

Overview of the Alberta Capacity Market

This section provides an overview of the Comprehensive Market Design Final proposal.

1.1 Overview of the Alberta capacity market

Introduction

In January 2017, the Government of Alberta directed the AESO to design and implement a capacity market in Alberta.¹ The Alberta capacity market will be a mechanism to achieve resource adequacy and meet the government-defined resource adequacy standard at least cost by enabling broad competition among capacity resources. The capacity market will work efficiently and effectively with the energy and ancillary services markets and will be consistent with the lower-carbon electricity system of the future. The first capacity market auction is to commence in 2019 with first delivery of capacity to occur in 2021.

CMD Final

The final Comprehensive Market Design (CMD Final) represents the AESO's proposed technical design for Alberta's capacity market, including associated changes to the energy and ancillary services markets. CMD Final describes a holistic market design intended to achieve the desired end state and criteria developed through input from industry.² The technical design for the capacity market that is reflected in CMD Final is a culmination of significant analysis and due diligence completed by the AESO and CMD working group members. It is also a reflection of feedback received and considered over the course of an extensive engagement with stakeholders that commenced in early 2017, following the Government of Alberta's direction to the AESO to design and implement a capacity market for Alberta. CMD Final will form the basis for development of ISO rules necessary for the implementation of the capacity market.

The Alberta capacity market design contains several high level components including prequalification of resources, determination of resource capacity value, determination of a procurement demand curve, auction mechanics, performance measurement, market power mitigation measures, financial settlement and integration with existing energy and ancillary services markets. A summary of the key design elements of these components is provided in the table below.

Design Overview

Category	High-level Design Elements
Eligibility and Prequalification Requirements; and Financial Security Requirements	<ul style="list-style-type: none"> • Minimum asset size requirement of 1 MW. • Certain prequalification requirements are asset-specific to accommodate different operating characteristics and ensure feasibility of physical delivery. Assets that are eligible to prequalify include thermal, demand response, external, storage, hydro, variable, and aggregated assets. • Existing generation assets located in Alberta with an estimated UCAP of 1 MW or greater will be automatically prequalified for capacity auctions. New capacity

¹ Government of Alberta Mandate Letter: <https://www.aeso.ca/assets/Uploads/capacity-market-design-AESO-mandate-letter-Jan-10-2017.pdf>

² Please see the Section 1 rationale document or <https://www.aeso.ca/assets/Uploads/Final-DES-criteria-and-assumptions-v2-final.pdf> for further information.

Category	High-level Design Elements
	<p>assets, external capacity assets and demand side assets will be required to prequalify in order to participate in the first transitional auction.</p> <ul style="list-style-type: none"> • Resources that are the subject of a renewable electricity support agreement in connection with Renewable Electricity Program (REP) Rounds 1, 2 or 3 are not eligible to participate in a capacity auction. • Energy efficiency resources will not be eligible for participation in initial capacity auctions. • Demand response assets will be eligible to participate on the supply side of the capacity market. • Storage assets must demonstrate 4 hour continuous discharge capability at its estimated UCAP level. • A refurbished capacity asset is defined as an asset that has met one of: <ul style="list-style-type: none"> ○ increased maximum capability of the asset by the greater of i) 15% of the asset's most recent maximum capability or ii) 40MW above the asset's most recent maximum capability; or ○ making an investment of at least \$200/kW for the whole asset's most recent maximum capability. <p>The capacity market offers of a refurbished asset will not be subject to capacity market power mitigation. Firms subject to mitigation will be provided a one-time option to provide a mitigated offer for the existing asset to be utilized in a multi-stage market clearing process</p> <ul style="list-style-type: none"> • A capacity asset may choose to add incremental capability to the asset through increasing an asset's maximum capability. Offers for the incremental capacity will not be subject to capacity market power mitigation. The incremental capacity will need to be prequalified. • New capacity assets will be required to post security in order to participate in a capacity auction. Security requirements will decline through time until the new asset achieves commercial operation. • New capacity assets other than refurbished or incremental will be required to post financial security with the AESO at a rate equal to $5\% * \text{grossCONE} * 1/ \text{a Capacity Recovery Factor}$. Refurbished and incremental assets will be required to post financial security at fixed rates. • Prequalified capacity assets will remain prequalified for subsequent auctions subject to certain considerations, including loss of pool participant status, failing to meet development milestones, material changes to the asset, delisting or a change in self-supply designation. • Physical bilateral transactions are not permitted in the Alberta capacity market. However, a site may self-supply capacity provided the load is capable of being served in whole or in part by generation that is located on the same site, and at the same point of interconnection to the electric system (including industrial system designations and sites under the Duplication Avoidance Tariff). • Sites with onsite generation that are only net-metered, and sites with onsite generation that are net-metered and cannot physically flow their gross volumes due to system connection limitations must self-supply.

