March 12, 2015

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: California Independent System Operator Corporation
Docket No. ER15- ___-000

Tariff Amendment to Modify Bid Cost Recovery Provisions to Ensure Appropriate Treatment of Minimum Load Compensation for Multi-Stage Generators

Request for Waiver of Sixty Day Notice Requirements

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) submits this tariff amendment to modify elements of the bid cost recovery provisions of its tariff.[1] Specifically, the CAISO proposes to modify the bid cost recovery provisions relating to multi-stage generators to more appropriately reflect costs associated with operating these resources at minimum load when they are self-committed in the CAISO's day-ahead or real-time markets. The proposed changes will ensure these resources do not receive excessive bid cost recovery uplifts.

The CAISO tariff already contains rules that appropriately consider minimum load costs for multi-stage generating resources in the CAISO's bid cost recovery calculations when the CAISO commits such resources in the day-ahead market. In the CAISO's 2013 tariff amendment filing in Docket No. ER13-2452, the CAISO separated the accounting of bid cost recovery amounts between the day-ahead and real-time markets. In doing so, the CAISO recognized the need for additional rules to appropriately allocate these costs between the day-ahead and real-time markets, in order to avoid the

[1] The CAISO submits this filing pursuant to section 205 of the Federal Power Act, 16 U.S.C. § 824d. Capitalized terms not otherwise defined herein have the meanings set forth in the CAISO tariff. References to numbered sections are references to sections of the CAISO tariff unless otherwise indicated.

potential for multi-stage generators to receive excessive bid cost recovery uplift payments. When it filed that amendment, the CAISO limited these rule changes to instances in which the CAISO committed multi-stage generating resources in the day-ahead market. Self-committed resources are not eligible to recover minimum load costs for the day-ahead market and therefore, the CAISO did not include self-committed resources within the scope of these rules.

The CAISO has since determined, however, that under certain circumstances, self-committed multi-stage generator resources also have the potential to over-recover bid costs. The CAISO is proposing to amend its tariff to ensure that the Commission-approved policy of appropriately allocating minimum load costs between the day-ahead and real-time markets applies equally and consistently both to CAISO commitments of multi-stage generation resources and situations when such resources are self-committed, either as a result of a self-schedule submitted in the day-ahead or real-time market, or through base schedules submitted by the EIM entity participating in an Energy Imbalance Market.[2] The CAISO estimates that the minimum load cost settlement impact in the CAISO market due to this tariff gap has been approximately $2.54 million since May 1, 2014.

Because of the potential for resources to receive excessive uplift payments under the current tariff rules through their bidding practices, and the fact that these tariff modifications are consistent with the policy already approved by the Commission, the CAISO requests that the Commission grant waiver of the 60-day notice and comment period and allow this tariff amendment to go into effect the day after filing, March 13, 2015.

I. BACKGROUND

The CAISO's bid cost recovery mechanism is the means by which the CAISO ensures that resources scheduled in the CAISO's markets are able to recover their commitment, energy bid, and ancillary services bid related costs. Relevant to this filing, these costs include costs associated with starting up and operating at minimum load. The rules relating to bid cost recovery eligibility, payment and allocation are set forth in Section 11.8 of the CAISO Tariff.

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[2] As explained below, the current tariff language already dictates the correct result for Energy Imbalance Market commitments except in the case of certain decremental dispatches. However, in analyzing this issue, the CAISO determined that the existing tariff language relating to the Energy Imbalance Market should also be clarified to make clear that bid cost recovery for multi-stage generators and short-start units that participate in the energy imbalance market is treated in a manner similar to those that are committed in the CAISO's other markets.

During any given trading hour, a resource may be committed in multiple CAISO markets (*e.g.*, the day-ahead market, which includes the integrated forward market and the residual unit commitment process, or the real-time market, which consists of the fifteen-minute market and the five-minute real-time dispatch and includes the Energy Imbalance Market). This can occur as a result of: (1) the CAISO committing the resource based on the resource's market bids; (2) the resource committing itself through self-schedules or; (3) for Energy Imbalance Market resources, the resource submitting base schedules. Because the CAISO's bid cost recovery provisions calculate and pay bid cost recovery separately for the day-ahead and real-time markets, the CAISO's bid cost recovery rules include provisions that determine for any given market interval whether commitment costs are allocated to the day-ahead or real-time market.

When the CAISO introduced the functionality to explicitly model resources with multiple operating configurations in 2010, the CAISO amended its bid cost recovery rules to account for the respective costs of a multi-stage resource's various configurations and to account for the multi-stage generator moving between these various configurations. Therefore, the CAISO proposed, and the Commission accepted the following tariff revisions : (1) creating a new category of commitment costs known as transition costs to capture the costs associated with moving multi-stage generators between configurations; (2) allowing multi-stage generators to submit separate start-up and minimum load costs for different configurations; and (3) adding rules specifying, for any given market interval and configuration and depending on the type of commitment, how the CAISO would determine whether the commitment costs for the day-ahead or real-time market will apply.[3]

In September 2013, the CAISO filed a tariff amendment modifying its rules for netting costs and revenues for purposes of calculating bid cost recovery uplifts. Prior to this amendment, the CAISO determined bid cost recovery uplifts by netting all of a resource's eligible costs against all of its market revenues earned during each trading day.[4] The September 2013 amendment proposed to separate the netting of costs and revenues for each trading day between the costs and revenues relating to the day-ahead integrated forward market and the costs and revenues relating to the residual unit commitment and real-time markets. In proposing this change, the CAISO recognized that in the case of multi-stage generating resources, separately netting minimum load costs and revenues between the day-ahead and real-time markets was

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3 *Cal. Indep. Sys. Operator Corp*., 132 FERC ¶ 61,087 (2010).

