

February 28, 2020

Pauline McLean
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Dear Ms. McLean:

Re: AESO Pricing Framework Review

On July 24, 2019 the Government of Alberta announced that Alberta would not be proceeding with a capacity market, and that the industry would remain with an energy-only design. In late July 2019 the Alberta Electric System Operator (AESO) received direction from the Alberta Ministry of Energy:

... to provide advice regarding market power and market power mitigation by November 29, 2019. Additionally, the AESO was directed to provide analyses and recommendations on whether any changes to the energy-only market are needed, including changes to the price floor/ceiling and shortage pricing, by July 31, 2020. The AESO recognizes that there is a strong linkage between market power mitigation, the price floor/ceiling and shortage pricing, and will consider this connection as it undertakes its work.¹

On February 12, 2020 the AESO presented their Pricing Framework Review and stated that the objectives are:²

Energy pricing framework should ensure efficient and effective signals are provided to promote the following:

- Long term adequacy: through providing clear transparent signals on the need for capacity, and revenue sufficiency with reasonable expectations of recovery of capital and return on capital

¹ Letter dated October 8, 2019 from the AESO to the Market Surveillance Administrator, Market Participants and Other Interested Parties regarding "Request for Information regarding Market Power Mitigation".

² Session#1 Presentation available at <https://www.aeso.ca/assets/Uploads/Session-1-February-12-2020-0207-V1-FINAL2.pdf>

- Efficient short-term market response: involves ensuring that the pool price creates the right signals for the market and administrative price levels do not hinder these signals, including:
 - Provide short term price signals to encourage flexibility and response from both supply and demand resources;
 - Provide self-commitment decision signals, and also provide a mechanism for the recovery of start-up and cycling costs;
 - Provide the signal for participants to import or export.

The AESO asked the market participants and MSA to respond to 10 questions which are reproduced in Appendix A. The questions are addressed below.

In considering potential market enhancements, which as the MSA argues should be more broad than the AESO has indicated, it is important that any changes be justified on the basis of increasing market efficiency and pay due consideration to the cost of change, including costs borne by market participants as well as the AESO.

Preliminary Matters

Before the MSA answers the questions, there are five preliminary matters the MSA wishes to address. They are (a) scope, (b) evidence, (c) self-generation, (d) shortage pricing, and (e) demand forecasts.

Scope

At slide 12 of the February 5 presentation, the AESO defines what is in scope and what is out-of-scope with respect to this consultation. Reasons for the scope should be offered but, more importantly, for reasons set out below the MSA believes the scope is inappropriately narrow.

Evidence

It is clear from the scope that the AESO has prepared technical analysis to support the findings. The MSA requests that any technical studies prepared by the AESO throughout this consultation be made fully available to participants in the consultation.

At slide 67, the AESO states that in the March stakeholder session it will present its findings from its short-term efficiency evaluation, which will include the efficiency of the price cap and the price floor. The MSA suggests that full technical report in support of these findings be made available to the participants in the consultation in advance of the March stakeholder session.

Self-generation

The AESO points to the importance of self-generation, or DERS, in its analysis. There is no doubt that this is a very important issue. Currently, these type of generators account for

approximately 5,000 MW³ of generation capacity out of a total of 15,570 MW of capacity in Alberta.⁴ This is a significantly greater proportion than exists elsewhere in Canada.⁵

A factor that is unmentioned is that the Commission is currently considering this issue.⁶ The Commission's findings may result in additional incentives for self-generation over time. Given the amount of self-generation and its likely increase in the future, it is important for the AESO to clearly state its assumptions in this regard. The new capacity and new entry from this technology is very important in determining the veracity of the energy-only market going forward. The AESO should prepare a separate technical report on this issue.

Shortage pricing

It is important that shortage pricing be fully considered in this consultation. In the capacity market case, the Commission heard from witnesses from three parties who clearly stated how important shortage pricing is in the operation of an energy-only market. The MSA's argument in that respect is reproduced in Appendix B. The extracted paragraphs highlight the testimony of Dr. Paul Sotkiewicz, former Chief Economist of PJM, which points out that the shortage pricing can easily be implemented in Alberta.