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	<ul style="list-style-type: none"> • The City of Medicine Hat will be required to self-supply capacity. • Self-suppliers who intend to change from participating on a net basis to a gross basis or from a gross basis to a net basis must declare their intention. Changes will only be allowed every four years with the exception that changes to the self-supply designation will be permitted prior to four years due to physical operational changes at the self-supply facility.
Delisting	<ul style="list-style-type: none"> • Capacity assets must temporarily or permanently delist before ceasing participation in the capacity, energy or ancillary service markets. • Delisting requests or notifications will either be permanent delisting notifications (asset retirement) or temporary delisting requests. Temporary delisting requests may be for physical or economic reasons. • The AESO may conduct a reliability review prior to finalizing its assessment of delisting requests. • Temporary economic delisting requests will only be allowed for the second rebalancing auction. • The legal owner of a capacity asset that is making a temporary economic delisting request must offer the net avoidable costs of such asset into the second rebalancing auction. Cost submissions will require corporate officer attestation. • An asset will only be allowed to temporarily withdraw from the energy and ancillary services markets for the duration of the obligation period if the second rebalancing auction clears at a price less than the temporary economic delist offer price. • A capacity asset may temporarily economically delist from the capacity market but choose to participate in the energy and ancillary services markets for no more than 5 continuous months in the same obligation period. Avoidable costs and EAS offsets will be calculated based on outage dates provided prior to finalization of the second rebalancing auction • A temporarily delisted capacity asset will be allowed to return to the energy market if the AESO determines a reliability need exists • A capacity asset may not economically delist for more than two consecutive obligation periods. • Temporary physical delist requests must be submitted when a capacity asset is expected to be physically unavailable for five continuous months or more during the obligation period. • Permanent delist notifications may only be submitted during the prequalification period associated with the base auction and first rebalancing auction. Requests for the second rebalancing auction are not permitted. A capacity asset retirement date need not occur at the start of the obligation period. The legal owner of a capacity asset intending to permanently delist may continue to participate in the energy and ancillary services markets until the physical retirement date through submission of a temporary physical delist request for the relevant portion of the initial retirement year. • No economic test will be conducted on permanent delist notifications.
Capacity Value (UCAP) Determination	<ul style="list-style-type: none"> • The AESO will calculate and assign a UCAP value for each prequalified asset. • Five years of historical data will be utilized for asset specific UCAP determination for existing assets. The 250 tightest supply cushion hours in each year will be utilized. • Participants will be allowed to choose a UCAP within a range determined as the maximum or minimum values that result from the following approaches:

