

8 Supply Obligations and Performance Assessments

This section addresses the obligations of legal owners of capacity assets and how capacity asset performance will be assessed prior to and during an obligation period.

8.1 Assessment prior to commencement of obligation period

- 8.1.1 Prior to the commencement of an obligation period, the AESO will monitor capacity committed assets and assess whether:
- (a) in the case of a new capacity committed asset, the asset has satisfied development milestone requirements and will achieve commercial operation in time to meet its capacity commitment; and
 - (b) in the case of an existing capacity committed asset, the asset's UCAP has not deteriorated relative to the asset's capacity commitment for that obligation period.

Obligation of new capacity asset during prequalification

- 8.1.2 The legal owner of a new capacity asset must provide the AESO with a detailed project plan during the prequalification stage of each base auction or rebalancing auction. The project plan must include sufficient detail to demonstrate that the new capacity asset will achieve commercial operation prior to the commencement of the applicable obligation period.
- 8.1.3 The AESO will use the project plan described in subsection 8.1.2 above to:
- (a) validate whether the development of the new capacity asset is proceeding as per the project plan;
 - (b) assess whether the new capacity asset will achieve commercial operation prior to the commencement of the applicable obligation period; and
 - (c) establish credit requirements for the new capacity asset (see discussion regarding Market Participant Buy Bids and Sell Offers and Credit Requirements in other sections of the CMD).

Failure to deliver assessment for new capacity committed assets

- 8.1.4 As per section 2, *Supply Participation*, a new capacity supplier must demonstrate that it has fulfilled development milestone requirements during the prequalification stage of each rebalancing auction.
- 8.1.5 A new capacity supplier that cannot demonstrate that it has fulfilled the development milestone requirements will be deemed to have failed to deliver on the new capacity asset and will be required to buy out its capacity commitment for that new capacity asset in one of the rebalancing auctions.
- 8.1.6 A new capacity supplier must buy out its capacity commitment in the first rebalancing auction if that new capacity asset is more than 8 months delayed, vis a vis a major milestone, in its project schedule.

The AESO anticipates that subsection 8.1.6 will turn to black in the final CMD, subject to confirmation via further analysis that is currently underway.

- 8.1.7 A new capacity supplier must buy out its capacity commitment in the second rebalancing auction if its new capacity asset is more than 5 months delayed in its project schedule.

The AESO anticipates that subsection 8.1.7 will turn to black in the final CMD, subject to confirmation via further analysis that is currently underway.

One stakeholder stated that the AESO should not be designing a market that pushes all future new capacity to the month of October, and that the 5 month timeframe should be more flexible for new units in their first year.

For clarity, the AESO does not consider this approach to push all future new capacity to the month of October. Rather, this approach assesses the readiness of a new capacity asset based on the project plan described in subsection 8.1.2. If a new capacity asset will not be available within 5 months of the original timeline the capacity commitment for that obligation period will need to be repurchased. Conversely, the provision does not create a requirement for a new capacity asset to be commissioned in October. The AESO anticipates that new capacity assets may target commissioning prior to October to ensure availability during the obligation period.

Updates to qualified UCAP ratings

- 8.1.8 The AESO will recalculate the UCAP rating for a capacity committed asset in advance of each rebalancing auction to reflect any changes in the capacity committed asset's capabilities as described in Section 6.

8.2 Assessment during obligation period

- 8.2.1 The AESO will assess a capacity committed asset on both an availability and performance basis during the obligation period. If the performance assessment period and availability assessment period hours overlap, availability and performance of the capacity committed asset will be assessed separately and, if applicable, both types of payment adjustments will be applied for those same hours.

Some stakeholders suggested that availability and performance penalties should be phased in, rather than fully implemented for the first delivery period. They stated that a phased approach would provide an incentive to generators to perform yet allow market participants to understand the risks involved with the new market before being subject to penalties.

The AESO continues to view a phased approach to be inappropriate. The performance framework is an integral part of the overall market design and is required to ensure that incentives for over performance as well as consequences for underperformance, are in place from the beginning of the market, particularly as suppliers will also be receiving compensation for the provision of capacity.

Some stakeholders stated that the overall performance penalty/incentive scheme remains too complex and is not achieving the desired outcome (reduce investment uncertainty, ensure resources that do not deliver in critical hours are not paid a capacity payment). These stakeholders suggest that the performance assessment framework should simply claw back revenue for non-delivered capacity during specified hours, together with an additional assessment to eliminate the incentive to commit and not deliver, equal to 10% of the capacity market revenue per MW. To balance the 10% risk of under delivery, incentives to offset penalties would be set at 90% of the asset's capacity revenue per MW.