For the purposes of clarity, the MSA believes that there would be no need for any form of ex-ante market power mitigation to be imposed for shortage pricing to work and no ex-ante market power mitigation is proposed by the MSA.

Demand forecast

There may be concerns about the demand forecast the AESO is relying on. The AESO must have a detailed demand forecast that underlines the analysis presented on February 12. That study should be released to the participants in this consultation. It is impossible to make a meaningful contribution without it. There may be key assumptions that have changed since the AESO prepared its forecast, including the assumed carbon price in the future.

³ See paragraph 13, page 4 of AltaLink's submission re response to Commission Bulletin 2019-16, available at http://www.auc.ab.ca/regulatory_documents/Consultations/2019-10-11-SelfSupplyandExport-AltaLinkManagementLtd.pdf.

⁴ See the MSA's 2019 Market Share Offer Control Report, available at <https://static1.squarespace.com/static/5d88e3016c6a183b1bcc861f/t/5d8cf795c3fa58146f1f13ad/1569519510719/2019+Market+Share+Offer+Control+Report.pdf>.

⁵ In Ontario, by way of example, this generation accounts for 10% of total supply compared to 30% in Alberta. Specifically, in Ontario at the end of 2019 there was approximately 3,400 MW of local, distribution-connected generation capacity and another 37,500 MW of transmission-connected generation capacity. See <http://www.ieso.ca/en/Learn/Ontario-Supply-Mix/Ontario-Energy-Capacity>.

⁶ See AUC Bulletins 2019-16 and 2020-01, available at <http://www.auc.ab.ca/News/2019/Bulletin%202019-16.pdf> and <http://www.auc.ab.ca/News/2020/Bulletin%202020-01.pdf>, respectively.

The Questions

Long-term adequacy and short-term market response

The AESO assessment about adequacy does not consider ancillary service markets and how the design of these markets impact overall rates of return for different generation technologies, including small distributed generation and storage. The AESO should consider how alternative ancillary services market designs, such as co-optimization, would affect investment incentives.

Analysis should consider performance during ramping and contingency events in addition to shortfall and surplus events. The AESO assessment should consider whether efficient responses are likely in times of transmission constraints. While the probability of such constraints is low, this will not necessarily be the case in the future.

Purpose of the offer price cap

The AESO's latter two stated purposes are actually principles it proposes to use to select specific values of the offer price cap rather than being purposes of the offer price cap mechanism itself. The MSA agrees that an offer price cap should be sufficiently high to allow suppliers to reflect their variable operating costs, including opportunity costs, and allow a reasonable opportunity to recover prudently occurred fixed costs over the long term.

The MSA is concerned that the decision to constrain the current consultation to exclude features common in other energy-only markets, such as multi-part offers, unduly limits the scope of options that can be considered.

Purpose of the market price cap

The purpose of the market price cap is to provide a clearing price in conditions where the market would fail to clear. This occurs when supply is insufficient to meet demand (including reserve requirements), which is when the market is in shortage conditions. Currently, the pool price is set administratively at \$1,000 when this occurs.

The market price cap can be linked to the concept of shortage pricing. Specifically, instead of simply setting the price to \$1,000 during all shortage conditions, the market price could be set based on the severity of the shortage. This would provide for a market price that increases as shortage conditions worsen. This would achieve an outcome broadly equivalent to the use of an Operating Reserve Demand Curve (ORDC). The determination of the specific shortage pricing mechanism would be based on analysis of consumers' willingness-to-pay for power and would not be a single value (i.e. \$1,000).

As stated above, there would be no need for any form of ex-ante market power mitigation to be imposed for this proposal to work and no ex-ante market power mitigation is proposed by the MSA.

Finally, currently the market price cap and offer price cap are different by one cent. This reduces the incentive for generators to engage in physically withholding to drive up the market price; instead, they can simply offer their production to the market at the current offer price cap if they choose. To the extent that the offer price and the market price caps diverge substantially, incentives for physical withholding may result. This is a key issue that organizations equivalent to the MSA in the U.S. face. Implications such as this are important to consider when engaging in market design.