Category	High-level Design Elements
	<ul style="list-style-type: none"> ○ eliminating the top and bottom 5% of the data set utilized to determine UCAP ○ increasing and decreasing the asset's UCAP by 2% of the asset's maximum capability ○ increasing and decreasing the asset's UCAP by 1 MW ● Forced and planned derates and outages, distribution system constraints and transmission outages that result in an asset being electrically disconnected from the transmission system and force majeure events will not be excluded from availability and production data and will act to reduce calculated UCAP values. Transmission system constraints will be excluded and will not reduce calculated UCAP values. ● Assets with insufficient historical operating data will have data supplemented by class averages, engineering estimates or information gathered through jurisdictional reviews. ● An availability or capacity factor methodology will generally be used to calculate asset-specific UCAPs: <ul style="list-style-type: none"> ○ An availability factor will be used when metered generation or load volumes align with energy market dispatches (typically, thermal, storage, large hydro and net to grid dispatched self-supply sites). ○ An availability factor determined through linear regression will be used for self-supply sites for which the generating assets are dispatched on a gross to grid basis. ○ A capacity factor will be used when metered generation or load volumes do not align with energy market dispatches (typically, wind, run of river hydro and solar assets) ● Demand side resources will be classified as either firm consumption level (FCL) or guaranteed load reduction (GLR): <ul style="list-style-type: none"> ○ UCAP for FCL assets will be established as 91% of the difference between an estimated baseline consumption level and the FCL of the asset. ○ UCAP for GLR assets will be established as 91% of the GLR level provided during prequalification. An availability factor methodology will be utilized once sufficient historical performance data is available. ● Assets with UCAP values less than 1 MW may aggregate with other assets in order to participate in the capacity market. UCAP for these assets will be determined using a capacity factor methodology unless all aggregated assets are eligible for UCAP determination using an availability factor. ● UCAP for external capacity assets will be based on firm transmission volume held in the external jurisdiction and demonstration that the supply source is a non-recallable resource of sufficient size. This volume will then be derated to reflect the frequency of time during historical supply cushion hours that the respective inertia was out of service with 0 ATC. ● UCAP for mothballed or temporarily delisted assets with data available for 250 or more tight supply cushion hours will utilize available data to calculate UCAP. Assets with less than 250 hours of data available will have available data supplemented with class average data such that a total of 250 data points is obtained. ● A UCAP refinement process will allow capacity market participants to submit a request to review the UCAP or UCAP range for select reasons. If issues cannot be resolved through the UCAP refinement process, a capacity market participant may utilize a formal dispute resolution process.

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Calculation of Demand Curve Parameters	<ul style="list-style-type: none"> • The demand curve will be developed in order to satisfy the resource adequacy standard specified by the Government of Alberta. • The AESO will use a forward-looking probabilistic resource adequacy model (RAM) to determine capacity volume requirements. The RAM will consider factors that impact the supply demand balance in Alberta such as Alberta gross load, supply availability, forced and planned outages for thermal assets, onsite generation, variable generation profiles, hydroelectric generation profiles, and imports. • Outputs of the RAM will be translated into fleet-wide UCAP values using a formula to align with asset-specific UCAP calculations. • System UCAP requirements will be adjusted to account for self-supplied volumes and ineligible resources (including successful Renewable Electricity Program (REP) Round 1, 2 and 3 projects). <ul style="list-style-type: none"> ○ The reference technology used for determining gross-CONE and net-CONE will be a natural gas-fired technology and selected through detailed cost screening. Additional details on the reference technology selection are being developed by the AESO and subject to further consultation. • A comprehensive gross-CONE estimate will be completed by an independent consultant at regular intervals. Annual interim adjustments will be made using cost indices. Finalization of the gross-CONE estimate is underway by the AESO and subject to further consultation. • The energy and ancillary services offset for the reference technology will be determined on a forward looking basis via a forward market methodology utilizing forward market electricity and natural gas prices. Additional details on the EAS offset are being developed by the AESO and subject to further consultation. • The demand curve for the Alberta capacity market will be a downward-sloping, convex demand curve with the following parameters: <ul style="list-style-type: none"> ○ The price cap will be set based on the maximum value of either a 1.75 net-CONE multiple or a 0.5 gross-CONE multiple; ○ The minimum quantity point will be set at a value of capacity equivalent to the Government of Alberta's set minimum of 0.0011% of EUE (for the first auction this is expected to be 964 MWh) in one year ; ○ The inflection point is set at 0.875 x net-CONE, at a quantity 7% above the minimum acceptable quantity; and ○ The foot is set at 18% above the minimum acceptable quantity, at a price of zero. • The demand curve for a rebalancing auction will have the same shape as the base auction demand curve. Procurement volumes will be updated prior to each rebalancing auction.
Forward Capacity Auction (Base Auction)	<ul style="list-style-type: none"> • Three-year forward period. • A transition period with forward periods shorter than three years for base auctions will be required to establish the three-year forward period. • One-year obligation period, running November 1 – October 31. • No option for seasonal capacity commitments (annual obligations only). • REP Round 1, 2 and 3 resources with a Renewable Electricity Support Agreement will be ineligible. No other adjustments for out-of-market payments will be made for the initial auction. • Uniform price, sealed bid, single round auction.

