response. Possession of market power is not sufficient basis for anti-trust prosecution and does not – on its own – justify preemptive (and disruptive) changes to the market design. For example, Competition Bureau Canada writes:

> *"Although it is necessary for a firm to possess a substantial degree of market power in order to contravene section 79, this alone is not sufficient to raise issues under the abuse of dominance provisions of the Act. Even where a firm may be dominant, it must also be engaging in a practice of anti-competitive acts that gives rise to a substantial lessening or prevention of competition".*[6]

The only data that CRA (and the AESO) has presented is related to market power possession, not the exercise of market power.[7] And indeed, some of the AESO's data on market power possession, which CRA relies on to support its theory of coordinate behavior, is out of date because it is based on the circumstances that predate some of the new participants in the OR markets. In the more recent MSA quarterly reports, the MSA itself notes that the operating reserves market and

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[5] In other jurisdictions, BESS also participate extensively in regulating reserve markets. However, the market rules are more accommodating in those jurisdictions. It is a lot more difficult for a BESS to sell regulating reserves to the AESO because of the multi-hour block nature of the product currently and the fact that BESS owners cannot specify parameters in their OR offer that would ensure neutrality of the energy charge.

[6] Competition Bureau Canada. "Abuse of Dominance Enforcement Guidelines." Government of Canada, Innovation, Science and Economic Development Canada, Office of the Deputy Minister, Competition Bureau Canada. January 20, 2022. https://ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/publications/abuse-dominance-enforcement-guidelines#sec01

[7] In fact, the exercise of unilateral market power is allowed in the Alberta markets, because it provides a pathway for fixed cost recovery and dynamic efficiency. The CRA report also recognizes this.

competition have significantly increased since 2019 and remained highly competitive even in Q3/Q4 2022 because of the influx of new participants and expansion of OR capabilities, even when the overall supply cushion in the energy market tightened due to outages and higher demand.[8] For example, the MSA noted increased participation of BESS, accounting for 19% of dispatched spinning reserves, while load participation in the supplementary reserves market increased to 50% by 2022.[9,10] Such new entry will also violate the "prerequisites" for tacit collusion to be workable, as we discuss further below.

2.3 Current OR market design does not align well with the prerequisites for the theory around collusive behavior

CRA admits that it is not focused on unilateral market power exercise, because such behavior is in fact permissible in the Alberta electricity sector. In its assessment, CRA focuses exclusively on the economic theory of coordinated behavior and tacit collusion.

The *Electric Utilities Act*[11] and specifically the *Fair Efficient and Open Competition ("FEOC") Regulation* put significant restraints on any explicit coordination and sharing of electric trade data amongst non-affiliates.[12] With respect to tacit collusion, the current characteristics of the active OR markets do not meet all the prerequisites[13] for the applicability of the economic theory of tacit collusion, which are as follows:

1. **Reaching terms of coordination:** If competitors can quickly reach a consensus over how the coordination should operate, coordination is more likely to occur.

2. **Monitoring deviations:** Coordinating firms are frequently persuaded to stray from the rules of coordination to enhance their market share. Hence, markets must be sufficiently transparent to allow coordinating firms study the behavior of other firms, to determine when to retaliate if deviation arises.

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[8] MSA. *Quarterly Report for Q4 2022. pg. 21-35.*

[9] MSA. *Quarterly Report for Q4 2022. pg. 56.*

[10] It appears that CRA is ignoring inconvenient facts that LEI has already brought up. In our first report, we cited that "technological developments are increasing the pool of eligible resources and driving competition in Alberta's OR markets". pg. 21. In addition, we provided an example of the increasing role of BESS in the spinning reserves market, noting that by Q1 of 2022, it was "responsible for 15% of dispatched spinning reserves, despite making up only 0.4% of installed capacity (as of August 2022)". pg. 21.

[11] Electric Utilities Act, SA 2003, c E-5.1.

[12] See Sections 2 and 3 of the Fair, Efficient and Open Competition Regulation, Alta Reg 159/2009.

[13] European Commission (2004), *Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations between Undertakings*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205(02)&from=EN

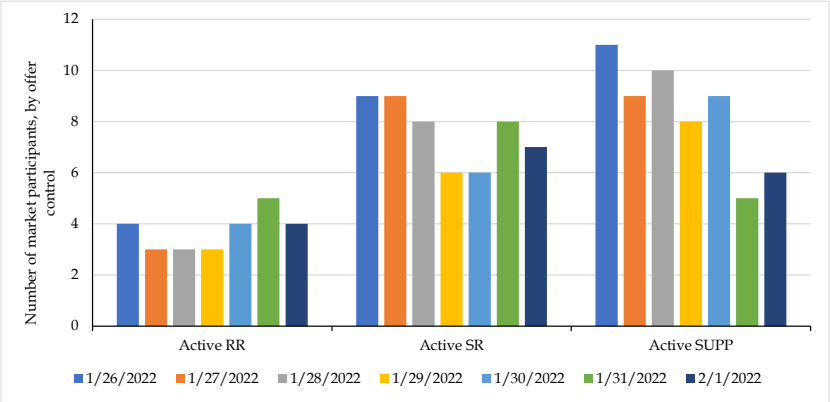
3. **Deterrent mechanisms:** Coordination cannot be sustained unless the penalties for deviating from the rules are high enough to persuade the coordinating firms that, doing so is not in their best interests.

4. **Reactions of outsiders:** For coordination to be effective, the actions of customers, potential competitors, and non-coordinating firms should not be able to undermine the results that are anticipated from coordination.

First, as CRA also admits, the identity of market participants making offers is not revealed. Indeed, AESO releases the OR awards by provider after a 60-day period on its Energy Trading System ("ETS"), but there is no direct corollary data to the offers that were made. This undermines the credibility of any "punishment" to deter market participants from departing from the collusive strategy.

Second, the number of participants is not fixed (and evidence from Alberta's OR markets suggests that the resources participating day to day to change significantly especially in the active supplementary markets, as seen in the figure below). This makes it difficult for market participants to come to a tacit agreement on how to divide up the market. There is always a risk of a new market participant offering in and disturbing the "quid pro quo" established by the incumbents. **Error! Reference source not found.** below shows the daily variation of participants in the OR market. The graph indicates that the number of participants frequently varies from one day to the next. In addition, we observe that there is increasing variation in the Active Supplemental Reserves ("SUP") auction and Active Spinning Reserves ("SR") auction, which is consistent with the influx of new entry from BESS providers and load providers. Notably, these are just the participants that cleared. At any given point in time, there may be even more participants that offered but were not awarded.[14]

Figure 1. Number of participants that cleared in the daily Active OR auctions the week of January 26, 2022



Source: AESO. Ancillary offer control and asset data, 2022.
Note: Market participants in this graphic does not include smaller participants in the market.

[14] Only the AESO and WattEx have information for the total number of participants that offered.

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CRA also notes that the OR auctions are repeated, and that economic theory indicates that repetitive auctions are more prone to collusion. However, it is important to understand that the type of repetition in the OR markets is not ideal to arranging a coordinated strategy. Unlike real-time energy markets where trading is essentially continuous, the AESO buys all its active OR needs on a daily basis. The next day, the market fundamentals may be very different from the prior day (therefore in the context of coordinated behavior, the "agreement" previously arranged may no longer be viable) and the participating resources may not be the same (as described above).

Finally, in order to make punishment credible, it is important that market participants know who was awarded OR commitments. Therefore, not knowing the identity of the other market participants during or right after each day's auctions close makes any "punishment" strategy (for moving away from the coordinated outcome) practically impossible to implement. CRA fantasizes about potential workarounds to the lack of visibility of the identity of competitors, like signaling mechanisms in the offers. But there is no basis for these imaginative theories. Many economists have concluded that this violation of these prerequisites nullifies the applicability of tacit collusion.[15,16]

In the theoretical construct, when tacit collusion is practiced, prices are higher than they would otherwise be, or the supply of the product or service is less than what would occur, under competitive market dynamics.[17,18] Under one variation of the theory of collusion, known as limit pricing, prices are artificially suppressed (i.e., lower than what would have occurred under competitive markets), in order to prevent new entry.[19] In purporting the theory of tacit collusion, it is unclear what outcomes CRA is actually concerned with in the context of efficiency of the active OR markets in Alberta. So, we should ask ourselves:

- Is CRA worried that there is insufficient supply of OR products? That has not happened under the current design for many years.[20] Indeed, the open auction format helps signal

[15] Ibid.