4 Tariff Amendment Lowering the Energy Bid Floor and Changing the Bid Cost Recovery Methodology with Additional Performance Based Refinements, Docket No. ER13-2452-000 (September 25, 2013), transmittal letter at 4.

complicated by the fact that a change in configuration between the two markets can result in the same generating resource having different minimum load and energy costs for the same operating interval.

An important principle of bid cost recovery in the CAISO markets is that resources are only eligible to receive a bid cost recovery uplift to the extent the revenues earned through their market payments based on the locational marginal price do not cover their total bid costs. Separately netting costs and revenues across the day-ahead and real-time markets created the potential to expand bid cost recovery payments for multi-stage generating resources because of the interplay between two factors: (1) the CAISO pays resources for the energy delivered at the applicable locational marginal price for portions of the resources' energy bid curve below the minimum load level along with the energy delivered at or above minimum load; and (2) the market revenues associated with the configuration committed in the day-ahead would no longer be used to offset the bid costs associated with the real-time-committed configuration. The CAISO recognized that, under certain circumstances, these factors combined could result in a multi-stage generating resource obtaining double recovery of minimum load costs.[5]

In order to appropriately consider the commitment costs of different multi stage generator configurations in its bid cost recovery calculations, the CAISO, in its September 25, 2013 filing in FERC Docket No. ER13-2452-000, proposed to amend the rule for assigning minimum load costs for multi-stage generating resources to day-ahead or real-time bid cost recovery calculations. The modified rule specified that when a resource is dispatched in one configuration by the CAISO in the integrated forward market, and then later dispatched by the CAISO in a different configuration in the real-time market, the real-time market bid cost recovery calculations will only consider the incremental minimum load costs between the two. In addition, the CAISO modified section 11.8.4.1.2 to allow the bid cost recovery mechanism to include negative minimum load costs for cases in which the resource is committed to a lower configuration in the real-time than the configuration to which it was committed in the day-ahead. This was meant to account for a resource's minimum load cost savings relative to the higher minimum load costs included in the day-ahead market bid cost recovery calculations.

The Commission accepted these tariff revisions.[6] In its order, the Commission concluded that the CAISO's proposed rules for calculating bid cost recovery payments for multi-stage generators "are just and reasonable measures that eliminate the

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5 *See* September 25 Transmittal Letter at 27-28.

6 *Cal. Indep. Sys. Operator Corp*., 145 FERC ¶ 61,254 (2013).

potential for double counting of costs that could otherwise occur when day-ahead and real-time bid cost recovery are calculated separately."[7] The Commission also acknowledged the CAISO's belief at that time that this risk did not exist with respect to self-committed resources because they are not afforded uplift payments for unrecovered start-up and minimum load costs.[8] Although it remains true that self-committed resources do not receive such uplift payments within the same market for which they are self-committed, as discussed below, the CAISO now realizes that under certain scenarios, multi-stage generating resources that are self-committed also have the potential to receive excessive bid cost recovery payments. Therefore, it is appropriate to calculate minimum load costs for these resources based on the incremental difference between the costs associated with the resource's day-ahead and real-time committed configurations. The instant tariff amendment seeks to implement this solution.

The CAISO also notes that in June 2014, the Commission conditionally approved modifications to the CAISO tariff to allow other balancing authority areas the opportunity to participate in the CAISO's real-time market for imbalance energy, *i.e.*, the Energy Imbalance Market. Among the modifications accepted by the Commission was new tariff language specifying that resources participating in the Energy Imbalance Market are eligible for bid cost recovery through the real-time market, and that a non-zero Energy Imbalance Market Base Schedule will be treated as a self-commitment. This means that Energy Imbalance Market resources are not eligible to recover start-up and minimum load costs consistent with the treatment of costs during self-commitment intervals as set forth in Section 11.8.4.1.2 of the tariff. Thus, Energy Imbalance Market resources are not paid bid cost recovery, including recovery for minimum load costs, for amounts submitted in their base schedules. This language ensures that multi-stage Energy Imbalance Market resources are not eligible to over-recover minimum load costs when they are self-committed in a higher configuration than the configuration indicated in their base schedules. However, because the Energy Imbalance Market bid cost recovery is based entirely on real-time activities, the language in section 29.11(n) does not authorize the CAISO to include decremental minimum load costs in the bid cost recovery calculations due to changes in configurations when a resource is self-scheduled and operates at a lower configuration than was included in its base schedule.[9] As discussed further below, the CAISO proposes to modify its tariff to authorize the CAISO to account for decremental minimum load costs when dispatching

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[7] *Id*. at P 37.

[8] *Cal. Indep. Sys. Operator Corp*., 145 FERC ¶ 61,254 at P 8, fn 13 (2013).

[9] In this context, "decremental minimum load costs" refers to the minimum load cost savings realized by a multi-stage generator as a result of being dispatched in real-time at a lower configuration than the one indicated in its day-ahead schedule or base schedule.

multi-stage resources through the Energy Imbalance Market, as well as clarify that the general rule regarding the treatment of multi-stage resources also applies to Energy Imbalance Market commitments.

