Comprehensive Market Design Stakeholder Comment Matrix
Technical Working Group – *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. UCAP: Can you support the availability factor over the 100 hours of smallest supply cushion being used to calculate the UCAP for thermal resources and large hydro?	Measuring the availability factor, capacity factor or intertie schedule during the 100 hours per year of smallest supply cushion for each of the previous five years may not incent strong performance by capacity providers. Further, using historical performance of inter ties in particular to determine their transfer capability would tend to understate their ability to provide capacity as well as ancillary services in a go forward market. In view of this, we have described in the general section below, a market-based approach which rather than rewarding past performance for available capacity could incent better performance through design.
2. UCAP: Can you support the capacity factor over 100 hours of smallest supply cushion being used to calculate the UCAP for variable resources, self-supply and interties?	Using historical performance to determine UCAP may not reflect the ability to provide capacity as well as ancillary services in a go forward market. In view of this, we have described in the general section below, a market-based approach which rather than being based on past performance for available capacity could incent better performance through the instrument of capacity products.
3. UCAP: Do you see any data issues beyond those identified by the AESO?	We do not support the UCAP approach. Please see the general response below.
4. Demand Curve: Do you have any feedback on the material presented in the CMD 1? Note: AESO and the WG will revisit the shape of the demand curve once draft outputs from the Resource Adequacy model are available.	• Since different types of supply based on projected operating hours (base, mid merit, peaking) require different capacity prices to compensate for missing money, a three-tiered pricing approach may be adopted (if required there could be more than 3 tiers depending on the spread in operating hours). • Rather than procuring supply to meet a demand curve designed to procure 100% of adequacy requirements, procure the offered capacity, based on the net cone applicable to each type of capacity, under a left moving demand curve • Rather than using an administratively determined UCAP for the maximum obligation of suppliers, use capacity products with performance targets that would meet the system requirements and specifications; the products must be tied to physical units or the interties as applicable • A fixed price declining block auction could be designed to procure the three types of capacity simultaneously. Under this auction approach, prices are reduced if there is over supply in one or more categories of products; one of the constraints for the auction would be that the cost of each type of capacity acquired should not exceed the applicable net cone. • The suggested mechanism allows for price discovery and, in the absence of scarcity pricing for energy, can provide the right fixed price signals for missing money; any capacity provider who stays out of capacity bids can be considered as not experiencing missing money.

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5. Load Forecast: Can you support the proposed approach to forecast load? Are there any outstanding comments or concerns with the proposed approach?	In our view load forecast needs extensive cooperation with distributors and others to anticipate the changing paradigm for supply and use.
6. Resource Adequacy Modeling: Please identify what specific information AESO should provide to the workgroup to ensure the required level of transparency and detail to test the reasonableness of the resource adequacy model results?	A modeling approach using past transactions rather than expected future supply and use, including consideration of increasing NDV and role of storage, could produce misleading results. It is our view that the modeling should be based on go forward supply and use assumptions.
7. CONE: Can you support the intended Gross CONE estimation approach?	We can support using an independent consultant with Alberta-specific expertise in financing and developing power plants to calculate gross-cost of new entry (gross-CONE) provided rational criteria as discussed further in 9 below, are used. However, this would still be a contentious issue and should therefore be subject to testing before the AUC
8. CONE: What are the important considerations AESO needs to take into account when selecting the Energy and Ancillary Service offset estimation methodology?	The modeling approach to estimation of E &AS revenues could be controversial. A modeling approach using past transactions rather than expected future supply and use, including consideration of increasing NDV and role of storage, could produce widely differing results depending on input assumptions. It is our view that the modeling should be based on go forward supply and use assumptions. Since this would be a contentious issue it should be subject to testing before the AUC.
9. CONE: Are there any issues or gaps in our considerations or plan in Net CONE estimation?	The AESO's rationale paper Section 3 states industry stakeholder comments supported having independent experts calculate gross-CONE and net-CONE using a simple-cycle gas turbine as the reference technology. It also states the reference technology may be based on the following criteria: most frequently developed (historically); most economic (lowest net-cost of new entry or net-CONE); lowest capital cost (lowest gross-CONE); and shortest time to energization (development timeframe). One key consideration to note is that coal to gas conversions, to the extent they could be accomplished at a relatively low cost per MW (possibly lower than a simple cycle gas turbine) may have high carbon emissions, (particularly if they are simple cycle) and would likely be subject to higher carbon taxes, relative to a standard simple cycle unit, which they could potentially recover through their energy price bids and eventually from customers. Such an outcome would mean uneconomic purchase of capacity and would result in the wrong price signals being provided to relatively high emission capacity, contrary to the Government's intent to reduce carbon emissions. Therefore, if a simple cycle gas turbine were used as reference technology, there should be standardization of the corresponding