[16] For example, see Ayres, Ian. "How Cartels Punish: A Structural Theory of Self-Enforcing Collusion." Columbia Law Review, vol. 87, no. 2, 1987, pp. 295–325. JSTOR, https://doi.org/10.2307/1122562. Accessed March 6, 2023.

[17] Devlin, Alan. "A Proposed Solution to the Problem of Parallel Pricing in Oligopolistic Markets." Stanford Law Review, vol. 59, no. 4, 2007, pp. 1111–51. JSTOR, http://www.jstor.org/stable/40040349. Accessed 5 Mar. 2023.

[18] Joseph E. Harrington, Jr., 2012. "A Theory of Tacit Collusion," Economics Working Paper Archive 588, The Johns Hopkins University, Department of Economics.

[19] Milgrom, Paul, and John Roberts. "Limit Pricing and Entry under Incomplete Information: An Equilibrium Analysis." Econometrica, vol. 50, no. 2, 1982, pp. 443–59. JSTOR, https://doi.org/10.2307/1912637. Accessed 5 Mar. 2023.

[20] Based on TransAlta's experience, the issue of insufficient supply in the OR markets is not a pervasive problem, because there have been only two instances when this occurred, one of which was due to an IT issue. LEI

to OR providers when the supply appears to be falling short of AESO's procurement target and that successfully motivates additional offers. TransAlta's corporate admission explains how a sealed bid, which CRA advocates for, would increase the likelihood of insufficient offers.

- Is CRA worried about higher prices due to tacit collusion? There is no evidence that active OR prices have been inflated due to tacit collusion. OR prices have been very efficient at tracking Pool Prices (which represent the common "opportunity cost" component for many OR suppliers) and the supply or demand-based fluctuations in the energy market. In several MSA quarterly reports, the MSA notes that a general correlation exists between OR costs and pool prices because the opportunity cost of providing OR is usually foregoing the sale of energy. This is particularly true for active OR products since active OR prices are indexed directly to pool price. In the Q3 2021 report, the MSA provided a trend graph showing how OR prices track with Pool Prices (and this graph is reproduced in Figure 2 below). As we discuss further below in Section 4.2, a sealed bd auction could actually raise clearing prices, because it will not give market participants visibility of economic opportunities to offer more supply at a lower price.

- Is CRA worried about artificially low prices? Low prices benefit consumers in the short term, but in the longer term, if they are indeed a consequence of limit pricing or other predatory pricing strategies, can be harmful because they could squeeze out smaller players and prevent new entry. This is not aligned with the actual experience in Alberta: there has been significant new entry in the active OR markets, as we have discussed in the August 31, 2022 report. That new entry has consisted of new resources (BESS), new participants (for example, new load resources engaging in the OR markets to reduce their overall energy bills), and even participation of existing resources that had not previously participated (such as Clover Bar). The Alberta Power Pool currently has over 2,749 MW of gas-fired generation under construction.[21] As we get such resources online in the coming years, they will be equipped with the basic technology to be able to participate in the OR markets, so their participation will be contingent on the market opportunities.[22] An open auction provides the most efficient way for these new resources to learn about the OR markets and compete effectively.

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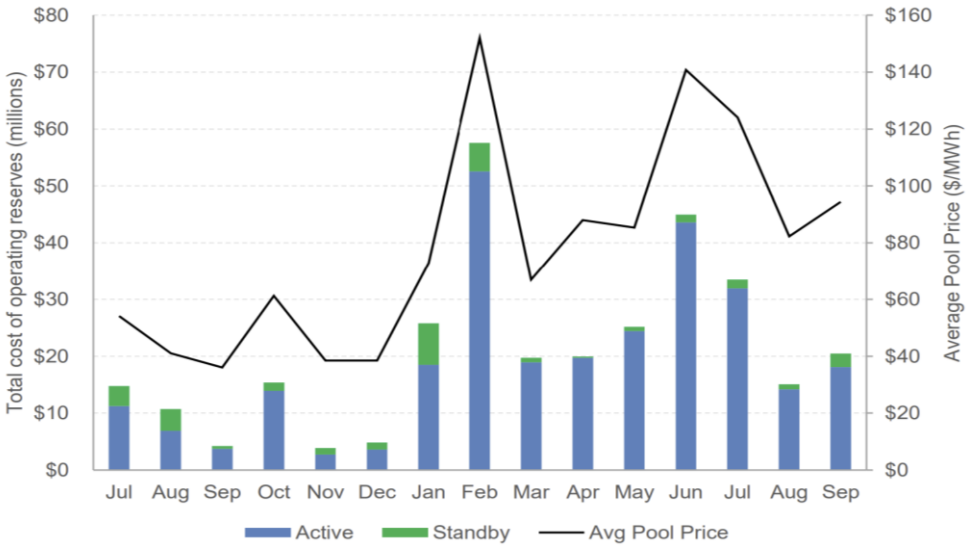
believes that moving from an open auction to a sealed-bid format, would definitely lead to increasing instances of undersupply.

[21] AESO. *Long-term adequacy metrics - February 2023*. February 1, 2023.

[22] Under Section 502.5 of the AESO Rules, all thermal generation (greater than 10MW) are required to have an acting governor system which must be designed to be continuously in service, free to respond to frequency changes, and able to control the response to frequency changes. For a battery energy storage facility, every such storage facility must have a continuously acting government system, designed to be continuously in service, free to respond to frequency changes, and, controlling the response to frequency changes while the battery energy storage facility is connected to the transmission system.

In summary, the CRA report is vague and inconclusive about the harm posed by their theory of tacit collusion in the Alberta OR markets. The actual market data does not support any of the harmful consequences that tacit collusion can create.

Figure 2. Relationship between OR market costs and average pool price (July 2020 to September 2021)



Source: MSA Quarterly Reports, Q3 2021, pg. 22.

2.4 Other theories of collusion raised by CRA are similarly lacking evidentiary applicability to Alberta's OR markets

CRA also makes allegations on anti-competitive strategies around coordinated behavior in the OR markets bleeding over into the energy market ("cross-market signaling"). LEI believes that CRA is referring to cross-product or cross-market manipulation, where market participants distort prices in one market to profit from adjacent products that outweigh their direct losses/opportunity costs – this behavior may occur individually or in collusion with other market participants.[23] CRA is essentially saying that a market participant would "act against their economic interest"[24] in the energy market in order to punish deviations from a collusive strategy in the OR markets. CRA fails to describe how this type of behavior can play out and pay off.

- First of all, in order to consummate such a strategy, OR providers would need to know which market participants in the active OR auctions deviated from the collusive strategy (and that is not possible at this time with any level of precision in the trading day and

[23] Prete, C.L., W. Hogan, B. Liu, & J. Wang. *Cross-product manipulation in Electricity Markets, Microstructure Models and Asymmetric Information.* The Energy Journal. Vol. 40(5). 221-246. 2019.

[24] Ibid.

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even in the days that follow; cleared volumes by market participants are published only 60 days later).

- Furthermore, in order to be able to credibly punish the entity that deviated from the coordinated OR strategy in the energy markets, the dominant OR providers would need to be able exert market power over the energy market. Punishment could take the form of lower energy prices or crowding out of the market participant through undercutting energy offers. The market participant(s) doling out the punishment strategy would have to achieve profits from OR sales that greatly outweigh their direct losses in the energy market. Given the relative size of the markets (and volumes impacted), this is a mathematically remote possibility. Moreover, we should keep in mind that the active OR market prices are indexed to pool prices, therefore, the act of punishment in the energy market could undermine the net payments (profits) in the OR market.

- In addition, it is unclear whether the behavior would work given there are other energy market participants (who are not OR market participants) that would be offering in the energy market and their offers may undermine the attempted enforcement mechanism.

Once again, the theory does not seem to apply to the circumstances. Moreover, there is no evidence of such strategies in the markets to support CRA's allegations. As noted earlier, the MSA actually concluded that in 2022, the active OR markets were more competitive than the energy markets: energy price rose (in contrast, a cross-signaling strategy would imply lower energy prices, ceteris paribus), while OR prices fell. In fact, the MSA reported that on-peak spinning and supplemental products set "record lows for equilibrium prices in Q3 and Q4" 2022.[25]

3 CRA's citations to select economic literature is not applicable to Alberta's OR markets

CRA cites Klemperer (2008)[26] and Athey (2011)[27] in their assertion that "some" economic theory suggests that a sealed bid format is more likely to attract new entrants. However, the cited theoretical papers are not readily applicable to Alberta's OR market. Indeed, a comprehensive review of the papers suggests alignment with LEI's concerns about reduced offer transparency for purposes of resolving uncertainties and driving competition.