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	<ul style="list-style-type: none"> • Offers may be submitted using up to seven price quantity pairs. There will be limits as to which blocks may be inflexible. • Alberta will clear as a single capacity region with one capacity price set at the unconstrained price level established without consideration of expected transmission constraints. The capacity market auction clearing algorithm will maximize social surplus and minimize deadweight loss. • After considering volumes limited due to expected transmission constraints, any capacity asset volumes required to satisfy the capacity purchase volume determined through unconstrained market clearing that are priced above the market clearing price will receive uplift payments equal to the difference between their offer price and the market clearing price. • External capacity asset offers and any transmission-constrained asset offers will generally be cleared, subject to the principle of maximizing social surplus, based on offered capacity price in the supply curve and, then by pro rata allocation until the transmission constraint limit is reached. Cleared assets will receive the market clearing price. • A dispute resolution process will be established such that participants can dispute determinations made by the AESO in respect to prequalification assessments, UCAP determination, delisting, self-supply or market power mitigation.
Rebalancing Auctions	<ul style="list-style-type: none"> • After a transition period, two rebalancing auctions will be held at 18 and 3 months before the obligation period. • During the transition period, ending after auctions for the 2023/24 obligation period, one rebalancing auction will be held three months before the obligation period. • Capacity suppliers may offer repricing bids and incremental sell offers into the rebalancing auction. Capacity suppliers choosing to buy back an obligation for reasons other than UCAP reduction in the final rebalancing auction or missing milestones will not have the ability to submit a price above the price cap. • Offers may be submitted using up to seven price quantity pairs. There will be limits as to which blocks may be inflexible. • Capacity suppliers who are required to buy-out in a rebalancing auction due to failure to meet development milestones or UCAP reductions will be priced marginally above the market price cap to ensure they clear in the market. • The rebalancing auction may clear with a net purchase or sale from the AESO, consistent with an updated demand curve. • The shape of the demand curve will stay the same in the rebalancing auction. • Rebalancing auctions will clear using the same mechanics as the base auction. • Rebalancing auctions will reflect updated assessments of any anticipated transmission constraints. Previously cleared capacity committed assets which are no longer able to deliver all or a portion of their committed capacity volume will not be subject to reduced capacity payments.
Monitoring and Mitigation	<ul style="list-style-type: none"> • A must-offer requirement will apply to all qualified capacity assets unless they are permanently delisted or temporarily physically delisted. • The AESO will conduct an ex-ante market power screen prior to each base auction to identify firms who will be subject to capacity market offer price mitigation based on their portfolio size. Rebalancing auctions will not be subject to offer mitigation. • Firms subject to market power mitigation will be identified utilizing the demand curve. A market power screen will be applied to identify firms that have the ability to profitably