II. NEED FOR TARIFF AMENDMENT

When it proposed the change from inter- to intra-market netting for bid cost recovery in 2013, the CAISO anticipated that the need to account for the difference in minimum load costs between multi-stage generators' day-ahead and real-time configurations would only occur when the CAISO dispatched such resources in the day-ahead market, as opposed to instances in which they were self-committed. This was because commitment costs are not included in the day-ahead market bid cost recovery calculations when a resource is self-committed in the day-ahead market. Therefore, in the September 2013 tariff amendment the CAISO modified its tariff to limit a multi-stage generating resource's minimum load costs recovery to the difference in minimum load costs between its day-ahead and real-time configurations. However, this rule only applies in cases where the resource's configuration in a "CAISO IFM Commitment Period"[10] differs from a resource's configuration in a "RTM CAISO Commitment Period." The modified tariff language also provides that, for a multi-stage generator configuration committed by the CAISO in the real-time market but self-scheduled in the day-ahead market, the CAISO will include the full minimum load costs of the real-time market committed configuration in the real-time market bid cost recovery calculations.

On May 1, 2014, the CAISO implemented the new bid cost recovery rules approved by the Commission in Docket No. ER13-2452. Shortly thereafter, the Department of Market Monitoring reported to the CAISO the potential for multi-stage generating resources to over-recover minimum load costs when self-scheduled in the day-ahead market and later committed in the real-time market pursuant to a CAISO commitment. This potential exists because the bid cost recovery rules in the September 2013 amendment permit a multi-stage generator to recover all of its minimum load costs in real-time market bid cost recovery, even though the resource had already decided to self-commit in the day-ahead market, thereby signaling that it was willing to forego bid cost recovery for some or all of these costs. Over-recovery of bid costs can occur in such cases because the costs are accounted for in the real-time, and the revenues earned for the self-committed energy cannot be used to offset those costs.

The ISO evaluated the issue and determined that only minimal amounts of over-recovery had actually occurred. The CAISO began monitoring bid cost recovery payments to multi-stage generating resources specifically for this issue and planned to

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[10] A "CAISO IFM Commitment Period" is defined as "the portion of a Commitment Period in the IFM that is not a Self-Commitment Period." CAISO Tariff, Appendix A.

remove this potential over-recovery opportunity in an upcoming tariff amendment related to bid cost recovery. The opportunity to include this fix in a related filing has not materialized. Because of the continued risk of bid cost recovery overpayments, the CAISO is making a standalone filing to remedy the situation.

The CAISO tariff already contains rules ensuring that if a resource self-schedules a configuration in the IFM and also submits an economic bid in a higher configuration in the same market, and the CAISO commits the resource, the resource's minimum load costs in that market are incremental to the resource's self-scheduled configuration.[11] The CAISO believes that this same principle should apply when the resource self-schedules a configuration in the day-ahead and then the CAISO economically commits the resource in real time at either the same or a different configuration.

Therefore, the CAISO proposes to amend the bid cost recovery provisions relating to multi-stage generating resources by adding a general formula for calculating minimum load costs for all multi-stage resources to ensure that the CAISO correctly accounts for these resources' minimum load costs regardless of whether the CAISO commits them or they are self-committed. This is consistent with the policy approved by the Commission in its order on the September 2013 amendment. The proposed formula specifies that for multi-stage generators, the minimum load costs eligible for recovery in the real-time market for a particular interval will be the minimum load costs associated with the configuration committed in the real-time market, less the greater of (1) the minimum load costs associated with the configuration committed in the day-ahead market[12] or (2) the minimum load costs associated with any configuration self-committed in the real-time market.

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[11] *See* Section 11.8.2.1 (stating that for multi-stage generators, the incremental commitment costs, including minimum load costs, for a configuration other than one self-scheduled, are determined as set forth in Section 31.3); Section 31.3 (stating that if a multi-stage generator submits a self-schedule during a trading hour for a particular configuration, the integrated forward market will determine commitment costs, including minimum load costs, associated with any economic bids for other configurations as the incremental costs between the two configurations). Therefore, in those instances in which a resource has a self-schedule in the lower configuration (C1) and an economic bid in a higher configuration (C2), the CAISO only pays the difference between the higher and the lower self-schedule configuration (C2-C1). Since there is no self-schedule in the integrated forward market in this scenario, in the integrated forward market the costs incremental to the self-committed integrated forward market configuration are not considered. If there was a self-schedule in the lower configuration, *e.g.* C1, then the integrated forward market minimum load costs would have been the minimum load costs of C2 minus the costs attributed to the self-scheduled configuration of C1.

[12] For purposes of this formula, this also includes minimum load costs associated with configurations committed through the CAISO's residual unit commitment (RUC) process.

The following scenarios demonstrate the need to modify the bid cost recovery rules to appropriately account for multi-stage generator configuration minimum load costs and, in particular, ensure resources do not over-recover minimum load costs. These examples show how the application of the CAISO's proposed minimum load cost calculation rule for multi-stage resources will remedy the current rule gap. For purposes of these examples, the CAISO assumes a multi-stage generating resource with the three configurations, as illustrated in Figure 1. The configuration with the lowest minimum capacity or Pmin is configuration 1 (C1), which has a minimum load cost of $700 per hour. The second lowest configuration is C2 with a minimum load cost of $1,000 per hour and the highest configuration is C3 with a minimum load cost of $1,200 per hour. These same minimum load costs are used in all of the scenarios.