[25] MSA. *Quarterly Report for Q4 2022. pg. 55*.

[26] Klemperer, Peter. *Competition Policy in Auctions and. Bidding Markets*, in P. Buccirossi (ed): Handbook of Antitrust Economics, MIT Press, Cambridge, MA, USA. 2008. (We refer to this as the 2008 paper from Klemperer in the text).

[27] Athey, Susan, Levin, J., & Seira, E. *Comparing open and sealed bid auctions: Evidence from timber auctions*. The Quarterly Journal of Economics, 126(1), 207-257. 2011.

3.1 Klemperer's concerns with collusion are based on observations from other markets which do not have the same properties as the OR markets in Alberta

The main focus of the Klemperer (2008) paper is on bidding markets rather than auctions, the characteristics of which he describes on pages 4-5 of the paper. Klemperer sets out to address the three fallacies – the "consultant's fallacy," the "academics fallacy," and the "regulator's fallacy" in bidding markets.[28] The aim of the paper is to explain the need for careful consideration of competition issues in such markets. Klemperer also comments on ascending clock auctions and how they may also be susceptible to collusion. OR auctions, whether they continue to be open or sealed-bid are not a bidding market, based on the definition used in Klemperer (2008). Therefore many of the specific concerns Klemperer raises for bidding markets with respect to the three fallacies are not relevant to the issues at hand.

CRA cites to Klemperer (2008) specifically in relation to ascending (open) and sealed-bid auctions, where Klemperer points out the advantages of a sealed bid auction over an ascending auction especially for weaker bidders, explaining that "entry deterrence and other predatory strategies can be less profitable in a sealed-bid auction."[29] Citing Klemperer, CRA also explains that while ascending auctions might be the more efficient outcome, given the issue of 'latency' in Alberta's OR market, the benefit of an ascending (open) auction over a sealed-bid auction becomes significantly smaller.[30] However, as we discuss further below, CRA has not fully understood the dimensions of the 'latency' issue in the active OR auctions. Moreover, Klemperer concedes that although a sealed bid auction may initially be attractive to weaker bidders, there is still a winner's curse problem to contend with.[31]

Klemperer (2008) also draws on examples of collusion in an open auction for energy based on the outcomes in the 1990s in the UK power pool.[32] However, the characteristics of the Alberta power sector are very different from the conditions that prevailed in the UK power pool at that time and, notably, Klemperer admits the choice of auction did not mitigate the collusive/coordinated behavior: "a common view is that the post-NETA fall in prices is much more due to the substantial reduction in market concentration that occurred around the same time than to the change in the market rules (see e.g., Newbery, 2004). That is, the standard factors facilitating collusion mattered; **changing the auction process did not much matter**" (emphasis added).[33]

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[28] Klemperer, Peter. Competition Policy in Auctions and. Bidding Markets, in P. Buccirossi (ed): Handbook of Antitrust Economics, MIT Press, Cambridge, MA, USA. 2008.

[29] CRA report, page 9.

[30] Ibid.

[31] Klemperer, Peter. Competition Policy in Auctions and. Bidding Markets, in P. Buccirossi (ed): Handbook of Antitrust Economics, MIT Press, Cambridge, MA, USA. 2008. pg. 26-27.

[32] Klemperer, P. (2004). Auctions: theory and practice. Princeton University Press.

[33] Ibid. pg. 14.

General auction theory described in Klemperer may not apply to single round, sequential auctions with a changing supplier list, different technologies, and a common uncertainty about the value of the product:

- Alberta's active OR markets are repeated (daily) but not continuously as the UK hourly energy market – moreover, on a daily basis, new fundamentals arise and market participants go in and out, as we discussed in Section 2.3 above.

- OR supply is characterized by different technologies with different opportunity costs (hydroelectric versus gas versus BESS). In some of the theoretical examples that Klemperer uses in the 2008 paper, he is discussing a product with stable costs.

- Identity of bidders in the OR auction is not released. Klemperer writes, "*keeping identities of bidders secret can also make an auction more competitive (especially if bidders are risk averse) and encourage entry*".[34]

Additionally, one of the key factors that Klemperer has on the checklist[35] for coordinated behavior[36] is "difficult entry", but we know that this is not the reality in Alberta's OR markets.

Klemperer explains that a sealed-bid auction is a better option than an ascending auction for dealing with problems of entry deterrence, predation, collusion, and optimization of the results for the bid-taker (in this case, AESO).[37] But he then goes on to explain that an open auction can be fine-tuned to reduce the possibility of signaling: "*requiring bids to be "round" numbers, prespecifying the exact increments, and making bids anonymous…. Aggregating lots into larger packages makes it harder for bidders to "divide the spoils", and keeping secret the number of bidders remaining*".[38] Many of these mitigating elements are already included in the current OR auction design in Alberta. Finally, in spite of what CRA would like us to believe, Klemperer also recommends a hybrid open auction because he explicitly recognizes the benefits of resolving winner's curse and common value uncertainty. Specifically, Klemperer proposes a Anglo-Dutch auction because it "***encourages entry*** *and discourages collusion (just like a sealed bid auction) but is more likely to sell to the highest valuer than a pure sealed-bid auction, both because it directly reduces the numbers allowed into the sealed-bid stage and also because the two* ***finalists can learn something about each other's and the***

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[34] Klemperer, Peter. Competition Policy in Auctions and. Bidding Markets, in P. Buccirossi (ed): Handbook of Antitrust Economics, MIT Press, Cambridge, MA, USA. 2008. pg. 37-38.

[35] In the 2008 paper, on pg. 15, Klemperer writes: "We will discuss below some special issues about how the details of auction-market rules can facilitate coordinated effects (and explicit collusion), in particular through creating the standard checklist conditions of market transparency, high frequency of firms' interactions, and **difficult entry**" (emphasis added).

[36] He also raises issues of unilateral effects – which does not apply in Alberta as economic withholding is permissible.

[37] Klemperer, Peter. Competition Policy in Auctions and. Bidding Markets, in P. Buccirossi (ed): Handbook of Antitrust Economics, MIT Press, Cambridge, MA, USA. 2008. pg. 35.

[38] Ibid. pg. 36.

remaining bidders' perceptions of the object's value *from behaviors during the ascending stage*" (emphasis added).[39]

3.2 Athey's theoretical model and the observed dynamics for U.S. timber auctions does not fit the fact patterns of the Alberta OR market

The 2011 paper written by Susan Athey, Jonathan Levin and Enrique Seira examines dynamics in the US forestry sector, and specifically sales of timber by the U.S. government over a period of 1982 to 1990. The U.S. government used both sealed bid processes and open auctions from time to time. The researchers found that there were statistical differences between the type of companies that won the sealed bid sales process versus the open auctions in some regions of the U.S. In addition, they observed some differences in price outcomes. The researchers then hypothesized that collusion (in the open auction format) contributed to the differences in price. They developed a theoretical model to further test their hypothesis and ultimately found that their theoretical model could not completely accommodate the outcomes they observed. Indeed, they concede that their model had to be significantly simplified and abstracted from what may be happening in the real world. For example, in their model, they had to assume that timber was completely a private value commodity, which is not likely to be the case.[40] They had to also simplify the representation of the industry structure (by categorizing market participants into just "mills" and "loggers"), they simplified the new entry decision, and also studied a very specific form of collusion.[41] And they assumed that the sealed bid processes were perfectly competitive, although there could have been opportunities for market participants to cooperate in some way in advance of the sealed bid. Most importantly, they did not assess any time-based patterns or consider that there may have been a winner's curse problem that affected market outcomes and also led to the exit of some firms over time (after they realized they may have overpaid and could not sustain adequate profit margins). It would be disastrous for the long run efficiency of the Alberta OR markets if the proposed sealed bid auction format motivated some new participants for a short period of time, but then those participants exited the market because of the lack of timely market information and an opportunity to complete price discovery.