The AESO is concerned that the proposed alternative approach is not revenue neutral and that it would dilute incentive signals relating to performance, such that when the system is at greatest risk of, or experiencing, supply shortfall (i.e., EEA events) performance is of greater value than performance under conditions of lower system risk.

One stakeholder stated that significant penalties are not required in Alberta because non-performance in the 100 tightest hours will result in lower capacity revenues (by impacting UCAP in future years).

The AESO continues to consider that a UCAP adjustment applicable to future years would not sufficiently incent performance in the current obligation period. The AESO also believes, based on lessons learned in the eastern US capacity markets, that performance penalties are required to incent compliance. The eastern markets have designed somewhat similar penalty structures in response to past non-delivery on capacity obligations in those jurisdictions.

Unavailability payment adjustment mechanism

- 8.2.2 The AESO will conduct availability assessments during the tightest supply cushion hours.
- 8.2.3 Based on availability assessments, the AESO will apply an unavailability payment adjustment to a capacity committed asset that is not available to satisfy its capacity commitment during an availability assessment period.

Availability assessment period

- 8.2.4 A capacity supplier will be required to demonstrate that its actual availability was at least, on average, equal to its obligation during the availability assessment period.
- 8.2.5 The AESO will assess the actual availability of a capacity committed asset by comparing each capacity committed asset's capacity commitment to its availability during the 100 tightest supply cushion hours over the course of the obligation period. The capacity committed asset's actual availability will be measured in alignment with the AESO's UCAP calculation methodology as described in section 3, *Calculation of Unforced Capacity*; i.e., based on the amount of MW offered to the energy and ancillary services market (including any dispatched volumes), or as the amount of MW generated during the availability assessment period.

The AESO anticipates that subsection 8.2.5 will turn to black for the final CMD.

One stakeholder noted that, under the weighted energy methodology proposed by the Government for the allocation of capacity costs, unless the AESO significantly increases the number of hours in the availability assessment period there will be a significant disconnect between the capacity product purchased by load and the product capacity resources are paid to provide.

The AESO acknowledges that the amount of hours used for calculating tight supply cushion hours for resource performance will potentially differ somewhat from the proposed cost allocation methodology, recognizing that specifics of that methodology are still to be developed. However, the AESO considers there to be alignment between the capacity product purchased by load and the product capacity resources are paid for, as both are expected to be primarily based on on-peak and super peak hours in both summer and winter periods.

- 8.2.6 To determine the availability assessment period, the AESO will perform a supply cushion analysis at the end of each obligation period to identify the 100 tightest supply cushion hours.

The AESO anticipates that subsection 8.2.6 will turn to black for the final CMD.

Availability volume definition

- 8.2.7 The availability volume of a capacity committed asset will be defined as:

$$\text{Availability Volume (MW)} = (\text{Actual Availability Volume} - \text{Expected Availability Volume})$$

Where *Expected Availability Volume* = capacity committed asset's *Obligation Volume*

Where Actual Availability Volume = average availability volume during 100 tightest supply cushion hours:

- a. For an asset whose UCAP is based on a capacity factor, a sum of metered volume and dispatched contingency reserve volume (if spinning and supplemental reserve provided) or regulating raise range¹ (if regulating reserve provided).
- b. For an asset whose UCAP is based on an availability factor, stated available capability (AC) volume.
- c. For a guaranteed load reduction (GLR) asset, its stated available capability (AC) volume will be adjusted for armed LSSi volumes.

For a firm consumption level asset, availability will be measured by the difference between a “look back baseline” less the firm consumption level. For purposes of the foregoing, “look back baseline” means the recent load profile used to assess the availability of firm consumption level assets. The look back baseline will be calculated by averaging the 5 highest load observances over the immediately preceding 10 days.

A capacity asset with an AC value greater than zero but which is not ready to receive a dispatch will, for that period of time, be deemed unavailable for the purpose of an availability assessment.

For the final CMD, the AESO intends to clarify that, for a Firm Consumption Level (FCL) asset:

Expected Availability Volume = Capacity Committed Obligation volume,

The Capacity Committed Obligation Volume is the cleared Qualified Baseline - FCL level

As described in section 3, the Qualified Baseline for a FCL asset will be determined based on the 250 tightest supply cushion hours of the year prior to the auction. The AESO will average the load observed in each of the like tight supply cushion hours using the previous 15 day non-holiday weekdays prior to the tight supply cushion hour and the 10 day weekend and holiday prior to the tight supply cushion hour.

and

Actual Availability Volume = Lookback Baseline – FCL level

The lookback baseline will be determined based on the 100 tightest supply cushion hours of the obligation period. The AESO will establish the look back baseline by averaging the load observed in each of the like tight supply cushion hours using the previous 15 day non-holiday weekdays prior to the tight supply cushion hour and the 10 day weekend and holiday prior to the tight supply cushion hour.