Figure 1
Illustrative three configuration multi-stage generating resource

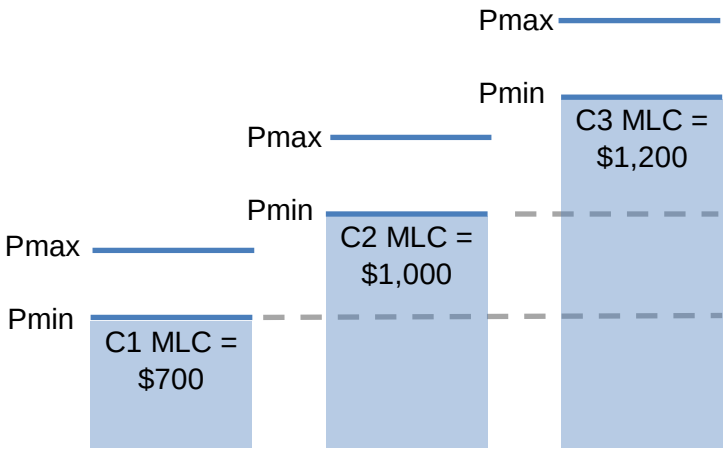

Table 1 below shows the incremental minimum load costs calculated as the difference between the "to" and "from" configurations. For example, transitioning from configuration C1, at a minimum load cost of $700 per hour, to configuration C2, at a minimum load cost of $1,000 per hour, will incur an incremental minimum load cost of $300 per hour ("to" minus "from" configuration costs or $1,000 - $700).[13] The first row, second column of Table 1 shows this. When the resource stays in the same configuration, there is no incremental cost, as shown in the first row, first column of Table 1. It is also possible to incur a negative incremental cost (*i.e*. a cost savings) when the resource is committed to a lower configuration in the real-time market than was committed in the day-ahead market. For example, when the resource transitions from configuration C2 to configuration C1, it incurs a negative minimum load cost of

[13] This rule is reflected in Section 11.8.1.3 (1)(a) of the CAISO tariff.

$300 per hour ("to" minus "from" configuration costs or $700 - $1,000), representing the fact that the resources has realized a savings in costs as a result of being dispatched in a lower configuration in real-time.

Table 1
Incremental and decremental minimum load costs

		"To" configuration		
		C1	C2	C3
"From" configuration	C1	$0	$300	$500
	C2	($300)	$0	$200
	C3	($500)	($200)	$0

The tables in the following two subsections show the resource under various dispatch conditions. Each condition is illustrated in a separate table using the same costs in each scenario. The table in subsection II.A shows scenarios in which the resource is committed in the real-time market to a "higher" configuration from the configuration committed in the day-ahead (an incremental change in configuration). The table in subsection II.B shows scenarios in which the resource is committed in real-time at a "lower" configuration than the one committed in the day-ahead (a decremental change). The scenarios in subsection II.C involve situations in which there is no change in configuration between the day-ahead and real-time.

Each table includes a number of scenarios that are further sub-divided into "a" and "b" rows to distinguish between the result that would occur under the current tariff rules and the result that will occur pursuant to the minimum load cost calculation formula proposed in this amendment.

A. Scenarios demonstrating the need to modify the bid cost recovery provisions to account for situations where multi-stage resources that have day-ahead or real-time self-schedules are dispatched in real-time in a higher configuration

The CAISO tariff authorizes the CAISO to account for the incremental difference between minimum load costs when a multi-stage resource's configuration changes between the day-ahead and real-time when the CAISO commits the resource in the day-ahead. The current tariff rule does not, however, account for this difference when one or more of the resource's configurations are self-scheduled.[14] This limitation can

[14] *See* Section 11.8.1.3 (1)(a).

cause over-accounting for minimum load costs in certain scenarios. The table and explanations below illustrate that in some cases over-accounting can occur and how the proposed rule would eliminate the over-payment of bid cost recovery uplifts under additional scenarios where the resource has submitted a self-schedule either in the day-ahead or in the real-time. The table below also shows how the proposed formulation does not change the existing tariff authority for the scenarios the current tariff language intended to capture.

Table 2
Dispatches involving incremental changes in configurations (CAISO)