There are a number of notable differences between the timber auctions examined and current OR auctions in Alberta:

- The timber auctions were for **sale** of a product rather than the **purchase** of product (as is the case with the OR auctions). As such, the observation of **higher timber prices** in the sealed bid processes (because weaker bidders won more often because stronger bidders

[39] Athey, Susan, Levin, J., & Seira, E. *Comparing open and sealed bid auctions: Evidence from timber auctions*. The Quarterly Journal of Economics, 126(1), 207-257. 2011. pg.217.

[40] Jonathan B. Hill, Artyom Shneyerov. *Are there common values in first-price auctions? A tail-index nonparametric test*. Journal of Econometrics, Volume 174, Issue 2, 2013, Pages 144-164, ISSN 0304-4076, https://doi.org/10.1016/j.jeconom.2013.02.003

[41] Athey, Susan, Levin, J., & Seira, E. *Comparing open and sealed bid auctions: Evidence from timber auctions*. The Quarterly Journal of Economics, 126(1), 207-257. 2011. pg.212-213.

"shaded" their bids) would translate into **lower discount to Pool Prices** if AESO were to implement a sealed bid process because of the offers from market participants would be less aggressive (less of a discount to pool prices) due to lack of price discovery. And that would mean a **higher cost** of OR procurement.

- The timber open auctions were "in person"[42] and therefore the identity of all participants was known; in the Alberta Active OR auctions currently, market participants do not know the identity of competitors when they are actively offering and cannot definitively match all cleared volumes to offers even after the winners' identities are revealed 60 days later; this means the applicability of the theory of tacit collusion is much weaker to the OR markets.

- Timber sales were periodic[43] once a tract of forest had matured and typically for $11 million[44] or more of timber product, in contrast the size of the OR auctions (cost of procurement in daily active OR auctions range from $ 405,479 to $1.36 million,[45] and this value covers all 14 distinct product auctions across the active and standby reserves); the size of the auction in terms of proceeds could have made the benefits of collusion potentially more attractive in the timber industry;

- Payment and performance terms varied across the timber auctions (in some auctions, winners were paid based on their offer, whereas in other cases, winners were paid only on the amount that was harvested[46]); in contrast in the OR auctions, the payment terms are consistent and universal – a single clearing price for all volumes awarded; and OR providers have to meet the same performance requirements.

In summary, the product and auction setting for U.S. timber sales has very little in common with the procurement of OR products in Alberta, other than both refer to the concept of an "auction" and that timber and operating reserves are both grouped under the broad umbrella of a commodity product.

3.3 CRA overlooks how timely and relevant information can help resolve winner's curse

CRA questions LEI's consideration of common value property of the OR auctions, because they know that it is in fact a critical feature of the OR product and has important implications for the

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[42] Athey, Susan, Levin, J., & Seira, E. *Comparing open and sealed bid auctions: Evidence from timber auctions*. The Quarterly Journal of Economics, 126(1), 207-257. 2011. pg. 212.

[43] Ibid. pg. 218.

[44] Ibid. pg. 249.

[45] MSA. *Quarterly Report for Q4 2022. pg. 55.*

[46] Ibid. pg. 219.

procurement of OR by AESO at the lowest possible cost. The common value element in OR products is the opportunity cost of providing OR which is tied to Pool Prices. In other words, Pool Prices are the "common value" element. In an open auction, some of the uncertainty around the next day's Pool Prices is resolved. As mentioned in LEI's initial report, "*the AESO OR market, despite the differences in providers and their generation technologies, probably has a higher proportion of common value than private value given the presence of a single equilibrium price and the index to the broader pool price*".[47]

CRA tries to fault LEI for not estimating the magnitude of the common value present in OR offers,[48] but economic theory related to winner's curse, which may be amplified with diverse auction participants (large and small, sophisticated and less sophisticated) is not limited to a specific size of common value – so estimating the size of common value properties is not necessary. Common value estimates are also not needed to get to a rationale and logical conclusion that new entrants would be absolutely worse off under the AESO's proposed changes. Let's say that AESO does change the format of the auctions. And let's further assume a new supplier is interested in participating in the OR markets. That new supplier would not have access to prior offer data that incumbents have compiled from prior transactions. He/she would have to participate "blindly" in the OR auctions and would have to wait 60 days to see how his/her offers fared relative to the competition. Two months is a long time to wait to refine an offer strategy and given how fundamentals changed, the data revealed after 60-days is likely to be useless.

3.4 CRA misinterpreted LEI's discussion of the sealed-bid format

CRA writes: "…LEI acknowledges that a sealed-bid format can increase participation in a common values auction by new entrants, since their likelihood of winning is higher in a common value auction…".[49] CRA misconstrues LEI's discussion of sealed-bid auctions. LEI explained that under a private value auction, the adoption of a sealed-bid format may be preferable because it "*gives weak bidders a better chance of winning (at the expense of some productive inefficiency, in that a weak bidder winning implies that one of the losers values the asset more highly). But the benefits of greater participation will very often outweigh anticipated productive efficiency losses*".[50] In the August 2022 report, LEI also explained that "*sealed bid process (where there are asymmetries of information) is an inferior option for promoting competition and motivating new entry*" because after a new entrant wins, it may lead to a winner's curse problem.[51] CRA has not proposed any resolution to the winner's curse problem in their assessment. A sealed-bid auction with a 60-day delay to the release of offer

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[47] Frayer and Ezeokana (2022), London Economics International, ''*Independent evaluation of proposed changes to Alberta's operating reserve market format and information release policies*'', August 31, 2022 (hereafter "LEI Report"). pg. 33.

[48] CRA Report, pg. 15-17.

[49] CRA report, pg. 17.

[50] LEI report. pg. 33.

[51] Ibid. pg. 34.

data would undermine the ability of existing and new participants from resolving the winner's curse problem.

4 CRA does not fully understand Alberta's OR markets

The reasons CRA cites for supporting AESO's sealed-bid auction format, indicates that, they do not have the full understanding of how OR markets work. First, CRA implies that the OR market is highly concentrated, however, they come to this conclusion relying on AESO's report of market shares. Total cleared offers are an insufficient proxy for studying market shares (concentration) because, it conceals the actual level of activity ongoing in the OR markets as explained below. Additionally, hydro, which AESO believes to be wielding market power is in reality, one of the OR providers responsible for keeping market outcomes competitive. LEI presents data that shows that market outcomes tend to be better for consumers when hydroelectric resources are selling more volumes (which would go against the market power philosophy that prices would be inflated when the market concentration increases). In addition, using actual data, LEI presents a counterfactual that shows the negative impacts for overall public welfare if the sealed bid auction format is implemented and participants cannot take advantage of opportunities to compete because they no longer see those market opportunities.

4.1 CRA relies on incomplete market power indicators

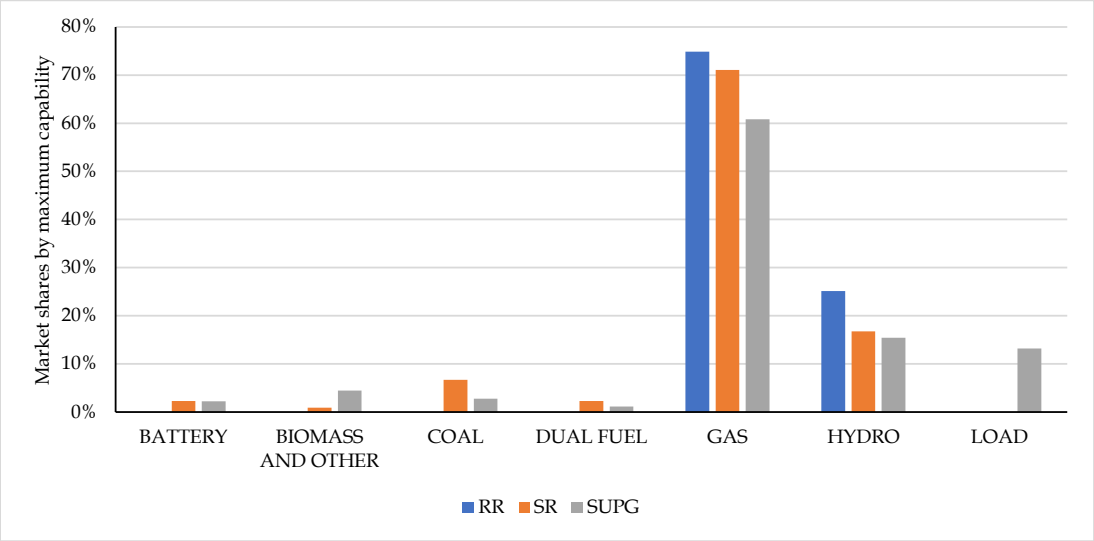
Total offers are much larger than the cleared volumes, as indicated in the figure below, which LEI created by comparing maximum capability participant can offer in the auctions against the cleared volume published by AESO. We use maximum capability as a proxy for total offers because, no one in the public domain has access to total cleared offers in the market. Based on the Figure 3 below, we observe that a market share snapshot of just cleared volumes is likely to overstate the actual concentration of OR market participants. Maximum capabilities on the other hand, depicts the market concentration of different technologies more accurately. For instance, Figure 3 indicates that gas fired generation, has a higher maximum capability (68% on average, across all active OR products) to stand as OR providers, and as such, indicates that gas fired generation could be offering more volume into the market than the hydroelectric assets. In fact, we observe that in terms of maximum capability, hydroelectric has average market share of 19% across all active OR products. This information contrast with the conclusions drawn from AESO's figures (see Figure 4 below) that calculated market shares based on total cleared volumes. In the AESO's figures, based strictly on cleared volumes, hydroelectric resources were reported to have more than 50% of the active OR market. Indeed, the large market share in cleared volumes for hydroelectric generation is not indicative of market power. Rather, it reflects the economic advantage of those assets, as we already explained in the August 31, 2022 report,[52] and further clarified in Section 2.2 above.