The FCL asset will be deemed available when the Actual Availability Volume is equal to or greater than the Expected Availability Volume.

One stakeholder suggested that, for an FCL asset, it is inappropriate to adjust the baseline by “looking back” to an equivalent hour during the past 10 similar days, and that as long as total load minus un-dispatched demand response is less than or equal to the FCL, then the FCL should be considered available and in compliance with its capacity market obligation. Penalties do not make

¹ I.e., the volume in the regulating reserve range that has not been dispatched.

sense in the context where the load has met its commitment.

The AESO agrees with this comment, insofar as it relates to asset performance. However, for availability assessments, the AESO wants to ensure that the qualified baseline represents an ongoing baseline of consumption to ensure that the characteristics of the capacity asset, including calculated capacity value, assumed in the auction process are being delivered.

Unavailability payment adjustment for negative availability volume

- 8.2.8 For a capacity committed asset with negative availability volume throughout an obligation period, the AESO will calculate an unavailability payment adjustment as follows:

$$\text{Unavailability Payment Adjustment Rate (\$/MWh)} = 40\% \times 1.3 \times \text{obligation price per MW} / 100 \text{ hours}$$

The total Unavailability Payment Adjustment in \$ will then be calculated as:

$$\text{Unavailability Payment Adjustment Rate multiplied by Availability Volume multiplied by } 100$$

For example, assume the capacity committed asset's obligation price was \$100,000/MW. *Actual Availability Volume* was 95 MW and *Expected Availability Volume* was 105 MW. The resulting unavailability payment adjustment would be:

$$(0.4 \times 1.3 \times \$100,000/\text{MW-year}) / 100 \text{ hours} = \$520/\text{MWh} \text{ for each assessment hour and the total payment adjustment would be } \$520/\text{MWh} \times (95 - 105) \text{ MW} \times 100 \text{ hours} = -\$520,000.$$

This amount would act to reduce capacity revenue paid to the resource as per Section 9.

The AESO anticipates that subsection 8.2.8 will turn to black in the final CMD.

One stakeholder requested an explanation for the AESO's use of 40% for the unavailability payment adjustment rate formula.

In response, the AESO notes that the 40% allocation of performance adjustments to availability reflects the higher weighting to performance periods given that they represent periods when the system is at greater supply adequacy risk. The material provided to the Working Groups in February and March 2018 describe a number of scenarios the AESO considered for these values. The 40% weighting for availability assisted the AESO in achieving a 1.3x maximum penalty structure for the poorest performing assets.

Over-availability payment adjustment for positive availability volume

- 8.2.9 A capacity committed asset that has a positive availability volume will be eligible to receive an over-availability payment adjustment. Over-availability payment adjustments will be wholly funded from the unavailability payment adjustments received from capacity committed assets with positive availability volumes.

The AESO anticipates that subsection 8.2.9 will turn to black in the final CMD.

One stakeholder suggested that incentives should be available to all parties that deliver energy during a performance or availability hour to ensure efficient real-time price signals are sent during periods of system stress.

The AESO does not agree that non-committed capacity assets should receive an over availability incentive. These assets do not have a capacity obligation, and the availability measure is meant to ensure capacity committed assets are meeting their obligations during tight supply cushion hours.

8.2.10 For a capacity committed asset with positive availability volume throughout an obligation period, the AESO will apply an over-availability payment adjustment for each MWh of average over-availability during the 100 tightest supply cushion hours, calculated as follows:

$$\text{Over-availability Payment Adjustment (\$/MWh)} = \frac{\text{Total Unavailability Payment Adjustments Collected in an obligation period (\$)}}{\text{Total over-availability volume (MWh)}}$$

The AESO anticipates that subsection 8.2.10 will turn to black in the final CMD.

8.2.11 An over-availability payment adjustment for a capacity committed asset will be subject to the cap described under the heading “Maximum Amounts for Over-availability and Over-performance Payment Adjustments”, below.

The AESO anticipates that subsection 8.2.11 will turn to black in the final CMD.

8.2.12 In the event that there are residual funds remaining after all unavailability payment adjustments and over-availability payment adjustments for an obligation period have been applied, or in the event that there are no capacity committed assets that are eligible to receive over-availability payment adjustments for an obligation period, such residual funds will be applied by the AESO against the costs incurred by the AESO to procure capacity from capacity suppliers.

The AESO anticipates that subsection 8.2.12 will turn to black in the final CMD.

Performance payment adjustment mechanism

8.2.13 The AESO will assess a capacity committed asset’s performance relative to its capacity commitment during EEA events for the full duration of the performance assessment period.