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	<p>increase the clearing price of an auction by 10% or more, measured both above and below the inflection point of the demand curve, by withholding capacity from a base auction. The market power screen will be based on a firm's capacity offer control of existing asset UCAP, regardless of resource type.</p> <ul style="list-style-type: none"> • Firms that fail the market power screen will be required to offer all existing capacity assets at or below the default offer price cap of 0.8 x net-CONE. Assets may be allowed to offer at higher prices subject to demonstrating higher net avoidable costs. Net avoidable cost will be equal to avoidable costs minus the energy and ancillary service offset. • There will be no minimum offer price requirements for capacity suppliers due to net-short capacity positions or out-of-market payments.
<p>Supply Obligations and Performance Assessments</p>	<ul style="list-style-type: none"> • Prior to the commencement of an obligation period, a capacity supplier will be required to meet development milestones: <ul style="list-style-type: none"> ○ A new source capacity committed asset will be required to meet development milestones tracked by the AESO. If, prior to the first rebalancing auction, major milestones have are delayed by more than eight months, or prior to the second rebalancing auction major milestones are delayed by more than five months, the new capacity asset will be required to buy out its capacity commitment in the rebalancing auction. A new demand response asset that cannot demonstrate a UCAP equal to or greater than 75% of its capacity obligation prior to the second rebalancing auction will be required to buy out of its obligation by the amount the obligation exceeds its UCAP. ○ In the second rebalancing auction, an existing capacity committed asset with an obligation volume greater than its final UCAP will be required to buy back the difference between its obligation volume and its final UCAP. • During an obligation period, the AESO will assess a capacity committed asset on both an availability and delivery basis: <ul style="list-style-type: none"> ○ The availability of a capacity committed asset will be assessed during the 250 tightest supply cushion hours. The AESO will perform a supply cushion analysis at the end of each obligation period to identify the 250 tightest supply cushion hours. ○ The AESO will apply an unavailability payment adjustment to capacity suppliers with a negative availability volume throughout an obligation period. The unavailability payment adjustment rate will be a \$/MWh value equal to 40 % of 1.3 multiplied by the asset specific weighted average capacity revenue per MW across all auctions for the obligation year divided by 250. ○ A capacity committed asset with a positive availability volume throughout an obligation period will be eligible to receive an over-availability payment adjustment, to be wholly funded from the unavailability payment adjustments received from capacity committed assets with negative availability volumes. The over-availability payment adjustment will be based on a \$/MWh rate determined by dividing the total unavailability payment adjustments collected in an obligation period (\$) by the total over-availability volume (MWh). ○ The delivery of a capacity committed asset relative to its capacity obligation will be assessed during EEA events (levels 1 through 3) using actual energy production, level of consumption and/or provision of reserves. The obligation volume will be multiplied by a balancing ratio (energy and reserves produced by all capacity committed assets during a performance assessment period divided by total capacity purchased). <ul style="list-style-type: none"> – External assets will be considered meeting delivery requirements for the first two hours of a delivery event if they have an offer in the merit order but are not dispatched because the available transfer capability is fully utilized.