Even though concentration is higher in regulating reserves ("RR") than in other active OR products, it is still a highly contestable market, given that all generation - other than renewables

[52] LEI report. pg. 14.

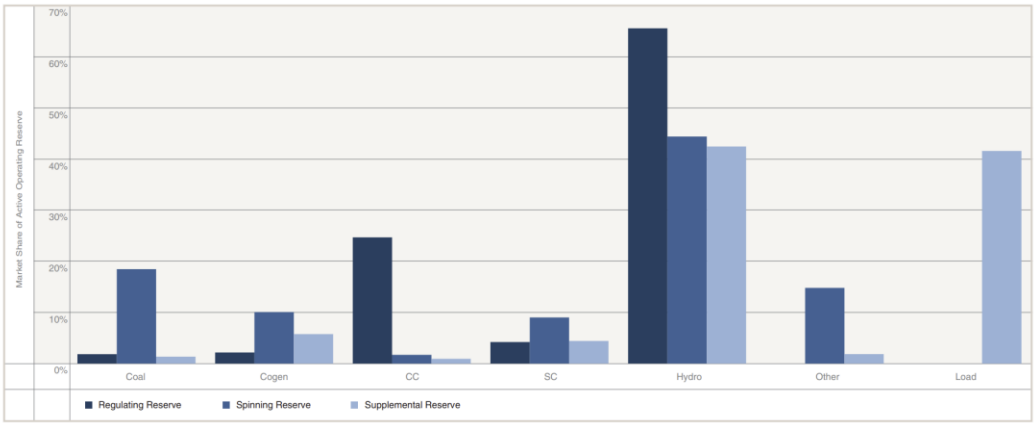
and thermal generation – are required to install automated governor controls per ISO Rules.[53] This means that technically, many thousands of MWs of resources are equipped with the technology to provide regulation service. To the extent that they choose not to qualify as a regulation provider or participate in the active OR auctions, that is a result of other factors. If regulation prices were to rise significantly and become economically attractive, it would be straightforward for these existing potential suppliers to participate.

Figure 3. Market share of active operating reserves, by maximum offer capability



Source: AESO ETS, compiled by LEI and TransAlta

Figure 4. 2021 market share of active operating reserves, by total cleared offers



Source: AESO. AESO 2021 Annual Market Statistics, March 2022. pg. 35.

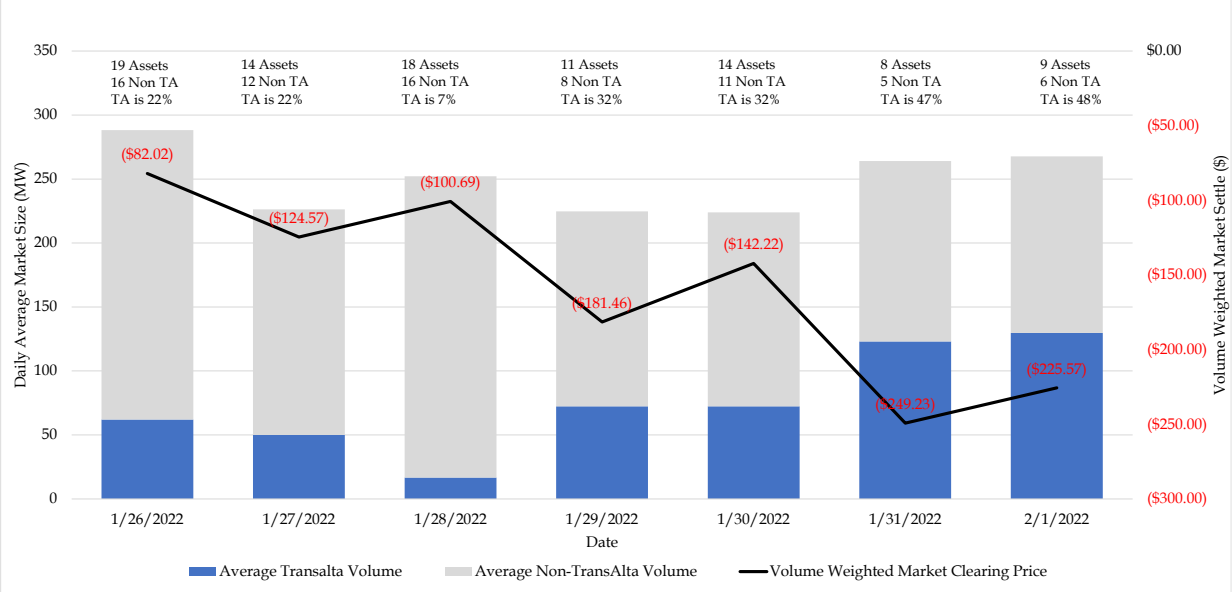
[53] ISO Rules Part 500 Facilities Division 502 Technical Requirements Section 502.5 Generating Unit Technical Requirements. https://www.aeso.ca/assets/documents/502.5-Generating-Unit-Technical-Requirements-2.pdf

4.2 CRA misunderstands the way active OR auctions currently work

In several places throughout the CRA report, we found statements that suggested that CRA did not fully appreciate the mechanics of the current auctions for OR. For example, CRA writes the following: "LEI does not explain, however, why transparency that increases the likelihood that a specific bidder's offer is accepted is a benefit to the market rather than to the bidder".[54] The benefit to the market should be obvious. The active OR auctions are for the purchase of OR by the AESO. Suppliers compete to be awarded an OR obligation. All offers are denominated in terms of a discount to Pool Price. If a bidder's offer is accepted, then by definition it is because the bidder offered a **deeper** discount to Pool Price than other providers and that means a lower clearing price (equilibrium price) and lower overall OR costs for consumers to pay.

Figure 6**Error! Reference source not found.** below provides a snapshot of the relationship between TransAlta's (mostly hydroelectric) cleared volumes relative to other participants and clearing prices (settled prices). When TransAlta's volumes are higher, that tends to be correlated with a lower clearing price (lower OR cost), because the hydroelectric volumes can offer more competitively than many other resources.

Figure 5. Daily Active Supplemental Market Statistics, from January 26, 2022 to February 1, 2022



Source: AESO. ETS - Ancillary offer control and asset data 2022.

It is also important to remember that under the current design, after the 5 minute mark is reached in the auction, market participants cannot remove their offer to sell OR. They are committed to

[54] CRA report, pg. 15.