8.2.14 The AESO will calculate a capacity committed asset’s performance volume to determine the volume of the asset’s capacity that will be subject to either over-performance or under-performance payment adjustments.

Performance assessment period

8.2.15 A capacity supplier will not be given any notification prior to the commencement of a performance assessment period declared by the AESO.

8.2.16 Performance will be assessed hourly; i.e., the assessment calculations will be completed for each hour or portion of an hour during a performance assessment period.

Performance volume definition

8.2.17 Performance volume is the volume of a capacity committed asset’s actual performance minus its expected performance during a performance assessment periods.

8.2.18 A capacity committed asset’s performance volume will be defined as:

$$\text{Performance Volume (MWh)} = \text{Actual Performance} - (\text{Expected Performance} * \text{Balancing Ratio})$$

Performance volume is the volume of a capacity committed asset's actual performance minus its expected performance during a performance assessment period.

A capacity committed asset's performance volume will be defined as:

$$\text{Performance Volume (MWh)} = \text{Actual Performance} - (\text{Expected Performance} * \text{Balancing Ratio})$$

Actual performance volume will be measured in MWh as:

- For capacity factor and availability factor capacity assets, the sum of metered volume, and dispatched contingency reserve volume (if spinning and supplemental reserve provided) or regulating raise range (if regulating reserve provided).
- For a Guaranteed Load Reduction (GLR) asset the actual performance is the difference between the GLR asset's performance baseline and the GLR measured consumption of electricity during the performance event. This difference should be equal to or greater than the capacity obligation.

For each performance event day, the performance baseline shall be calculated as follows:

$$\text{Performance Baseline} = \text{Standard Baseline} \times \text{In-Day Adjustment Factor}$$

Both the *standard baseline* and the *in-day adjustment* calculation for any performance event shall go back to a maximum of thirty-five (35) business days.

Standard Baseline:

Non-Holiday Weekday Baseline - Average of hourly intervals in the last ten most recent non-holiday weekdays.

Weekend and Holiday Baseline - Average of hourly intervals in the last five Saturdays, Sundays or holidays, as applicable.

Under this approach each like hour during the past 10 similar days (Non-Holiday Weekdays) prior to a performance event day is averaged to establish an hourly average baseline for those 10 days.

Under this approach each like hour during the past 5 similar days (Holiday or Weekends) prior to a performance event day is averaged to establish an hourly average baseline for those 5 days.

8.2.19 Actual performance volume will be measured in MWh as:

- (a) For capacity factor and availability factor capacity assets, the sum of metered volume, and dispatched contingency reserve volume (if spinning and supplemental reserve provided) or regulating raise range (if regulating reserve provided).
- (b) For a guaranteed load reduction (GLR) capacity committed asset, a reduction in energy consumption from the ten day average baseline. The ten day average baseline will be the recent load baseline established by the AESO for a guaranteed load reduction asset and is the average of load in the same hour in the preceding 10 similar load days. If the performance event occurs in an on peak day hour ending 10, the ten day average baseline will be the average of load in each immediately preceding hour ending 10 over the immediately preceding 10 on peak days. If one of the preceding hour ending 10's was a performance hour, that hour will be removed from the average. Load not reduced due

to operating reserves or LSSi arming will be deducted from the metered volume of the asset. The load reduction from the ten day average baseline must be equal to or greater than the obligation volume.

For the final CMD, the AESO intends to clarify that a 10 of 10 day average baseline and an “in-day” adjustment factor will be used to assess the performance of a guaranteed load reduction (GLR) asset. The AESO considers the 10 of 10 baseline to have the following benefits:

- Accurate for a variety types of loads both above and below one MW of load reduction.
- Produces the narrowest distribution of errors and generates few extreme error values.
- Method produces very low load-impact error during most common performance events.

It is generally accepted that a period of approximately 10 non- holiday weekdays represents normal operation consumption. This baseline is short enough to capture any near – term consumption trends and long enough to limit opportunities for manipulation. See <https://www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential/napdr-mv.pdf> at PDF page 111 for further discussion regarding the benefits of a 10 of 10 baseline.

Under the 10 of 10 day baseline methodology, each similar hour during the past 10 similar days prior to a performance assessment period is averaged to establish an hourly average baseline for those 10 days. The similar days excludes performance periods, weekends and holidays. The baseline is meant to reflect the normal consumption level or the consumption in the absence of a performance. The baseline calculation will exclude days that had a capacity market performance event, and days when a GLR asset experienced a forced or planned outage.

For example, in order to get the 10 previous days from the table below, April 14,15,21,22 (in gray) are withdrawn from the table. April 16, 18 are also withdrawn from the sample because they are days that include a performance event and are therefore not representative of the resources normal operations.