Scenario		Market	Commitment	Minimum load cost (MLC) settlement		Total cost
			SS = self-schedule ISO = ISO commitment	Description	Calculation ($/hour)	($/hour)
		[A]	[B]	[C]	[D]	[E]
[1a]	Current rule for ISO commitment in both markets	IFM	C1 - ISO	IFM MLC	C1 - n/a: $700 - $0 = $700	$1,200
		RTM	C3 - ISO	RTM ISO committed configuration MLC minus IFM ISO committed configuration MLC	C3 - C1: $1,200 - $700 = $500	
[1b]	Proposed rule for ISO commitment in both markets	IFM	C1 - ISO	IFM MLC	C1 - n/a: $700 - $0 = $700	$1,200
		RTM	C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C1, n/a): $1,200 - max($700, n/a) = $500	
[2a]	Current rule for self-schedule commitment in day-ahead market	IFM	C1 - SS	No MLC contribution	n/a	$1,200
		RTM	C3 - ISO	RTM ISO committed configuration MLC	C3: $1200	
[2b]	Proposed rule for self-schedule commitment in day-ahead market	IFM	C1 - SS	No MLC contribution	n/a	$500
		RTM	C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C1,n/a): $1,200 - max($700, n/a) = $500	
[3a]	Current rule for self-schedule commitment in both markets	IFM	C1 - SS	No MLC contribution	n/a	$200
		RTM	C2 - SS C3 - ISO	RTM ISO committed configuration MLC minus RTM SS committed configuration MLC	C3 - C2: $1200 - $1000 = $200	
[3b]	Proposed rule for self-schedule commitment in both markets	IFM	C1 - SS	No MLC contribution	n/a	$200
		RTM	C2 - SS C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C1, C2): $1,200 - max($700, $1,000) = $200	
[4a]	Current rule for self-schedule commitment in real-time market	IFM	C1 - ISO	IFM MLC	$700	$1,200
		RTM	C2 - SS C3 - ISO	RTM ISO committed configuration MLC minus RTM SS committed configuration MLC	C3 - C1: $1200 - $700 = $500	
[4b]	Proposed rule for self-schedule commitment in real-time market	IFM	C1 - ISO	IFM MLC	$700	$900
		RTM	C2 - SS C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C1, C2): $1,200 - max($700, $1,000) = $200	
[5a]	Current rule for self-schedule commitment in both markets	IFM	C2 - SS	No MLC contribution	n/a	$500
		RTM	C1 - SS C3 - ISO	RTM ISO committed configuration MLC minus RTM SS committed configuration MLC	C3 - C1: $1200 - $700 = $500	
[5b]	Proposed rule for self-schedule commitment in both markets	IFM	C2 - SS	No MLC contribution	n/a	$200
		RTM	C1 - SS C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C2, C3): $1,200 - max($700, $1,000) = $200	
[6a]	Current rule for self-schedule commitment in both markets	IFM	C1 - SS C2 - ISO	IFM MLC	C2 - C1: $1,000 - $700 = $300	$300
		RTM	C3 - SS	No MLC contribution	n/a	
[6b]	Proposed rule for self-schedule commitment in both markets	IFM	C1 - SS C2 - ISO	IFM MLC	C2 - C1: $1,000 - $700 = $300	$300
		RTM	C3 - SS	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C2, C3): $1,200 - max($700, $1,200) = $0	
[7a]	Current rule for self-schedule commitment in real-time market	IFM	C2 - ISO	IFM MLC	C2: $1,000	$1,200
		RTM	C1 - SS C3 - ISO	RTM ISO committed configuration MLC minus IFM ISO committed configuration MLC	C3 - C2: $1,200 - $1,000 = $200	
[7b]	Proposed rule for self-schedule commitment in real-time market	IFM	C2 - ISO	IFM MLC	C2: $1,000	$1,200
		RTM	C1 - SS C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C2, C3): $1,200 - max($700, $1,000) = $200	

1. The current incremental minimum load accounting rule in Section 11.8.1.3 (1)(a) continues to be necessary and will be retained under the proposed formulation.

Scenario 1a shows the application of the rule that the Commission approved in the September 2013 tariff amendment, which only applies when the CAISO commits a resource in both the day-ahead and real-time markets, but in different configurations. In the day-ahead, the CAISO calculates the minimum load cost as the difference between the CAISO-committed configuration (C1) and any self-scheduled configuration, if there is one.[15] In this scenario, there is only a CAISO-committed configuration C1 and no self-schedule configuration in the day-ahead, so the resource is eligible to recover C1's $700 minimum load costs in day-ahead market bid cost recovery. In the real-time, the CAISO dispatches the resource to a higher configuration (C3) than the one the CAISO committed in the day-ahead market (C1), so it is eligible to recover in real-time bid cost recovery the incremental difference between the minimum load costs of the two configurations, *i.e*., $500. This is combined with the $700 minimum load cost associated with the commitment of C1 in the day-ahead market for a total of $1,200 of total minimum load costs for the hour considering both day-ahead and real-time market bid cost recovery.[16]

Scenario 1b shows the same scenario but reflects the application of the general formula proposed herein that will enable the CAISO to capture the minimum load costs associated with the self-scheduled real-time configuration in addition to the CAISO-committed configurations. The current formula used by the CAISO only calculates the difference between the minimum load cost associated with the configuration committed in real-time (represented as the "RTM MSG configuration MLC" in the table) and the minimum load cost associated with the configuration committed in the day-ahead market (represented as the "IFM committed MLC") when there is a CAISO commitment in both markets. The proposed formula considers the cost of the configuration that the resource has self-scheduled in real-time (represented as the "MLC of the MSG configuration SS in the RTM"), and uses the maximum of these last two variables so that the incremental cost is calculated correctly based on the last highest configuration.

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15 *See* FN 11.

16 This calculation reflects the CAISO's current authority contained in Section 11.8.1.3(1)(a). In these illustrations, the "total cost" represents the minimum load costs that would be added to any other eligible bid costs for the resource considering both day-ahead and real-time market bid cost recovery. These costs are separately considered as part of the respective day-ahead and real-time market's bid cost recovery calculations. Each of these two markets' bid cost recovery nets that market's eligible costs and the resource's applicable revenues earned in that market during the trading day to determine the amount, if any, of the bid cost uplift for the resource.

Under this scenario, because there is no self-schedule, applying the new rule results in the same minimum load costs as calculated under the current rule.

Scenario 1b shows how applying the proposed new formula reflected in proposed Section 11.8.1.3(2) to the circumstances in this scenario does not alter the amount of minimum load costs that the resource is eligible to recover during this interval, as compared with the CAISO's existing formulation.

2. The CAISO must extend the current incremental accounting rule in Section 11.8.1.3 (1)(a) to cases where the resource self-schedules in the IFM to ensure proper accounting of minimum load costs.