The market and offer price floors

The selection of the market price floor, just like the market price cap, is to provide a clearing price in conditions where the market would fail to clear. In a well-functioning market, there is no risk of sustained negative market prices as generation can choose to shut down. Sustained negative pricing has only been an issue in electricity markets that provide incentives for most generators to run despite negative prices.

In a similar way to the market price cap, the market price floor should be sufficiently low to incentivize efficient demand and supply response during surplus events. If the price floor is too high, it may **cause** a supply surplus event. The AESO should clearly articulate the meaning of a supply surplus event.

Resource adequacy assessment

The MSA is of the view that the modelling does not consider the full range market participant responses that are likely in the future. These would include responses from loads, self-supply, and emerging technologies to participate and increase competition. The self-supply issue, as pointed out earlier, is of critical importance to the issues currently before the Commission.

Historical revenue sufficiency assessment

The MSA agrees with general conclusions with the AESO's historical analysis that historically there has been adequate revenue sufficiency.

However, little if any information was presented by the AESO about whether market price signals were timely or not. For example, a more efficient market design may have seen assets retire earlier during periods of surplus. The MSA believes improvements to rules around outage reporting, retirements, and mothballing should be considered. The MSA has specific concerns about the mothball rule and understands that the AESO is considering this as part of a separate proceeding. The MSA intends to fully participate in that proceeding.

Variable costs greater than \$999.99/MWh

The AESO's analysis did not address the performance of the Alberta market at times with the price outside of Alberta was higher than the current Alberta offer price cap (\$999.99/MWh) or when the price outside of Alberta was less than the current Alberta offer price floor (\$0/MWh). The AESO should consider whether the cap on market prices reduces efficiency in the Alberta

market by preventing the price in Alberta from increasing to the level elsewhere when market conditions are very tight and whether the floor on market prices reduces efficiency in the Alberta market by preventing the price in Alberta from decreasing to the level elsewhere when the market is in surplus conditions.

Conclusion

In its conclusion at slide 62, the AESO states that the “market framework has sent efficient and timely price signals to the market.” The MSA agrees with the AESO.

Sincerely,



Market Surveillance Administrator

Appendix A

The AESOs request for feedback on pricing framework review following the first stakeholder session asked the following questions:

1. At the session, the AESO outlined the objectives of the pricing framework, which includes ensuring both long term adequacy and ensuring efficient short-term market response. Do you have any comments on the objectives of the pricing framework?
2. Please provide your comments on the AESO's description of Alberta's Energy-Only Market Pricing Framework, and the administrative price levels, in particular the purpose of the offer cap. Is there anything you would change or add to this description?
3. Please provide your comments on the AESO's description of Alberta's Energy-Only Market Pricing Framework, and the administrative price levels, in particular the purpose of the price cap. Is there anything you would change or add to this description?
4. Please provide your comments on the AESO's description of Alberta's Energy-Only Market Pricing Framework, and the administrative price levels, in particular the purpose of the price floor. Is there anything you would change or add to this description?
5. The AESO's forward looking resource adequacy assessment indicates that the energy only market with the existing offer cap will provide reasonable financial returns while meeting the supply adequacy requirements. Do you agree with the AESO's conclusions? If no, please describe your concerns.
6. The AESO's historical revenue sufficiency assessment indicates that the energy only market with the existing offer cap has historically sent efficient and timely price signals to the market. Historically assets have been added when pricing signals indicated that profitable entry could occur. Do you agree with the AESO's conclusions? If no, please describe your concerns.
7. Are there foreseeable situations where asset variable costs would be greater than \$999.99/MWh? If yes, please describe the situation.
8. The AESO has described the scope for this process, general agenda items and timing for upcoming stakeholder engagements, with the timing of the sessions aligned with the AESO's deliverable to the Government of Alberta Energy Minister. Please describe if you believe the scope is appropriate. If not, please describe/provide your rationale.
9. Is the approach used for this engagement effective? If no, please provide specific feedback on how the AESO can make these sessions more constructive.
10. Please provide any other comments you have related to the pricing framework engagement.