Date/Day			1-2 p.m	2-3 p.m	3-4 p.m	4-5 p.m	5-6 p.m	6-7 p.m	7-8 p.m
11-Apr	Wednesday	Day 1	21	21.75	22.5	21.75	21	18.75	18
12-Apr	Thursday	Day 2	23.25	24	23.25	23.25	22.5	19.5	19.5
13-Apr	Friday	Day 3	12	11.25	12	11.7	12	21.75	21
14-Apr	Saturday	Weekend	23.55	23.85	24.3	23.85	23.25	22.5	21.75
15-Apr	Sunday	Weekend	23.25	25.2	24.6	23.25	21	19.5	18
16-Apr	Monday	Event Day	15	15.75	15	16.05	15.9	15.6	15
17-Apr	Tuesday	Day 4	15.75	16.2	15.6	15.9	15.75	15	15.15
18-Apr	Wednesday	Event Day	21.75	22.5	21.75	21.75	21	20.25	19.5
19-Apr	Thursday	Day 5	12	11.4	11.7	11.25	11.7	22.5	21.45
20-Apr	Friday	Day 6	25.2	23.85	25.2	24	23.7	23.25	21.75
21-Apr	Saturday	Weekend	24.6	24.3	24.6	23.85	23.25	20.7	20.25
22-Apr	Sunday	Weekend	24	23.85	23.25	23.25	21	20.25	18.75
23-Apr	Monday	Day 7	15.75	15	16.05	15.9	15.9	16.05	15.9
24-Apr	Tuesday	Day 8	15.6	15.9	15.75	15	15.15	15.75	15
25-Apr	Wednesday	Day 9	23.25	25.2	24.6	23.25	21	19.5	18
26-Apr	Thursday	Day 10	23.25	23.55	23.25	23.25	22.5	22.2	21.45
Resource Baseline			18.705	18.81	18.99	18.525	18.12	19.425	18.72

For weekends and holidays the Baseline will be set based on consumptions during the

most recent 5 weekend days or holidays, as applicable.

The “in-day” adjustment factor for a GLR asset will be equal to A / B, where:

A = The average load of the first three of four hours before the event

B = The average load of the same hours from the last 10 non holiday weekdays.

The adjustment window will be the three (3) hour window occurring one (1) hour before a performance event. The adjustment factor will be limited to +/- 20% of the standard baseline. For greater clarity, the in-day adjustment factor will be rounded either up or down if calculated as being less than 0.8 or greater than 1.2 respectively.

“In-day” adjustments are included in baseline calculations to align the baseline calculated from recent non-event days with the conditions of the performance event day to improve the estimate of the “but-for” resource consumption level or in other words, establish a more accurate consumption level for the GLR asset.

The typical adjustment shifts or scales the baseline by a fixed amount so that it matches the actual load during a period before the event start. This adjustment can help correct for load changes due to weather, as well as for variable operations.

	First 3 of 4 hours prior Event Start Time				Performance Event hours			
	9-10 a.m	10-11 a.m	11-12 p.m	Average Load	1-2 p.m	2-3 p.m	3-4 p.m	4-5 p.m
10- day Baseline	13.5	15	16.5	15	18.705	18.81	18.99	18.525
Day-of Event	15	16.35	19.5	16.95	X	X	X	X
Adjustment Factor					Adjusted Baseline			
Adjustment Factor Calculation	Avg load day-of /Avg load baseline 16.95/15 = 1.13				1-2 p.m	2-3 p.m	3-4 p.m	4-5 p.m
					18.705	18.81	18.99	18.525
					*1.13	*1.13	*1.13	*1.13
Compliance measured against the adjusted baseline	→				21.14	21.26	21.46	20.93

<https://www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential/napdr-mv.pdf>

Additionally, the AESO intends to clarify that a GLR asset may participate in the Load Shed Services for imports (LSSi) program. A GLR asset that is providing LSSi mirrors a generator that is providing operating reserves. The LSSi service is classified as an ancillary service.

A load that is providing LSSi and is continuing to consume is like a generator who has reduced production to provide operating reserves, and will be recognized as such during a performance event.

The provision of LSSi enables the increase of imports which adds to Alberta’s supply adequacy. A requirement that would force a GLR asset with an LSSi commitment to reduce its load during a performance event would not represent increased benefit to the system as it would mean that the LSSi volume is no longer armed which would limit the import capability.

Therefore, a load armed to provide LSSi should have the volume armed considered as meeting its capacity obligation.

If the load is not armed, then the assets performance will be measured as the difference between the performance baseline and the GLR measured consumption of electricity

during the performance event vs the capacity obligation.

- (c) For a firm consumption level capacity committed asset, metered volume of load not reduced due to operating reserves or LSSi arming will be deducted from the metered volume of the asset. This difference must be equal to or less than the firm consumption level.