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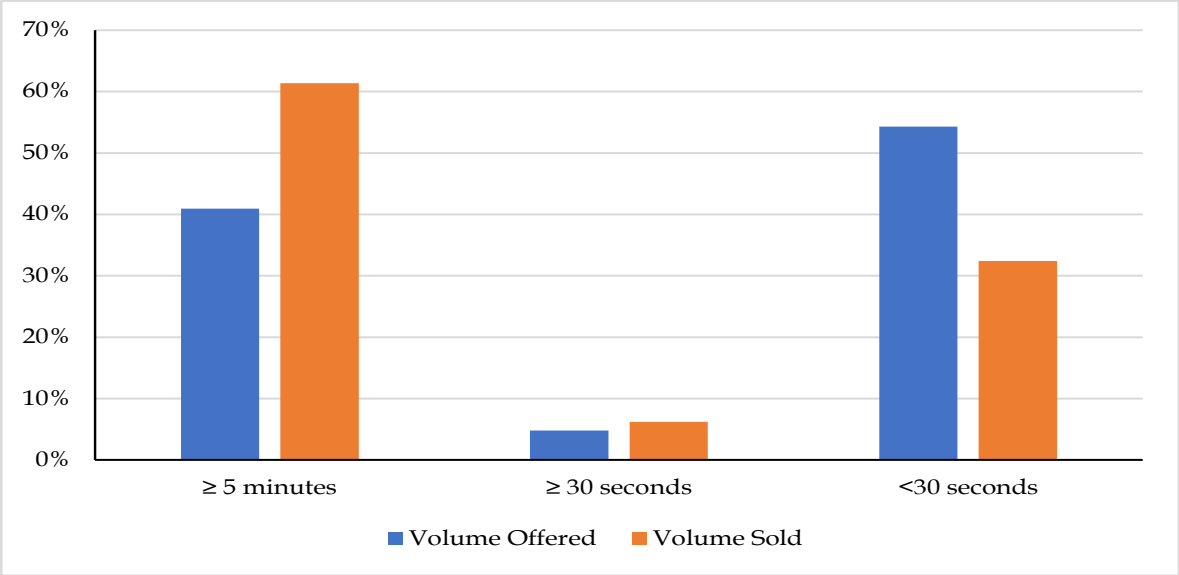
sell at a certain price. They can only change their offer price downward - in other words, the market participants can only get more aggressive with their pricing.

TransAlta has collated data on the timing of offers in the auctions. This data (see Figure 6 below) shows that the majority of offers (in volume terms) are made well before the 10-minute mark. Indeed, over 60% of the volume sold reflects offers that came at least during the first 5 minutes. For the flurry of offers made in less than 1 minute, these represent less than 40% of the capacity that is awarded (sold).

Figure 6. Offer volumes based on offer submission times in the Active OR auctions, 2020 – 2022



Source: WattEx, Data compiled by TAC, for 2020-2022 period across all 8 active OR products

In an auction where a product is being sold, the offers at the end of the auction will drive the price up. In contrast, in the OR auctions, because the AESO is procuring (buying) rather than selling, the additional offers that come in and clear are ultimately reducing the clearing price for all resources and lowering the total costs for consumers. If the AESO prevails with its proposal to move to a sealed bid process, market participants will not know the "price to beat" when they offer and therefore we should not expect the same cutthroat competition that we currently see.

In order to better understand how a sealed bid can worsen the market outcomes and reduce the welfare of consumers, it is useful to have a look at a sample day in the Alberta OR markets. We selected a specific day and reviewed the offer stack (with assistance of TransAlta). On this day, AESO procured 251 MW of on-peak SR. The marginal offer came in at -$290/MWh. Please see Figure 7 below.

We then considered a counterfactual situation under a sealed bid auction. Without visibility into the offers made by others, the marginal resource may not have seen the opportunity to offer and clear its volumes at -$290.00. If that offer had not been there, the next offer in the stack came in at -$180.62. However, that would not have been enough volume to fulfill the full 251 MW. So the AESO would have continued up the offer stack and also accepted 6 MW from the next offer at -

$175.52. The settled price under this counterfactual would have been a much lower discount to Pool Price and therefore resulted in a greater cost to AESO and a reduction (or loss) in consumer surplus. In other words, the lack of transparency in a sealed bid auction would have created a missed opportunity for an OR supplier to complete and that counterfactual outcome would negatively impact the welfare consequences of the OR auctions (raise costs of OR procurement to AESO, which would then mean higher costs to consumers).

Figure 7. Snapshot of daily market operations in the on-peak spinning reserves market, November 9, 2022

Date:	**28-Nov-22**
Product:	**On-peak Spinning**
Actual Result	
Actual Marginal Offer	
Set Price ($/MWh discount to Pool Price)	-$290.00
Offer Quantity (MW)	12
Volume Sold (MW)	11
AESO Bid Price	$40.00
Settled Price (Equilibrium Price) - $/MWh discount to Pool Price	**-$125.00**
Total Volume Bought (MW)	**251**
Counterfactual Result	
Next Highest Offer #1	
Offer Price	-$180.62
Set Price ($/MWh discount to Pool Price)	-$70.31
Offer Quantity (MW)	5
Volume Sold (MW)	5
Next Highest Offer #2	
Offer Price	-$175.52
Set Price ($/MWh discount to Pool Price)	-$67.76
Offer Quantity (MW)	10
Volume Sold (MW)	6
Counterfactual Settled price (Equilibrium Price) - $/MWh discount to Pool Price	**-$67.76**
Total Volume Bought (MW)	**251**
Total Volume Bought (MWh)	**4016**
Loss in Consumer Surplus	**$ 229,876**

Source: Based on data compiled by TAC from participation in the OR auction.

The lack of transparency could also create other negative impacts. For example, there may be periods of time where the AESO may not be able to procure all the OR volumes that it seeks because market participants have no visibility into the offers of others. Notably, with the open auction construct currently in place, the visibility of all the active offers (quantities and prices) increases the likelihood of sufficient supply to meet the AESO's needs and also promotes competition that ultimately lowers the costs of procuring OR – in order to be clear in the OR

auction, a market participant has to offer in such a way as to undercut the marginal offer, and that means that they will have to offer with a larger discount to Pool Price.

4.3 CRA wrongly conflates some of the characteristics of the energy market with the active OR markets

CRA claims that the data release policies in the OR markets should match those in the energy market.[55] This is a superficial proposal, because (1) there are important differences between the energy and OR auctions, and (2) the value of price discovery is much more important in the OR auctions.

As background, in 2017, the Alberta Utilities Commission ("AUC") issued a decision where it directed the AESO to cease publication of hourly offer quantities and volumes immediately following the traded hour (this was known as the Historical Trading Record or "HTR").[56] The decision of the AUC was premised on the belief of some of the AUC members that the HTR "*enables market participants to exercise market power with greater precision than would be possible without the HTR*".[57] AESO's expert witness noted that "*it's difficult, if not impossible, to conclude that the HTR was a function of the resulting prices*" [i.e., contributed to the high pool prices observed].[58] Notably, the AUC concluded that although they found no evidence of coordinated behavior [59], they were worried for the future and the possibility that the information could "*under certain market conditions*" result in "*a less competitive market*" because of "*relaxation of competitive restraint*".[60] The AESO clearly laid out the importance of having information about the merit order (supply stack) for all participants[61] and the AUC ultimately approved a modified HTR that would continue to provide information about the offers in an aggregated (identity-free) format, noting that "*more active, more informed and more effective competition, in turn, can constrain other market participants from enhancing the market power they inherently possess (whether arising from their absolute or relative size) or from other structural elements of the Alberta electricity market.*" [62]

Operating reserve auctions are not the same as the energy auction, so harmonizing the release of trade data with the energy market (60-day lag) is unnecessary and unjustified. Indeed, OR

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[55] CRA report. pg. 3

[56] AUC. Decision 21115-D01-2017. May 17, 2017. (Referred to herein as the "HTR Decision")

[57] HTR Decision, paragraph 4

[58] HTR Decision, paragraph 149.

[59] See HTR Decision, paragraph 182, "on balance, the evidence in this proceeding does not support a finding that the HTR facilitated coordinated behavior in any specific instance." See also paragraph 215.

[60] HTR Decision, paragraph 190.

[61] HTR Decision, paragraph 222 through 225.

