Comprehensive Market Design Stakeholder Comment Matrix
Design Working Group *FINAL*

The AESO is requesting written feedback from the Capacity Market Design Working Group (DWG) members about the content of the first draft Comprehensive Market Design (CMD 1) and about the working group session in which CMD 1 was discussed. This draft comment matrix is provided in advance to help working group members prepare for their upcoming session. Following the working group session, the AESO will post a **final comment matrix** one (1) day after the session. This final comment matrix should be completed by working group members within four (4) business days. The final feedback matrix is intended for working group members to provide written feedback about CMD 1 or the content of their working group session that is within the scope of their working group.

The AESO will post all comment matrices and any other feedback received from working group members on www.aeso.ca and on the Capacity Market SharePoint site. **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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CMD Key Design Questions	Comments and / or Recommendations
1. UCAP: Can you support using Availability factor for dispatchable resources? Does the approach meet the intent of a resource neutral approach to capacity volume that reflects the deliverability of energy during periods of tight system conditions?	The availability factor approach to UCAP calculation needs to be assessed in relation to duration limited assets such as energy storage. NRStor is concerned that the selection of a specific number of the tightest supply cushion hours (100 hours) may not represent the instances when supply need is greatest on the Alberta system. It is not clear that the availability factor approach rewards assets capable of responding quickly and flexibly to a clear capacity "need" signal. How this availability factor approach to UCAP calculation impacts duration limited assets such as energy storage needs to be addressed. The unpredictable nature of the tightest supply hours as currently proposed places significant risk on non-thermal assets such as energy storage. This is a detrimental impact considering that flexible assets like energy storage could prove particularly beneficial in eliminating or preventing EEA events because of their inherent ability to respond quickly to excursion events.
2. Payment Adjustment Mechanism: Can you support using a 60/40 performance/ availability framework? Does the approach achieve the intent of higher adjustments to performance periods?	On the surface, it appears that the proposed payment adjustment mechanism is designed is reflect the capabilities and generation characteristics of traditional thermal assets. Energy storage does not fit into the traditional generation paradigm and as such a separate discussion should take place on the design of a performance mechanism that reflects the capabilities of energy storage assets. Within the current proposed framework, it appears that two products are being procured as one: 1. A performance product tied to behavior in response to EEA events 2. An availability product largely tied to the amount of energy, relative to asset size, generated over the course of the calendar year. It is NRStor's understanding that the availability payment mechanism can only be reliably met by traditional baseload assets. The availability component does not seem aligned with the purpose of the capacity market. The energy market's "must offer" requirements largely satisfy the goal of the availability metric. The proposed Performance/Availability framework appears to mix energy market and capacity market signals. Would the energy market not be better suited to serve the intended incentive of the availability framework? It is NRStor's opinion that the energy market should provide the availability related incentives, rather than layering such availability related incentives into the capacity market design.

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3. Payment Adjustment Mechanism: Can you support a monthly cap at 300%? Does the approach achieve the intent of reasonably limiting adjustment payments?	1. From a cash-flow planning perspective, large penalty payments may be challenging for smaller market participants. Has the AESO considered alternative means of settling performance payments that could prove less volatile for capacity market participants? 2. See answer to Question 2 above. The payment adjustment mechanism is being designed with traditional thermal generators in mind. Therefore, such a payment mechanism presupposes that the Alberta electric system will continue to be primarily composed of thermal generation assets.
4. Payment Adjustment Mechanism: Can you support a 1.3x annual revenue/ rebalancing assessment limit? Does the approach achieve the intent of ensuring capacity resources are available for the obligation period?	Please see responses to Questions 2 & 3.
5. Market Power Mitigation: Can you support setting a market power screen as a fixed percentage of aggregate UCAP requirement for the auction? Does the approach meet the needs of mitigating supplier market power?	This approach appears appropriate provided the fixed percentage of aggregate UCAP is calculated to ensure that only those participants will with economic incentive to exert market power are mitigated.
6. Market Power Mitigation: Is a price cap of 50% of net CONE appropriate to mitigate the offers of suppliers with market power?	NRStor does not have a position on this particular design question.
7. Market Power Mitigation: Do you think there is sufficient support that mitigation of buyer side market power is not initially required in the capacity market?	A better description and analysis of rebalancing auctions including how AESO participates is required. In addition, NRStor suggests that the AESO should be assessing other technologies such as energy storage that can provide capacity via both the supply side and the buyer side of the market.
8. Delisting: Are there some circumstances where the delist bid of an asset does not clear but the asset continues to participate in the energy market?	The purpose of requiring a delist bid is to mitigate sellers with market power from economically withholding capacity. For all sellers without market power, delisting or not participating in the capacity market should be a business decision, unencumbered by excessive market rules.