To assess the performance of a firm consumption level (FCL) asset, load measured during a performance event will need to be equal or less than the qualifying baseline - the capacity obligation. Similar to GLR resources, the volume of armed LSSi that an FCL resource is supplying will be considered as contributing towards performance.

With respect to external resources, the AESO is proposing that for an external resource to be assessed as performing, the asset must be flowing energy during a performance measurement period up to the asset's capacity commitment, or have an offer and be available for dispatch up to the asset's capacity commitment in the event the Available Transmission Capability (ATC) is fully utilized and the asset was not dispatched (ATC was filled with lower offers in the merit order).

In the case where the ATC is fully utilized with lower offers in the merit order and the asset is not dispatched, the asset must offer equal to or greater than the asset's capacity commitment using its "price taker" asset, at the next restatement opportunity period. For example, after T-2 restatement, or earlier if restatements are allowed inside of T-2, so that energy will flow during the third hour of the performance period or sooner.

The asset will be considered compliant if, as above, the asset has offers as a price taker equal to or greater than the asset's capacity committed volume. If the ATC level is constrained to less than the full interconnection firm capacity level, the asset may be prorated to less than the capacity commitment. For example, other non-CCI assets with firm transmission may get a prorated share of the transmission into Alberta.

Regardless of capacity obligations, external offers will not be given dispatch priority over non-capacity committed import offers. The AESO's current merit order dispatch will remain in effect.

This approach has a number of benefits:

1. The lowest cost imports continue to have a priority.
2. External assets with a capacity obligation will not be incented to bump non capacity imports, potentially leaving more energy available during short fall situations.
3. Transfer capability may be increased up to TTC levels during short fall situation. At this time capacity committed loads that have not priced themselves in will be available with increased ATC capability.

- 8.2.20 The legal owner of a Long Lead Time Energy (LLTE) capacity asset, in order to be assessed as having delivered on its capacity commitment during a performance period, must be providing energy in response to a dispatch during a performance assessment period. LLTE assets that are issued a directive at any point to provide energy for a performance assessment period will be assessed as having failed to deliver on its capacity commitment during the performance assessment period.

With respect to Long Lead Time Energy (LLTE) assets, the AESO may direct a LLTE asset to start their unit before a shortfall event when there is sufficient time. A LLTE asset that is directed

to start will be considered compliant for a performance event if the asset enters a start time within 10 minutes of receiving the directive, and if the asset is online and providing their capacity obligation during the performance event.

8.2.21 A capacity asset with an AC value greater than zero but not ready to receive a dispatch will, for that period of time, be deemed to be non-performing for the purpose of a performance assessment.

8.2.22 Expected performance will be equal to:

- (a) For generating assets and guaranteed load reduction assets (GLR) - the asset's obligation volume multiplied by the balancing ratio.
- (b) For firm consumption level assets – the qualified baseline minus firm consumption level multiplied by the balancing ratio.

Non-performance payment adjustment

8.2.23 The AESO will apply a non-performance payment adjustment for a capacity committed asset with a negative performance volume.

8.2.24 The AESO will set the non-performance payment adjustment based on the obligation price per MW. The non-performance payment adjustment will also be dependent upon the **expected number** of EEA hours for the obligation period as determined for the base auction.

The AESO anticipates that subsection 8.2.24 will turn to black in the final CMD.

The AESO also intends to clarify that the expected number of EEA hours will be determined using the Resource Adequacy Model and a supply of capacity equivalent to the inflection point on the demand curve. The inflection point is described in Section 4.4.2 (d).

For consistency, it makes sense to correlate the expected EEA hours to a point on the demand curve. Using the inflection point is most appropriate because it is the point on the demand curve that is closest to the expected average outcome over time.

8.2.25 The AESO will determine and communicate to market participants the specific value of expected EEA hours in advance of each base auction using the AESO's reliability modelling. This value will remain constant for the applicable obligation period. **If the expected EEA hours based on the AESO's reliability modelling is lower than 20, a floor of 20 hours will be used.**

The AESO anticipates that subsection 8.2.25 will turn to black in the final CMD.

8.2.26 The AESO will calculate the non-performance payment adjustment using the following formula:

$$\text{Non-performance payment adjustment rate (\$/MWh)} = 60\% \times 1.3 \times \text{Obligation price per MW} / \max(\text{Expected EEA hours}, 20)$$

The *non-performance payment adjustment rate* will then be multiplied by the *performance volume* to determine the non-performance payment adjustment for the performance event for the capacity committed asset.

The AESO anticipates that subsection 8.2.26 will turn to black in the final CMD.