Scenario 2 shows a variation of scenario 1 where the resource submits a self-schedule in the IFM instead of being committed by the CAISO. The CAISO market rules recognize that resources may self-schedule for legitimate business purposes. For example, a resource could have a bilateral contract for energy and self-schedule a multi-stage generator configuration in the day-ahead market to deliver on that contract. Its decision to self-schedule reflects its compensation outside of the market for committing the resource. Therefore, the bid cost recovery principle is to not account for costs related to self-commitments because they represent voluntary decisions by market participants based on external factors and not economic decisions by the ISO market.

In this case, 2a shows that under the existing tariff rules specified in 11.8.1.3 (1)(a), the CAISO uses the real-time market CAISO-committed configuration minimum load costs. Because this is a self-committed MSG configuration, the last sentence of that section requiring incremental accounting does not apply, and the CAISO treats the resource as having $1,200 of minimum load costs for purposes of bid cost recovery accounting.

This outcome ignores the fact that the resource indicated its willingness to self-commit the lower configuration in the IFM. As illustrated in scenario 2b, if the CAISO accounts for that fact, committing the resource to C3 means it incurs an incremental minimum load cost of only $500. This appropriately lowers the cost accounting of the real-time minimum load costs in the real-time and ensures the resource does not have an excessive bid cost recovery payment in the real-time if its real-time market revenues are not sufficient to cover those costs. Importantly, the over-recovery of cost occurs because even though the resource has self-scheduled at C1 in the IFM, it earns revenue for the energy produced up to its minimum load for that configuration. Allowing the resource to recover the full minimum load costs of configuration C3 in the RTM without netting these and other RTM commitment costs against the market revenue from the IFM can result in excessive bid-cost recovery payments because the resource may have had sufficient revenue in the IFM to cover the self-committed minimum load costs. This was the reason the CAISO adopted the incremental rule reflected in the last

sentence of section 11.8.1.3 (1)(a) in the first place, and scenario 2a shows that the potential for overpayment that led to this rule exists for resources self-scheduled in the IFM as well.

3. The CAISO must extend the current incremental accounting rule in Section 11.8.1.3 (1)(a) to cases where a multi-stage resource self-schedules in the real-time to ensure proper accounting of minimum load costs.

Scenario 3 shows a further variation of scenario 2 where the multi-stage resource self-commits in the day-ahead in a lower configuration. In real-time it self-schedules at a higher configuration than in the IFM, but lower than the configuration that it economically bids in and is committed to by the CAISO in the real-time. Here, because the resource has offered to operate at C1 as a price-taker in the day-ahead market, it is not eligible to recover its bid costs from the CAISO market with respect to configuration C1, including the minimum load costs associated with C1 of $700. In this scenario, the resource also self-commits in real-time to operate as a price-taker at a higher configuration (C2) and submits an economic bid for its highest configuration (C3). If the CAISO then commits the unit in real-time at minimum load for C3, the fact that it was willing to act as a price taker at C2 means that it should only be eligible to recover the incremental difference between the minimum load costs for C3 and C2.

Scenario 3a reflects the minimum load cost calculated in accordance with existing tariff section 11.8.1.3 (1)(a), which specifies that if the IFM committed configuration, either self-committed or CAISO-committed, is different than the RTM CAISO-committed configuration, then the minimum load costs will be based on the RTM minimum load costs. Section 11.8.4.1 states that the CAISO will determine real-time market minimum load costs as the minimum load costs associated with any cleared economic bids incremental to any self-scheduled configuration's costs. Therefore, scenario 3a shows that under today's tariff rules, the resource would only be eligible to recover the difference between the minimum load costs for configurations C3 and C2.

Scenario 3b shows that applying the formula the CAISO proposes herein to add to Section 11.8.3.1(2) results in the same outcome as under the current tariff rules: $200. This appropriately reflects the fact that the resource agreed to act as a price-taker at C2 and thus forego bid cost recovery for the minimum load costs associated with that configuration.

Scenarios 4 is a variation of scenario 3 except that the IFM configuration is committed by the CAISO instead of self-committed by the resource. Under the incremental rule in the last sentence of Section 11.8.1.3 (1)(a), because the CAISO has committed a configuration in the real-time market, the minimum load costs should be the IFM minimum load costs plus the incremental minimum load costs from the day-

ahead committed configuration. That results in an accounting of $1,200 in minimum load cost. However, this result ignores the fact that the resource submitted a self-schedule in a lower configuration in real-time in addition to being committed by the CAISO in real-time. Therefore, the current rule could result in an over-accounting of minimum load costs because, in real-time, the resource's minimum load costs are incremental to the higher level configuration self-scheduled in the real-time. The proposed modified rule allows the CAISO to account for the actual incremental costs between the day-ahead and real-time committed configurations and results in a minimum load cost accounting of $900.

Scenario 5 shows a variation where the resource self-schedules in a configuration in the IFM (C2), then self-schedules in a lower configuration in the real-time (C1), and is committed by the CAISO economically in real-time at C3. By submitting a self-schedule in the day-ahead market, the resource indicates that it has agreed to forego bid cost recovery with respect to the costs associated with configuration C2, including the minimum load cost of $1,000. However, the existing incremental calculation rule in section 11.8.1.3 (1)(a) only applies when the CAISO commits a resource in the day-ahead. Therefore, the CAISO does not consider the self-scheduled commitment to C2 when it calculates the minimum load costs associated with the resource's real-time commitment. Section 11.8.1.3 (1)(a), however, requires the CAISO to calculate the real-time minimum load costs based on the incremental difference in real-time minimum load costs between the configuration self-scheduled in real-time and the one the CAISO committed in real-time. Thus, the CAISO's current rule would account for the incremental costs of C3 from C1. This outcome is inappropriate because it fails to reflect the fact that the resource offered itself as a price taker at C2 in the day-ahead market, and, therefore, should only be eligible to recover the incremental difference between the minimum load costs associated with its day-ahead self-committed configuration of $1,200 and its real-time CAISO-committed minimum load costs of $1,000. The fact that the resource self-committed to C1 in real-time should not have any effect on its eligibility for bid cost recovery, given its day-ahead commitment to a higher configuration. As shown in 5b, applying the CAISO's proposed formula remedies this situation and results in the resource's eligible minimum load costs in real-time reflecting the incremental difference between C2 and C3 of $200.