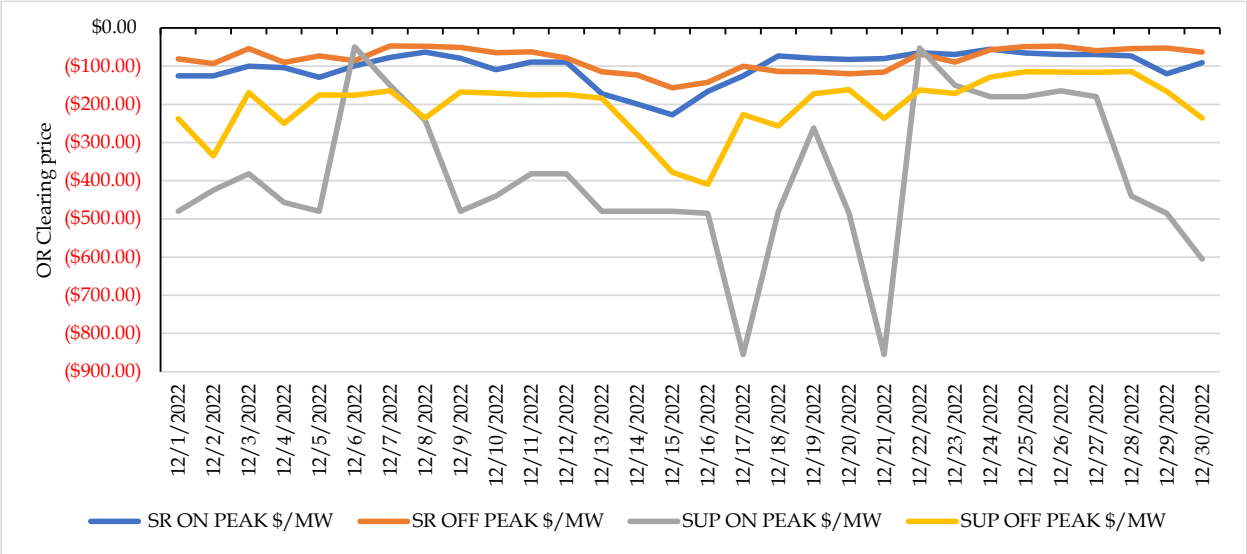
[62] HTR Decision, paragraph 254.

auctions are different from energy in terms of stable conditions, repetition and frequency of trading and the "risks" being taken:

- Although OR auctions occur daily (except for weekends and holidays), the conditions also vary from day to day. This is evidenced by the swing in OR prices from one day to the next, as see in the Figure 8 below. This is very different from the hourly trading of real-time energy, where the supply-demand fundamentals at least partially move with a predictable diurnal pattern, leading to a more predictable and more repetitive dynamic.

- When making real-time energy offers, market participants already know their short run marginal costs and that information is based on private values (like the plant's own heat rate and fuel supply arrangements). Knowing one's own short run marginal cost is sufficient to put together a competitive offer in the energy market. This is not the case in the OR markets, because the OR offer price is contingent on the next day's Pool Price and that is not known for certain. Some resources may also not know their own short run marginal costs as they may have not locked in pricing for the next trading day. Therefore, conceptually, there is more uncertainty facing a market participant offering in the OR markets as compared to the real-time energy market.

Figure 8. Snapshot of OR clearing prices in the spinning and supplementary market, from December 1st, 2022 - December 31st, 2022



Source: AESO. ETS – Historical data: Active Operating Reserve Price Report.

In the context of the HTR proceeding, the AESO sought expert advice from Dr. Wolak, who prepared a paper in 2014, *Analysis of the Market Efficiency Consequences of Information Release in the Alberta Wholesale Electricity Market.* In that paper, he concluded that "*there is no evidence that the release of the HTR enhances the ability of suppliers to coordinate their actions to raise wholesale prices*".[63]

[63] Wolak, Frank A. Analysis of the Market Efficiency Consequences of Information Release in the Alberta Wholesale Electricity Market. January 22, 2014. pg. 2.

More importantly, his analysis provided an important finding that is a lesson for the OR market as well: *"there is very little empirical evidence to suggest that the current AESO data release policy needs to be changed, and in fact that greater, not less transparency, about short-term outcomes is likely to improve the competitiveness of the wholesale market. Rapid and complete information release combined with regulator enforcement of violations of market rules is the best defense against the attempts of market participants to coordinate their actions raise short-term prices."*[64] Dr. Wolak found that AESO's publication of offer data immediately following each hour was more likely to increase the competitiveness of short-term market outcomes than to improve suppliers' ability to coordinate their activities to raise prices. Dr. Wolak performed detailed analysis of actual energy market activities to reach his conclusions. On the basis of that information, the offer data disciplined attempts of large suppliers raising prices by allowing market participants to see where there is an opportunity to offer at a bit lower price (so be more aggressive) and therefore undercut other potential suppliers. For this reason, the AESO publishes a modified HTR in the energy market. Having visible information on offers is just as essential in the active OR markets.

4.4 Offer transparency is necessary and valuable source of price discovery for all market participants

In writing the following point, "[w]e do not agree with LEI and **some** market participants that price discovery will be significantly impeded if the AESO's recommendations are adopted," CRA seems to imply that some market participants agree with the AESO's proposed changes to the auction format and information release policies.[65] CRA may have not fully understood stakeholder feedback. None of the stakeholders that supported delay in offer price disclosure to 60 days are active in the OR markets currently.[66] Some market participants are indifferent to whether the auction is open or sealed bid process, but nevertheless even those supporting sealed bid process are also requesting that AESO continue to publish offer prices and volumes as close to real time as possible.

In arguing against offer information being released, CRA claims that presence of latency means that price discovery is not occurring.[67] But this again highlights CRA's lack of practical knowledge. For active OR markets, there are a lot of offers throughout the 10-minute window, as seen in Figure 6 on page 21 above.

Also, seeing the volume and price for the last offers is valuable information for an efficient market outcome because it ensures that there is sufficient supply of active OR product to meet AESO's target procurement, as discussed in TransAlta's corporate submission. This is a very important

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[64] Wolak, Frank A. Analysis of the Market Efficiency Consequences of Information Release in the Alberta Wholesale Electricity Market. January 22, 2014. pg. 3.

[65] CRA report, pg. 3.

[66] TransAlta reports in its corporate submission that the group of stakeholders CRA classified as "other market participants" include parties that are not market participants; as a result, they probably have limited understanding or expertise related to how the OR auctions function practically.

[67] CRA report, pg. 1.

feature of the current design as it benefits consumers, maximizes the social benefits of the market design (in terms of allocative and productive efficiency), and supports reliable operation of the electricity system.

As discussed in LEI's August 31, 2022 report, the opportunity for market participants to see the offers in one product auction informs the offers for the next product auction in the sequence – for example the offers for on-peak RR can be useful for price discovery in the super-peak on-peak RR auction; and similarly, seeing offers for SR can inform market participants on how to offer competitively and maximize the opportunity of clearing in the SUP auction.

In addition, price discovery in the OR market can help inform decisions for the next day's energy market trading. LEI had written in the August 2022 report the following: "the offer curve in the spinning market provides a market view of how pool prices could potentially settle the next day. For example, if the spinning market offers are clustered around deeper discounts to pool prices, that points to the likelihood of higher volatility or the likelihood that other participants expect tomorrow's market may settle at higher pool prices".[68] In this way, offer information observed in the OR auctions can help with reconciling uncertainty and can influence efficient operating decisions. For example, sensing a tightening supply cushion for the next day, a market participant may decide to turn on a long-lead asset for the next day's energy market. As a consequence, the operation of that asset can be beneficial for the overall electricity system and consumers.

Finally having real-time data helps OR providers build confidence around the competitiveness of their offers for the next trading window (next trading day). If they were not able to clear all the volumes they had wanted, they can review the offers from other providers and get more aggressive the next day. The aggressiveness does not translate into higher OR prices – to the contrary, it means lower clearing pries (a high discount to Pool Price) and lower net payments.

CRA also writes: "In LEI's illustration, offer curves in the active spinning OR market provides information about how pool prices could settle the next day, and provides an example where offers are clustered around deep discounts to pool prices, which would indicate higher volatility or a possibility that other participants expect tomorrow's market may settle at higher pool prices. Again, it is not clear why this represents a benefit to the market, either in terms of lower clearing prices or a greater degree of efficiency in the next day's energy market, rather than to bidders, who may be able to use this information to reduce their bids."[69] This excerpt highlights CRA's misunderstanding of how operating decisions for both the OR and energy markets are formed and how those decisions supporting an efficient outcome and benefit consumers. If indeed, the OR offers lead a market participant to evolve their thinking about the next day's energy market and change its offer and operating strategy, that ensures productive efficiency between the various OR products and the energy market. For example, as described on the preceding page, a generator that sees a tightening supply situation for the next day based on the spinning reserve offers could rationally decide to start up a long lead-time generating asset. In another example, an owner of BESS capacity would infer from the OR offers that the market is expecting higher

[68] LEI report, pg. 28.

[69] CRA report, pg. 15.