Over-performance payment adjustment

8.2.27 A capacity committed asset that has a positive performance volume will be eligible to receive an over-performance payment adjustment. Over-performance payment adjustments will be wholly funded from the non-performance payment adjustments received from capacity committed assets with negative performance volumes.

8.2.28 The AESO will calculate over-performance payment adjustments for each MWh of over-delivery during EEA events and will pay those capacity committed assets with positive performance volumes at the \$/MWh payment adjustment:

$$\text{Over-performance Payment Adjustment (\$/MWh)} = \frac{\text{Total Non-Performance Payment Adjustments Collected \$}}{\text{Total positive Performance Volume MWh}}$$

8.2.29 **Over-performance payment adjustments will be capped in the manner described under the heading “Maximum Amounts for Over-availability and Over-performance Payment Adjustments”, below.** Non-performance payment adjustment funds remaining after the payment of over-performance payment adjustments (for instance, as a result of a lack of capacity committed assets that are eligible for over-performance payment adjustments) will be applied against the costs incurred by the AESO to procure capacity from capacity suppliers.

The AESO anticipates that subsection 8.2.29 will turn to black in the final CMD.

Maximum amounts for unavailability and non-performance payment adjustments

8.2.30 The AESO will cap the combined payment adjustment exposure to unavailability and non-performance payment adjustments for each capacity committed asset.

8.2.31 The monthly non-performance 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 AESO anticipates that subsection 8.2.31 will turn to black in the final CMD.

One stakeholder commented that 300% is too high a value and that responsiveness is likely to occur at much less than 300%.

The AESO considers a 300% monthly cap to limit monthly capacity non-performance and unavailability penalties to be reasonable. The AESO’s modeling, shared with the Working Group, has shown that a 300% monthly cap is required to ensure the poorest performing assets are at risk of penalties greater than annual capacity revenues.

8.2.32 The cumulative annual unavailability and non-performance payment adjustments for a capacity committed asset will be capped at 130% of the annual capacity revenue based on the capacity committed asset’s obligation price per MW.

One stakeholder asked if an asset hits its penalty cap (130%), and UCAP is based across the past 5 years, what the incentive would be for the asset to actually deliver MWs, especially if it is part of a larger portfolio. Additionally, if an asset has reached its maximum over-performance payment in a year, a question was raised regarding the asset’s incentive to continue to over-perform.

The AESO anticipates that a profit maximizing firm will always be incented to avoid penalties. While there may be firms that own portfolios of assets, they will always be incented to maximize their revenues, which requires maximizing asset performance. An asset that has reached the

maximum over performance payment in one year will still be eligible for energy revenues during performance events. The energy and ancillary service markets will continue to provide incentives for these assets to provide energy during tight system conditions.

Maximum amounts for over-availability and over-performance payment adjustments

- 8.2.33 Maximum potential over-availability and over-performance payment adjustments will be capped at a capacity committed asset's total annual obligation price per MW; i.e., if a 1 MW asset receives \$100,000 per year of capacity payment, the maximum cumulative over-availability and over-performance payment adjustments will be capped at \$100,000 for that obligation period, such that total revenue earned is \$200,000.
- 8.2.34 If the cap described in subsection 8.2.33 is reached before the end of the obligation period, the capacity supplier will not be eligible for further over-performance or over-availability payment adjustments for the remainder of the obligation period.

Unavailability and non-performance payment adjustment exemptions

- 8.2.35 A capacity committed asset that is constrained down due to limits on the Alberta internal transmission system will be exempt from unavailability payment adjustments on that volume of its obligation. The actual availability of a capacity committed asset that is constrained down due to transmission constraints will be measured as metered volume plus constrained down volume plus, if applicable, contingency reserve volume dispatched for regulating raise range. Similarly, a capacity committed asset that is constrained down due to limits on the Alberta internal transmission system will be exempt from non-performance payment adjustments on that volume of its obligation.
- 8.2.36 Availability and performance assessments will not be conducted during periods when a state of market suspension, as described in Section 202.7 of the ISO rules, *Market Suspension or Limited Markets Operations*, is in effect.
- 8.2.37 No other exemptions to the assessment of unavailability payment adjustments or non-performance payment adjustments will be permitted. For clarity, if a capacity committed asset is not available or does not perform for the following reasons, no exemption to the assessment of an unavailability payment adjustment or a non-performance payment adjustment will be granted:
- (a) forced or planned derates;
 - (b) forced or planned outages;
 - (c) force majeure;
 - (d) on-site and/or distribution system constraints; or
 - (e) transmission outages that result in the asset being electrically disconnected from the transmission system.

The AESO anticipates that subsection 8.2.37 will turn to black in the final CMD. Please see additional rationale in Section 3.