4. The proposed formulation does not modify the existing tariff rules regarding the incremental treatment of minimum load costs.

Scenario 6 shows a case in which the resource self-schedules in a lower configuration (C1) and the CAISO economically commits it in a higher configuration (C2) in the day-ahead market, and then in real-time the resource self-schedules in a higher configuration (C3). Section 11.8.1.3. (1)(b) provides that only the minimum load costs of the IFM are accounted for because the resource indicated its willingness to move to C3 in the real-time as a price taker. As discussed above, given that there was a self-schedule in the lower configuration, the tariff also requires that the resource be paid

only the increment of the higher ISO committed configuration (C2) and the lower self-scheduled configuration (C1). Scenario 6 shows that the result is the same under the current tariff rule and the proposed new rule.

Scenario 7 also shows how the current tariff rules do not change under the proposed formulation. Scenario 7 illustrates a situation where the resource is economically committed by the CAISO in C2 in the IFM and then in the real-time it self-commits at a lower configuration, C1, but is also economically committed at C3. Under section 11.8.1.3 (1)(a) of the currently effective tariff, because the resource was committed by the CAISO in IFM and then committed in the higher configuration in the real-time, the resource is eligible to recover the minimum load costs associated with the IFM plus the negative or positive difference between the minimum load costs of the real-time configuration (C3) and the IFM committed configuration (C2), without any consideration of the costs associated with the configuration self-scheduled in the real-time. Under the proposed rule the resource would also receive the same minimum load cost accounting for the IFM, but the new formula considers the existence of the self-scheduled configuration in the real-time and compares the associated minimum load costs with those of the IFM committed configuration only accounting for the incremental minimum load costs from the higher of the two. Because in this scenario the IFM committed configuration (C2) is higher than the real-time committed configuration, the incremental minimum load costs are calculated from C2. This illustrates that the current rule would still apply under the proposed formulation.

B. Scenarios showing the need to modify the bid cost recovery provisions to account for situations when a resources submits a self-schedule in the day-ahead or real-time and the CAISO dispatches the resource in a lower configuration in the day-ahead market

The table and explanations below illustrate how the current rules are not sufficient to ensure the CAISO does not over-compensate resources that the CAISO dispatches in real-time in configurations lower than those committed in the day-ahead, either through self-schedules or CAISO commitments. The current tariff rules reflected in sections 11.8.1.3 (1)(a) and 11.8.4.1.2 require the CAISO to account for the cost savings in minimum load costs when a resource is moved to a lower configuration between day-ahead and real-time. But this rule only applies in cases in which the CAISO commits the resource. The scenarios below demonstrate why the current rules are insufficient and create the opportunity for inappropriate overpayments when the decremental movement results from a self-schedule. Like the scenarios above, these examples also show how the policy preventing over-recovery in cases involving CAISO commitments will continue to be correctly implemented under the CAISO's proposed new rule.

Table 3
Dispatches involving decremental changes in configurations (CAISO)

Scenario		Market	Commitment	Minimum load cost (MLC) settlement		Total cost
			SS = self-schedule ISO = ISO commitment	Description	Calculation ($/hour)	($/hour)
		[A]	[B]	[C]	[D]	[E]
[1a]	Current rule for ISO commitment in both markets	IFM	C3 - ISO	IFM MLC	C3 - n/a: $1,200 - $0 = $1,200	$1,000
		RTM	C2 - ISO	RTM ISO committed configuration MLC minus IFM ISO committed configuration MLC	C2 - C3: $1,000 - $1,200 = ($200)	
[1b]	Proposed rule for ISO commitment in both markets	IFM	C3 - ISO	IFM MLC	C3 - n/a: $1,200 - $0 = $1,200	$1,000
		RTM	C2 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C2 - max(C3, n/a): $1,000 - max($1,200, $0) = ($200)	
[2a]	Current rule for self-schedule commitment in both markets	IFM	C3 - SS	No MLC contribution	n/a	$0
		RTM	C2 - SS	No MLC contribution	$0	
[2b]	Proposed rule for self-schedule commitment in both markets	IFM	C3 - SS	No MLC contribution	n/a	($200)
		RTM	C2 - SS	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C2 - max(C3, n/a): $1,000 - max($1,200, $0) = ($200)	
[3a]	Current rule for self-schedule commitment in both markets	IFM	C3 - SS	No MLC contribution	n/a	$300
		RTM	C1 - SS C2 - ISO	RTM committed configuration MLC	C2 - C1: $1,000-$700 = $300	
[3b]	Proposed rule for self-schedule commitment in both markets	IFM	C3 - SS	No MLC contribution	n/a	($200)
		RTM	C1 - SS C2 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C2 - max(C3, C1): $1,000 - max($1,200, $700) = ($200)	
[4a]	Current rule for self-schedule commitment in both markets	IFM	C3 - ISO C2 - SS	IFM MLC	C3 - C2: $1,200 - $1,000 = $200	$200
		RTM	C1 - SS	No MLC contribution	n/a	
[4b]	Proposed rule for self-schedule commitment in both markets	IFM	C3 - ISO C2 - SS	IFM MLC	C3 - C2: $1,200 - $1,000 = $200	($300)
		RTM	C1 - SS	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C1 - max(C3, C1): $700 - max($1,200, $700) = ($500)	