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	<ul style="list-style-type: none"> ○ The AESO will apply a non-delivery payment adjustment for a capacity committed asset with a negative delivery volume. The non-delivery payment adjustment rate will be a \$/MWh value equal to 60% of 1.3 multiplied by the asset specific weighted average capacity revenue per MW across all auctions for the obligation year divided by the maximum of (Expected EEA hours, 20). The non-delivery payment adjustment rate will then be multiplied by the delivery volume shortfall to determine the non-delivery payment adjustment for the delivery event. ○ A capacity committed asset that has a positive delivery volume will be eligible to receive an over- delivery payment adjustment. Over- delivery payment adjustments will be wholly funded from the non- delivery payment adjustments received from capacity committed assets with negative delivery volumes ○ In the event availability and delivery assessment periods overlap, both forms of payment adjustments will be applicable. ○ The AESO will cap the combined payment adjustment exposure to unavailability and non-delivery payment adjustments for each capacity committed asset. Monthly non-delivery payment adjustments for a capacity committed asset will be capped at 300% of the monthly capacity revenue based on the capacity committed asset's obligation price per MW. The cumulative annual unavailability and non-delivery payment adjustments for a capacity committed asset will be capped at 130% of the annual capacity revenue based on the obligation price per MW. ○ Over-availability and over-delivery payment adjustments will be capped at a 1x the capacity committed asset's total annual obligation revenue. ○ A capacity committed asset that is constrained down due to limits on the Alberta internal transmission system will be exempt from unavailability payment adjustments and non-delivery payment adjustments on that volume of its obligation. Availability and delivery assessments will not be conducted during market suspension, limited market operations and other specified rare events. ○ No other exemptions to the assessment of unavailability or non-delivery payment adjustments will be permitted, including for on-site and/or distribution system constraints, or transmission outages that result in the asset being electrically disconnected from the transmission system. ○ A capacity supplier will have the option of <i>ex ante</i> asset substitution, or <i>ex post</i> volume reallocation to avoid or decrease non-delivery payment adjustments associated with a failure to deliver on its obligation volume during a delivery assessment period.
Settlement and Financial Security Requirements	<ul style="list-style-type: none"> ● Payments will not be made to capacity suppliers prior to the start of the obligation period. ● Consistent with the energy market, capacity market statements will be issued monthly. ● Monthly capacity payment is equal to the capacity market price for the delivery year multiplied by the capacity obligation cleared in the base auction, minus the difference in cleared quantity between the rebalancing auctions, multiplied by relevant rebalancing price. ● Capacity payment adjustments due to non-availability and non-delivery will be deducted from monthly capacity payments. Remaining payment adjustment balances will be carried over to subsequent months until the total payment adjustment is collected. ● Costs of procuring capacity will be allocated to customers according to the approved capacity cost allocation methodology. ● No net settlement instructions for capacity will be enabled. ● Capacity assets looking to buy back in rebalancing auctions, as well as new capacity assets, will need to demonstrate sufficient credit and may have to provide security.

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	<ul style="list-style-type: none"> • Capacity obligation is the last obligation following the final rebalancing auction prior to the delivery year. This obligation must be actively tracked by the AESO. • New capacity assets that have not reached commercial operation before the start of the settlement period will not be paid the monthly capacity payment in that settlement period. The monthly capacity payment for that settlement period will be held by the AESO until all penalties for the obligation year are assessed and thereafter will be applied towards the payment adjustment balance. • Financial security is not required for existing capacity assets during the obligation period provided the asset maintains an obligation and is eligible for a capacity payment for the following obligation period. • Any residual funds remaining after all non-availability and over-availability or all non-delivery and over-delivery payment adjustments are made will be returned to load by being applied against the costs incurred by the AESO to procure capacity.
Roadmap for Changes in the Energy and Ancillary Services Markets	<ul style="list-style-type: none"> • Current aspects of the energy and ancillary services markets will continue, including, without limitation: <ul style="list-style-type: none"> ○ Current self-commitment rules. ○ Current must-offer requirement will continue to apply to a generation asset, regardless of whether or not it has a capacity commitment (available capability must be offered). ○ A load asset that does not have a capacity commitment (demand response and price-responsive load) may offer or may continue to self-dispatch. ○ A generation asset, regardless of whether or not it has a capacity commitment, must submit information related to asset outages in accordance with current requirements (no outage approval). ○ All offers may be between the price cap (\$999) and floor (\$0), unless mitigated (further explained below). ○ The current market structure for ancillary services will remain the same. ○ <i>Ex post</i> monitoring and mitigation of the market will continue. • New requirements to facilitate implementation of the capacity market and market power mitigation include: <ul style="list-style-type: none"> ○ Offer control information must be submitted. ○ Section 306.7 of the ISO rules, Mothball Outage Reporting will be replaced by capacity market delist process. Market participants must offer energy in the delivery period unless delisted. ○ Minor changes to the supply adequacy or supply shortfall rules to include assets with capacity commitments. ○ A load asset with a capacity commitment must participate by submitting an offer, not a bid (similar to generation assets), and comply with dispatch requirements. In the event of equal priced offers throughout the merit order, including at the offer cap (\$999.99), a load asset with a capacity commitment will be the last dispatched assets. A load or aggregated load that has not cleared in a capacity auction will not have a must offer requirement. ○ An import or export asset will be provided the option to submit offers in price quantity pairs upon request of a new priced asset, in which case they will be dispatched during the settlement period, and may set system marginal price. ○ An import asset with a capacity commitment will not have priority dispatch over an import asset that does not have a capacity commitment.

