Comprehensive Market Design Stakeholder Comment Matrix
Energy and Ancillary Services WG – *FINAL*

Please complete this matrix by February 27, 2018, and upload it to the "Feedback" folder on the CMD SharePoint site. The AESO will post all comment matrices received from working group members on www.aeso.ca. **Please note that the names of the parties submitting each completed comment matrix will be included in this posting.** The AESO does not intend to respond to individual submissions. If you have any questions about this comment matrix, please email capacitymarket@aeso.ca

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Date: February 27, 2018

CMD Key Design Questions	Comments and / or Recommendations
1. Offer Obligations, Dispatch, and Scheduling: Are there any issues or gaps / in the CMD proposal for intra hour scheduling and priced import assets?	In order to establish an 'equivalent reliability value of one MW across resource types,' all of Alberta's imports will require the option to be priced, within the hour (intra-hour), and all capacity committed imports will have a Must Offer Requirement. Depending on the details of the scheduling and allocation procedures there may be a number of issues or gaps. Powerex will work with the AESO and other stakeholders to identify any gaps and come up with solutions.
2. Offer Obligations, Dispatch, and Scheduling: Assuming imports can be scheduled and priced intra-hour, can you support that capacity committed imports must offer their capacity volumes?	Assuming imports can be priced and dispatched accordingly, Powerex agrees that capacity committed imports should have a Must Offer Requirement. This is a mandatory requirement in order to establish an 'equivalent reliability value of one MW across resource types.'
3. Flexibility and Price Fidelity: a. Any concerns with addressing ramp by block and dispatch tolerance to address system variability? b. Any concerns with shorter settlement at 15 minutes? 5 minutes? c. Any options missing from the options to evaluate to address variability? d. Any unintended consequences with optimization look ahead or pre-dispatch? e. Any comments on ramp product? 4. Any comments on co-optimization (EAS) in the context of SCED model? Note: The AESO will continue the analysis on the options for flexibility and present at the next WG session in April.	Powerex supports settlement being consistent with dispatch interval of 15-minutes.

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5. Market Power Screen and Mitigation: Can you support the proposal for ex ante mitigation as stated (RSI and scarcity screen and conduct threshold), specifically: a. Are there issues with 0.9 RSI that warrant further consideration? b. Are there any issues with the revised RSI formula? Is it required? c. Are there any issues / unintended consequences with additional scarcity screen? d. Are there any issues with a conduct threshold at 3x? Are there better alternatives? e. Are there any issues with opportunity cost exceptions? Any input for formulae / evaluation?	**AESO Proposed Energy Market mitigation** - Powerex supports the AESO's proposed energy market Residual Supply Index (RSI) screening process at a 0.9 threshold. - Powerex assumes this will be an ex-post mitigation procedure, based on Bids that the AESO will calculate hourly at T-"X" based on company offer control as share of the market. - Powerex notes that the AESO's proposed methodology would be at T-3, which is an hour ahead of the current Energy Market framework (T-2). Powerex would like to further discuss this detail. **External Supply Failing the RSI screening:** - With respect to external supply failing the RSI mitigation screen, the AESO has proposed the use of a cost-based mitigation threshold based on 3X marginal cost. o Powerex notes that the 3X marginal cost bid mitigation threshold is a proposal by the AESO. - Powerex proposes the below methodology as a procedure to establish opportunity cost for external supply. **Powerex proposal: offer price threshold for large-scale hydro external resources.** - Resources outside Alberta face multiple alternative market opportunities for the sale of their output. This means that the marginal cost for external resources are not limited only to the variable production cost of producing electricity, but must also recognize the opportunity cost of selling that output to Alberta rather than supporting various alternative market transactions. - Large hydro resources have extensive storage capacity. It is difficult to develop simplified formulas to accurately and reliably estimate the marginal cost of large hydro facilities with large storage. This differs from resources within Alberta, which generally consist of a mix of conventional fossil-fuel thermal generation and renewable resources (with a growing wind presence). - Incorrect marginal cost calculation, resulting in over-mitigation, can discourage market participation. - Experience with FERC-approved mitigation frameworks in other organized markets provides examples of alternative approaches that may be workable and effective at meeting these dual objectives. - Specifically, several eastern ISOs have applied bid mitigation frameworks that afford sellers varying levels of offer price flexibility without triggering bid mitigation. This is achieved through the use of defined offer price thresholds, below which bid mitigation does not apply. This is an aspect of the Conduct and Impact test, which many eastern ISO/RTOs (MISO, NYISO, and ISO-NE) use to establish external resources' opportunity costs. - The bid mitigation framework of the Conduct and Impact test balances the dual objective of protecting consumers against the exercise of local market power, while also ensuring that sellers are not discouraged from participating by the risk of their bids being mitigated to a level below their own estimate of the marginal cost of their resources. - Given the challenge of establishing marginal cost of large hydro resources with large storage, Powerex proposes that the AESO used the bid mitigation framework of the Conduct and Impact test for large-scale hydro resources external to Alberta to establish opportunity cost.

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Continuation of Response to Question 5: (Market Power Screen and Mitigation)	- Powerex proposed using transparent and objective real-time indices at the most relevant bilateral trading hubs as reference threshold levels for mitigation. - Powerex believes that the offer price threshold is a good proxy for the opportunity cost of large hydro resources, bidding at the BC and MATL intertie. The offer price threshold can be used as a proxy for the 3x marginal costs that the AESO has proposed as a cost-based mitigation threshold. <u>Proposal for the Northwest region:</u> • No mitigation of offers below ICE Mid-Columbia Day-Ahead on Peak Index Price plus the lower of 300% or $100/MWh • No mitigation of offers below $25/MWH **<u>Equation for Threshold Level: *Max*[$25,MIDC(on peak)+*Min*($100,MIDC(on peak)*3]</u>** - This approach is consistent with the approach applied in MISO, NYISO, and ISO-NE, including both the $25/MWh "floor" and the "lower of" 300% or $100/MWh above the applicable reference price. - The use of this approach in other organized markets, where outcomes have been described as highly competitive by their external market monitors, is a strong indication that the same approach could be successfully applied for market power mitigation for resources external to Alberta.
6. Roadmap: A fulsome roadmap will be presented to the April WG. The rules required for 2021 and taken out of scope have been identified. Rules that may be delayed or phased in will be identified at that time. a. Can you support the efficiency pieces taken out of scope (SCUC, BDAM, co-optimization)? (See section 10.4) b. Scope: Can you support the pricing pieces taken out of scope (price cap, shortage pricing, negative pricing)	

General Comments: Any comments on relevant scope areas of the CMD that are not addressed above