CMD Key Design Questions	Comments and / or Recommendations
9. Delisting: Should a resource be able to delist from the capacity market but be eligible to participate in the energy and ancillary services market? For example: a. An asset of a non-mitigated supplier fails to clear, should it be allowed to continue energy market participation? b. For long outage requirements that are for a substantial portion of the year?	There is a benefit to consumers in the energy market from allowing assets that do not clear the capacity market to participate in the energy and ancillary services market. The obligation term needs to be lengthened for new assets so new entrants can generate reasonable returns and are not negatively impacted by delisted assets re-entering the capacity market and bumping new entrants out.
10. Transition to Capacity Market: Is a rebalancing auction for first obligation period 2021/22 required and practical?	With the tight timeline in rolling out the market prior to the first obligation period, NRStor understands that rebalancing auctions may not be feasible.

General Comments

Capacity Market Contract Duration

The most important consideration related to the CMD was not discussed during CMD1: **Capacity Market Contract Duration**. AESO's current proposal for one-year capacity contracts is not sufficient to support participation for new entrants. Obligation term for new entrants is a key aspect of this market design that needs to be determined. NRStor does not believe that the one-year obligation term supports adequate competition in the capacity market, and subsequently reduces the likelihood of new entrants participating in either the capacity or EAS markets. The one-year obligation term strongly favours incumbent generation and development of projects via balance sheet financing. Such bias in the market construct does not enable smaller entities, that require debt-financing to secure investment capital, to participate in the market. Without longer obligation terms for new assets, only large organizations capable of building assets off their balance sheets will invest in the market.

NRStor believes that implementing a longer term for new resources will attract new investment and lower cost to consumers. The recently announced REP Round 1 results have proven that a longer term can significantly reduce cost to consumers. The term length associated with the REP Round 1 procurement allowed investors to significantly reduce their financing costs and pass those savings to consumers through reduced contract bids. Similarly, a multi-year term for new resources in the capacity market will lead to lower prices for consumers.

The goal of the capacity market is to provide a price signal for new investment when the price signal from the energy market no longer exists or would have an unacceptable level of volatility. A one-year term falls short of meeting this goal and NRStor recommends that new resources are given a seven-year term. There are two key reasons for supporting a seven-year capacity contract term for new resources:

1. Provides a more attractive investment climate – A single year term for new entrants fails to provide a stable price signal and is not meaningfully different from the existing energy-only market structure.
2. Reduces cost to consumers
    a. Reduces the volatility premium that new resources would otherwise include in their offers
        i. If new resources are awarded a single year contract, they would be forced to include a volatility premium in their offers to reflect the expected volatility in the capacity market prices during years two through seven. In a small market, where new resources may not be needed every year, it is reasonable to expect that the capacity market price will fluctuate significantly and that multiple consecutive years with a low clearing price is quite likely. This means that the volatility premium would have to be very high for new resources if they are only given a single year term when they first clear. The consumer would then pay that volatility premium to all MWs in the market, not just the new entrant, resulting in a significant over-payment incurred by consumers.
    b. Reduces the financing cost of new entrants by offering increased revenue certainty
        i. A seven-year term would allow new entrants to reduce their cost of financing and offer into the market at a lower price. (See REP round 1 results)
    c. A more attractive investment climate results in more competition and lower prices for consumers
        i. The NYISO and Analysis Group examined the possibility of moving to a forward capacity market. In that analysis they acknowledged that a seven-year term for new entrants would lower the total cost to load by up to 17% when compared to a forward capacity market with a one-year term.

Availability Factor

The method of determining availability through a specific number of tight supply hours tends to selectively benefit base loaded thermal generation and does not directly align with capacity constrained events. This ends up sending a mixed message to the market and will spur additional inflexible base-loaded thermal units and not the flexible units required to balance renewable generation. If an availability component is required, the timing of the specific measurement periods must be tied to actual grid requirements (such as a MW of supply cushion or % of load) so that participants can actively predict when they will occur and therefore provide capacity when it is required.

The availability factor approach to UCAP calculation needs to be assessed in relation to duration limited assets such as energy storage. NRStor is concerned that the selection of a specific number of the tightest supply cushion hours (100 hours) may not represent the times when supply is needed the most. For example, a tight hour having 800MW of supply cushion in an 11,000 MW demand period is much different than a 1,000 MW supply cushion in an 8,500 MW demand period, yet both may be part of the 100 tightest hour calculation. Given adaptive behaviors of market participants in the capacity market, as opposed to historic behavior patterns set in Alberta's energy only market to date, it is impossible to determine if the availability factor approach is appropriate for ensuring the delivery of energy in tight system conditions by modelling what Availability factors were using historic energy only market data. Furthermore,

the unpredictable nature of the tightest supply hours as currently proposed places significant risk on non-thermal assets such as energy storage. This is a detrimental impact considering that flexible assets like energy storage could prove particularly beneficial in eliminating or preventing EEA events because of their inherent ability to respond quickly to excursion events.

Energy Storage Participation

We need to spend time on how energy storage assets participate. Are they buyers and sellers of capacity? Can they provide capacity in both charging and discharging mode? Are technology duration limitations similar to considerations given to long lead time assets? NRStor looks forward to more fulsome discussions relating to energy storage participation as capacity market design continues in the following months. It is important that these topics are given consideration, as energy storage has very broad operational capabilities.