8.3 Ex ante asset substitution and volume reallocation

- 8.3.1 A capacity supplier will have the option of ex ante asset substitution, or volume reallocation to avoid or decrease non-performance payment adjustments associated with a failure to deliver on its obligation volume during a performance assessment period.

- 8.3.2 Ex ante asset substitution and volume reallocation are risk mitigation approaches that will be available to the capacity supplier in addition to the option of participating in the rebalancing auctions to adjust or buy back such asset's capacity obligation.

Ex ante asset substitution

- 8.3.3 A capacity supplier may engage in asset substitution with a qualified but non-committed or partially committed capacity asset commencing after the last rebalancing auction and until the start of the energy market settlement interval.
- 8.3.4 The legal owner of a qualified capacity asset may only substitute a volume less than or equal to its uncommitted capacity from a qualified but non-committed or partially capacity committed asset.
- 8.3.5 A capacity supplier must register all ex ante asset substitutions with the AESO specifying the:
- (a) start date and time, and end date and time of the substitution. The start date and time must not be prior to the date and time upon which the substitution is registered with the AESO.
 - (b) volume of the capacity obligation to be substituted. This volume must be less than or equal to the obligation volume of the substituted asset.
 - (c) approval of the substitution by both counterparties. Approval is required before the begin date and time of the substitution.

Details in respect of the financial arrangements between the two counterparties will not be required for the asset substitution registration.

- 8.3.6 **The AESO will allocate the payment adjustments associated with under-performance and over-performance of the substituted asset to the original obligation holder and not to the substituted asset owner.**

The AESO anticipates that subsection 8.3.6 will turn to black in the final CMD.

- 8.3.7 **The AESO will not transfer a capacity obligation during the substitution period to the substituted asset.** However, the substituted asset will be utilized for purposes of performance.

The AESO anticipates that subsection 8.3.7 will turn to black in the final CMD.

Ex post volume reallocation

- 8.3.8 Following a performance assessment period, a capacity supplier that delivered metered volumes greater than expected performance under its obligation during a performance assessment period may sell its excess positive performance volume to another capacity supplier whose capacity committed asset did not deliver sufficiently to meet its entire obligation. **Only capacity committed assets are eligible to participate in volume reallocation transactions.**

The AESO anticipates that subsection 8.3.8 will turn to black in the final CMD.

- 8.3.9 A capacity supplier must indicate to the AESO if its capacity committed asset(s) can be considered for volume reallocation **after the last rebalancing auction and** before the start of the obligation period (i.e., November 1 of a corresponding year).

The AESO anticipates that subsection 8.3.9 will turn to black in the final CMD.

8.3.10 The AESO will allocate the payment adjustments associated with under-performance and over-performance of the substituted capacity asset to the original obligation holder and not to the substituted capacity asset owner. The capacity obligation during the substitution period will not be transferred to the substituted capacity asset.

The AESO anticipates that subsection 8.3.10 will turn to black in the final CMD.

8.3.11 If one or more performance assessment periods takes place in a calendar month, the AESO will be required to notify the legal owner(s) that have indicated its capacity committed asset(s) can be considered for volume reallocation, no later than 5 business days following the end of the calendar month, of performance volume data results for each performance assessment period in the previous calendar month.

8.3.12 The performance volume data results will be required to contain the following information for each performance assessment period in the previous calendar month and in respect of each capacity committed asset, using the most recent data:

- (a) the capacity delivered in metered volumes (MWh) during the performance assessment period;
- (b) the balancing ratio;
- (c) the initial positive performance volume; and
- (d) the initial negative performance volume.

The AESO anticipates that subsection 8.3.12 will turn to black in the final CMD.

8.3.13 Following receipt of its performance volume results a capacity supplier must submit a volume reallocation request to the AESO within 6 business days if it wishes to participate in volume reallocation.

The AESO anticipates that subsection 8.3.13 will turn to black in the final CMD.

8.3.14 A volume reallocation request must include, the:

- (a) names of the volume reallocation transferee legal owner and the volume reallocation transferor legal owner(s).
- (b) performance assessment period to which the volume reallocation request relates; and
- (c) reallocated capacity volume. In the case of the transferee this is a positive number, and in the case of a transferor this is a negative number.

Details in respect of the financial transaction or the volume reallocation trade between a transferee and a transferor are not required in the volume reallocation request.

8.3.15 A capacity supplier that buys reallocated capacity will be considered to have met its obligation volume via a combination of any output of its own and output nominated from other legal owners of capacity committed assets through capacity volume reallocation (if sufficient amount of positive performance volume was reallocated).

8.3.16 The AESO will not allocate an over-delivery capacity payment adjustment for the seller for any MW transferred to another capacity supplier through volume reallocation.