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	<ul style="list-style-type: none"> ○ An import asset with a capacity commitment must offer its obligation volume into the energy market. ○ A load asset with a capacity commitment must submit outage information, similar to the existing requirements for generation assets (no outage approval). ○ A generating unit, aggregated generating facility, energy storage facility, load asset or aggregated load asset must submit its ramp capability during the asset's operational state (ramp table or curve). ○ A three-part market power mitigation test will be applied: <ul style="list-style-type: none"> – A market power screen to identify if a firm has market power based on an hourly residual supplier index (RSI) structural screen set at an RSI of 1.0. The RSI calculation will incorporate a voluntary submission of physical and financial supply obligations, which will be netted off the firm's portfolio. – No-look scarcity test: If the supply cushion is forecast to be lower than 250 MW in a delivery hour, there will be no market power mitigation in that delivery hour irrespective of generator concentration or offer prices. – Asset-specific reference price: Calculate the maximum price level that a generator would be expected to offer energy at if it had no market power based on the asset-specific short-run marginal costs adjusted through the use a market-wide marginal cost multiplier to account for cycling and start-up costs or a scarcity multiplier to account for scarcity market conditions. ○ An offer that fails the market power mitigation test will have its offers or bids mitigated to an asset-specific reference price, calculated as: <ul style="list-style-type: none"> – For thermal assets, 3 x marginal cost, defined as heat rate x fuel price + variable O&M + carbon price, x Asset-specific Carbon Efficiency Factor at supply cushions over 1,000 MW increasing to a multiple of 6 x marginal cost at supply cushions from 1,000 to 250 MW; or – For other assets, including an import asset or a non-thermal, energy-limited asset, a formula that captures the concept of opportunity cost. ○ An asset may submit to the AESO an exception request for the asset-specific reference price, and in doing so must submit its actual short-run marginal cost. ● The following design changes are included in the market roadmap (i.e., not included as part of the capacity market implementation for 2021) and will be reviewed and implemented as part of the ongoing evaluation of the market and day to day operations: <ul style="list-style-type: none"> ○ Energy market pricing methodology, including those that may be required to ensure efficient dispatch and pricing during shortage and surplus events in the future: <ul style="list-style-type: none"> – raising the offer cap above \$999.99; – negative pricing; and – shortage pricing. ○ Dispatch and flexibility: <ul style="list-style-type: none"> – dispatch certainty through tightened dispatch tolerance, ramp by block, and delay times; – introduction of a ramp product; and – shorter settlement.

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	<ul style="list-style-type: none"> • The following design changes will not be included as part of the capacity market implementation or market roadmap, although they may be considered as part of a separate evaluation at another time should the need arise: <ul style="list-style-type: none"> ○ locational marginal pricing (LMP); ○ security constrained unit commitment (SCUC); ○ security constrained economic dispatch (SCED); ○ inertia dynamic scheduling; ○ co-optimization of the energy and ancillary services markets; and ○ day-ahead market (DAM).

1.2 Auction Timelines and Transitional Period

Each capacity auction process is expected to take approximately eight³ months, starting from the prequalification process through to market clearing and posting of auction results. In the transition to the final capacity market structure, auctions will be conducted on a compressed forward period and with a reduced number of rebalancing auctions. The initial base auction process for the 2021/2022 obligation period will start in November 2019 and is anticipated to run through to approximately the end of June 2020. During the transitional period, base auctions will be held approximately every six months until the full three-year forward period is achieved with the completion in October 2021 of the base auction process for the 2024/2025 obligation period. Please see CMD Final Sections 5 and 6 for additional detail.

³ Subject to adjustment based on further assessment during the implementation phase of capacity market introduction. Finalized auction timelines will be provided before each auction.