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	emission levels relative to the Government's threshold for carbon taxes in order ensure progress is being made towards emission reductions. Coal to gas conversions and other capacities, to the extent they are paid the same gross cone payment per KW/Yr should at least match the emission levels of the standard simple cycle unit.

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

The AESO has proposed, as part of CMD 1, acquiring capacity up to a level that would meet the reliability standard (still to be determined by the DOE) using administratively determined performance standards such as UCAP. The AESO has also proposed to pay up to certain multiples of net CONE, in order to acquire 100% of the capacity requirements. At the same time the AESO has not proposed, changes to the energy market that would see energy prices drop proportionate to the additional costs to consumers arising from capacity payments. The result could be high risk of increased costs to consumers.

The primary objectives in establishing a capacity market are to address, adequacy and timeliness of investment in capacity resources and to mitigate undue levels of price volatility. In our view these objectives can be met using market responsive and market-based approaches while minimizing the potential for exercise of market power which looms large when administratively determined performance standards such as UCAP are adopted.

The adequacy and timeliness of adding capacity resources could be achieved if the missing money issue is addressed. Missing money primarily arises when the price cap for energy is insufficient for certain generators with relatively low running hours to recover their capacity costs; it could also be due to low pool prices arising from an overhang of excess capacity. Under these circumstances it is important to compensate those generators with missing money either by way of scarcity payments for energy when there is the potential for reserve shortfalls, or through capacity payments. If the objective is to mitigate price volatility under conditions of system stress the capacity payments would be the preferred option. The net CONE calculations for different types of generation (peaking, mid merit, base load etc.) provide an indication of the missing money that needs to be compensated through capacity payments.

What follows is the CCA view:

At a time when there appears to be significant reserve capacity for the foreseeable future as per the AESO's reserve adequacy screens, scarcity of capacity is not an issue and therefore payment for capacity any more than the net cone on a weighted average basis, (for peak, mid merit and base load) is not warranted and simply serves to increase the costs paid by customers. Accordingly, we recommend changes to the CMD 1 proposals as follows:

- Since different types of supply based on projected operating hours (base, mid merit, peaking) require different capacity prices to compensate for missing money, a three-tiered pricing approach may be adopted (if required there could be more than 3 tiers depending on the spread in operating hours).
- Rather than procuring supply to meet a demand curve designed to procure 100% of adequacy requirements, procure the offered capacity, based on the net cone applicable to each type of capacity, under a left moving demand curve
- Rather than using an administratively determined UCAP for the maximum obligation of suppliers, use capacity products with performance targets that would meet the system requirements and specifications; the products must be tied to physical units or the interties as applicable
- A fixed price declining block auction could be designed to procure the three types of capacity simultaneously. Under this auction approach, prices are reduced if there is over supply in one or more categories of products; one of the constraints for the auction would be that the cost of each type of capacity acquired should not exceed the applicable net cone.
- The suggested mechanism allows for price discovery and, in the absence of scarcity pricing for energy, can provide the right fixed price signals for missing money; any capacity provider who stays out of capacity bids can be considered as not experiencing missing money.

The second main objective of the capacity market is to mitigate price volatility. The decision to replace energy-based scarcity payments by way of capacity payments to compensate for missing money would help mitigate price volatility when the system is stressed. Any further mitigation of price volatility ought to be undertaken by customers who according to their aversion for price volatility would enter into forward contracts (fixed for floating swaps).

The AESO's proposed approach, by virtue of being a highly administrative approach (as opposed to market based), risks the potential for higher overall costs to consumers (through exercise of market power) or if there is too much capacity procured, the potential for unduly low energy prices. Both of these outcomes are contrary to the Government's objectives. Unduly low energy prices would not facilitate energy efficiency or the addition of distributed renewable resources.