Appendix B

The following is an excerpt from the MSA's final argument in AUC Proceeding 23757, *Application by the Alberta Electric System Operator for Approval of the First Set of ISO Rules to Establish and Operate the Capacity Market*.

Shortage pricing

120. The development on an ORDC for Alberta is feasible and can be done in a timely fashion. The AESO, in consultation with market participants, could develop an ORDC along the lines of those used in U.S. energy markets and file for approval from the Commission before the beginning of the first capacity obligation period in November 2021.

121. While some implementations of shortage pricing or ORDC are complex, the MSA's experts noted that ERCOT takes a relatively simple approach that may be attractive to Alberta because, like Alberta, the ERCOT market design does not currently co-optimize the dispatch of energy and operating reserves. Specifically, the report stated:

The ERCOT market in Texas may provide a good example of shortage pricing for AESO because, like AESO, ERCOT does not jointly optimize its dispatch of resources for energy and operating reserves. In Texas, the real time clearing is increased by the 'Real-Time Reserve Price' which is determined based on the level of reserves being maintain[ed] on the system in accordance with an operating reserve demand curve ("ORDC"). The ORDC reflects the incremental value of a MW of operating reserves at any given level of available operating reserves. It is based on Loss of Load Probability (LOLP) at that reserve level multiplied by Value of Lost Load (VOLL). For some levels of shortages, the real-time shortage price adder exceeds \$999/MWh.⁷

122. While the MSA is of the view that the best practices from the U.S. in this regard should be adopted, should it not be possible to adopt best practices, simplified approaches are available. Under cross-examination, Dr. Sotkiewicz said:

DR. SOTKIEWICZ: In other markets, whether it's PJM, New York ISO, Midcontinent ISO, ISO New England, they co-optimize, meaning they dispatch and choose reserves and energy together in realtime operations in five-minute dispatch. And as a consequence of that co-optimization, they're -- when the system starts going short reserves, there is a penalty factor, if you will, for going short reserves that increases the reserve price, which then, in turn, through the optimization engine, increases the energy price.

What it effectively looks like from the outside looking in is that there is an adder to the energy price, and reserve prices go up accordingly.

⁷ Exhibit 23757-X0390, page 47, PDF page 47.

In the Alberta market, that doesn't exist. Ancillary services are procured outside of the energy market. They're procured in advance. Resources are committed in advance to provide those reserves. So there's no opportunity to co-optimize energy and reserves.

So given that, the -- a simple way of doing so would be to add something to the price based on how short the system is becoming or impending reserve shortages.

And so one way to do that is a -- almost like it looks like a penalty factor -- as ISO New England calls it, a reserve-constraint penalty factor; as PJM calls it, just simply a penalty factor -- that says that once you reach a certain condition on the system, that energy prices will go up accordingly to signify that impending shortage.

Now, this is a much more simplified version in the sense that it is a single step or maybe one or two -- or two or three steps into that process as opposed to a continuous curve.

...

So rather than trying to completely redo the energy market and co-optimizing energy and reserves, coming up with market rules, rewriting software, updating systems, which can take a significant amount of time, a simple solution would be to just take that reserve-constraint penalty factor idea and implement it indirectly in the energy market. That way, effectively what we're doing is we're getting prices to rise, we're signifying impending shortages without having to then co-optimize energy and reserves, in that sense.

And given the way reserves are compensated today in the Alberta market as I understand it, then the reserve prices for those have already -- that have already been committed in advance would see higher reserve prices as well, because there's a higher opportunity cost for not generating energy.

...

And all I was simply trying to point out in my -- in my evidence is that, given the current Alberta energy market and the time it would take to actually get the market rules in place and implement software changes and procedural changes, that this would be a quick and relatively simple way to get that framework in place from an implementation perspective until, further down the road, the other changes could be made.⁸

⁸ Hearing Transcript, vol. 22, pages 2963-2965, PDF pages 53-55.