Pool Prices the next day, and that may lead him/her to decide to use the BESS capacity for the energy market rather than for OR sales. And as a consequence of the long-lead time operating decision and the BESS arbitrage decision, the energy market the next day may see more supply which will bring down energy prices and perhaps avert a firm load shed event. This would be an example of productive efficiency aided by the offer transparency currently available to market participants.

CRA also critiques LEI for not quantifying the benefits of transparency,[70] but this critique is misplaced. The harmful consequences from not having transparent data, although unquantified, are directionally unambivalent - removing offer transparency is going to lead to higher prices and higher costs of active OR procurement. It may also cause AESO to fall short of its procurement targets in the active OR processes, requiring the AESO to then utilize more of the standby reserve market, which is less efficient and more costly.[71]

4.5 Welfare impacts

CRA faults LEI for not discussing the "private benefits" to TAC from retaining the current open auction format with offer transparency.[72] LEI is confused by CRA's assertions because in fact the profit-maximizing behavior of a market participant seeking to maximize his/her OR sales is also beneficial to consumers. And access to real-time information about the offer volumes and prices of other participants also facilitates that profit-maximizing behavior.

Let's outline the process by which private decisions by each OR provider to maximize how much OR they can sell also yields higher consumer surplus:

- When a resource knows that it will most likely not going to be able to make a profit from the offer of some of its available capacity in the energy market[73], then the OR sales opportunity becomes the next best option;

- In order for a resource owner to maximize the likelihood that its offer is accepted by the AESO in the OR auction, it will want to offer at a deeper discount to Pool Prices than other providers (subject to not falling below its own anticipated marginal costs);

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[70] CRA writes in the report on pg. 15: "In any case, to the extent that benefits to the market from visibility of offers in the active spinning OR market exist, the magnitudes of any such benefits are uncertain, and LEI provides no evidence that these benefits to the energy market are material".

[71] MSA Quarterly Reports, Q1 2021. pg. 36-37.

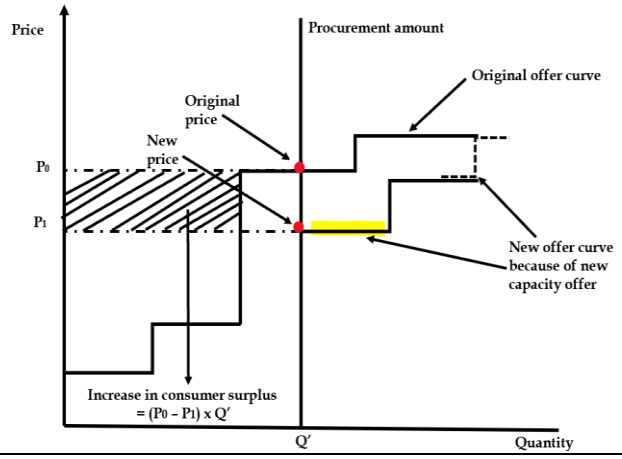
[72] CRA report. pg. 2.

[73] For example, when energy margins are slim because Pool prices are expected to be low or demand is expected to be low (and therefore the probability of being dispatched is low), then the next best option is to monetize the use of the "spare" capacity in the OR markets.

- If the offer is accepted, then either directly (if it's the marginal offer) or indirectly (if its quantity pushed out another more expensive offer), the resource owner's offer led to lower clearing price for all providers of that product in that day.

- In economic terms, this means the consumer surplus[74] is increasing whenever an OR provider is moving to taking advantage of economic opportunities that become clear during the OR auction as a result of the offer transparency, see Figure 9 below.

Figure 9. Illustration of the consumer surplus concept



5 Concluding remarks

CRA claims that LEI should have done an analysis of collusion – this seems to be a situation of the tail wagging the dog. It is not LEI that has inserted this theoretical issue into the assessment of OR markets. Indeed, how would we find a problem where none exists? CRA admits multiple times that they have not done any empirical analysis to establish that their theoretical concerns merit an overhaul of the market design. The theoretical paradigms that CRA uses to supports its position are not relevant, as we explain above. Moreover, there is a real risk that the changes AESO has contemplated to the OR markets will lead to less efficient markets, and higher costs to supply the same volume of OR. Under AESO's proposed design, market participants would have

[74] The concept of consumer surplus measures the value of the utility or benefit derived by a consumer from the purchase of a good or service. Consumer surplus is measured as the difference between the purchase price and the willingness to pay. In the case of this example, the willingness to pay is constant and therefore there is no need to define it. The change in price, multiplied by the quantity purchased, represents the increase in the value of consumer surplus. See consumer surplus Definition | Britannica Money

to go in "blind" and price in the risk associated with unresolved uncertainty around the market value of the product.

Furthermore, there are dynamic efficiency consequences, even if AESO is willing to saddle customers with a higher market price for OR. The lack of timely information about OR offers will create barriers to entry: new market participants will not have access to timely data on the offers of incumbents – by the time they get this information (in 60 days), the data will be of limited probative value for guiding future market pricing.[75] Such market rules-based barriers to entry are typically dismissed in the development of economic theories but they can have real consequences for a market in the long run. OR products are not just instrumental, they are absolutely pivotal to maintaining reliability on the power system. And their importance should only increase with time, as Alberta makes the transition to clean energy.

Given the lack of credible evidence that CRA can produce about existence of tacit collusion in the Alberta OR markets, LEI recommends that CRA's suppositions are put aside. Alberta's OR auctions have performed as intended and yielded identifiable and measurable efficiencies and benefits to consumers: for example, market prices that track the foregone opportunities in the energy market, and a market price signal that has also attracted new entry from conventional resources (like Clover Bar) as well as new technologies (for example, load resources and BESS). Given this entire endeavor of a Market Review was initiated to improve price fidelity, efficiency, and new entry, the empirical evidence allows us to affirm that the current design achieves those goals.

[75] The historical data may be useful for retrospective studies and analyses, but the application of price discovery will have been quashed.

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Stakeholder Comment Matrix

Additional Feedback on Offer Transparency in the Operating Reserve Market Review

Period of Comment:	February 2, 2023	through	March 7, 2023	**Contact:**	Nicole Irwin-Viet
Comments From:	Voltus Energy Canada			**Phone:**	+1 (857) 321-0314
Date:	2023/03/06			**Email**:	nirwin@voltus.co

Instructions:

1. Please fill out the section above as indicated.
2. Please refer back to the “related material” on the Stakeholder Engagement page on the AESO website.
3. Please respond to the questions below and provide your specific comments, if any. Blank boxes will be interpreted as favourable comments.

In the Stakeholder Consultation Session 3 on September 8, 2022, the AESO shared the following recommendations related to offer transparency in the operating reserve market (the AESO’s offer transparency recommendation):

- Move to a sealed-bid format
  - Continue to display the price and volume of the AESO bid during the auction
  - Display the total cumulative offer volume during the auction
  - Publish the clearing price and volume through Watt-Ex immediately at auction close and through the public Energy Trading System (ETS) website daily
- Publish offer price, volume, asset, and offer control party with a 60-day lag for all offered volumes

In consideration of the London Economics International (LEI) Report submitted by TransAlta on September 12, 2022 (the LEI Report), the AESO deferred further process on offer transparency until the AESO had time to review and consider the information in the LEI Report. During this time, the AESO also engaged Charles River Associates (CRA) to provide an independent assessment of the AESO’s offer transparency recommendation (the CRA Report) and sought the

MSA's views on the AESO's offer transparency recommendation (MSA Letter). The LEI Report, CRA Report, and MSA Letter are available on the Stakeholder Engagement page on the AESO website.

The AESO is now seeking further feedback from Stakeholders on the AESO's offer transparency recommendation.

	AESO Questions to Stakeholders	Stakeholder comments
1	Do you agree or disagree with the AESO's offer transparency recommendation? Please elaborate on your response.	Voltus agrees with the AESO's offer transparency recommendation, and is submitting comments to reiterate our support for the move to a sealed bid format for the AESO's Operating Reserve market. We agree with CRA's conclusion that the shift from an open format to a sealed bid format would not result in negative outcomes for the market. The CRA report and MSA letter support Voltus's position that under a sealed bid format offers will generally better represent participants' own true and individual financial motives, without the influence of coordination, and will improve price fidelity. Voltus also supports the AESO recommendation to publish cumulative offer volume and clearing price and volume information immediately following each auction. Finally, we approve of the continued practice of publishing market participants' offer price and volume, asset ID, and offer control party 60 days after the auction.