Scenario 1a shows the current application of tariff rules in Section 11.8.1.3 and 11.8.4.1.2, where the CAISO dispatches the resource in real-time in a lower configuration (C2) than the one the CAISO committed in the day-ahead market (C3). The resource will recover the minimum load costs of C3 less the minimum load costs of C2. This accounts for the negative minimum load costs savings in the two configurations, *i.e*., negative $200, which, when combined with the $1,200 minimum load cost associated with the commitment of C3 in the day-ahead market, results in $1,000 of total minimum load costs for the hour. The same result will occur with the application of the CAISO's proposed formulation as shown in Scenario 1b, which only impacts the calculation of minimum load costs in the real-time market.

Scenario 2 shows a similar situation, but in this case the resource self-schedules in C3 in the day-ahead and then self-schedules itself to a lower configuration, C2, in the real-time. Scenario 2a shows the application of the current rule where, because both of the configurations in the day-ahead and real-time are committed through self-schedules, the minimum load costs associated with both configurations are not eligible for recovery and are calculated as zero. Section 11.8.4.1.2 specifies that a multi-stage generator's minimum load costs will be the "RTM Minimum Load Cost less the IFM or RUC Minimum Load Cost, as applicable" for resources "the CAISO commits down to a lower MSG Configuration with its Minimum Load capacity lower than the Day-Ahead CAISO Committed MSG Configuration's Minimum Load capacity, either through an Exceptional Dispatch or an Economic Dispatch through the Real-Time Market, from its IFM MSG Configuration that was also from a CAISO Commitment Period." Because the current minimum load cost calculation rule leads to zero minimum load costs for both the day-ahead and real-time, the application of the formula in Section 11.8.4.1.2 results in zero minimum load costs. This result is not appropriate, however, because it fails to account for the cost savings that the resource realized as a result of being committed in real-time to run in a configuration with lower minimum load costs than the one it self-committed to in the day-ahead market.

Scenario 2b illustrates the application of the proposed new rule which appropriately accounts for the negative minimum load costs, representing savings associated with the resource being dispatched in real-time in a lower configuration. It shows that the decremental rule in Section 11.8.4.1.2 would apply regardless of whether the resource is self- or CAISO-committed in the IFM. This proposed formulation would ensure that the CAISO subtracts $200 from any other real-time bid costs eligible for recovery by this resource to reflect the benefit of this savings. This lowers the bid cost accounting side, which is the basis for uplift payments if the resource's LMP-based market revenue is not sufficient to cover its costs.

Scenario 3 illustrates a situation in which a resource submits a self-schedule at its highest configuration in the day-ahead, followed by a real-time self-schedule at its lowest configuration, and an economic bid for the middle configuration. Under the existing tariff, the resource's day-ahead minimum load costs are set to zero, but it is

eligible to recover, in real-time, the incremental difference between the self-scheduled configuration (C1) and the CAISO-committed configuration (C2), equaling $300. Again, this approach is flawed because it fails to account for the resource's day-ahead submission to be a price-taker at its highest configuration of C3. Given the resource's willingness to be dispatched at a higher configuration without the opportunity to recover the associated minimum load costs, there is no justification for providing bid cost recovery for the lower minimum load costs associated with the difference between the C2 and C1 configurations. Instead, because the resource has realized savings as a result of the CAISO committing it in real-time in a lower configuration than the one it self-committed to in the day-ahead, its real-time minimum load costs should reflect these savings, which in this case are negative $200. These savings are appropriately reflected by netting them against the resource's other real-time market cost and revenues.

As discussed in the incremental scenarios, the CAISO market rules recognize that resources may self-schedule for legitimate business purposes. However, under this scenario, the resource can strategically bid at a low bid cost in the real-time to force a CAISO commitment at C2 while still keeping C1 as a self-schedule. This strategy takes advantage of the current settlement rules that would inappropriately account for minimum load costs in the real-time market that are not offset by day-ahead revenues.

Scenario 4 presents a situation in which a multi-stage resource submits a self-schedule at C2 as well as an economic bid at C3 in the day-ahead market, followed by a self-schedule at C1 in the real-time market. Under the current tariff rule, the resource would be eligible to recover $200 in minimum load costs for the day-ahead market, representing the incremental difference between the self-scheduled and CAISO-committed configurations. The resource would not be eligible to recover any minimum load costs associated with the real-time because of its self-commitment, resulting in a total of $200 in minimum load costs eligible for bid cost recovery. This scenario fails to account for the fact that the resource had indicated its status as a price taker in the day-ahead market at C2. The current tariff provisions would result in accounting for $200 minimum load costs because it was committed at C3 in the day-ahead economically by the CAISO. This fails to account for the additional self-initiated movement from C3 to C1 in the real-time and it fails to account for the fact that the resource had already indicated its willingness to be committed at C2 at its own expense. Scenario 4b shows that under the proposed new rule, the CAISO would appropriately take the resource's self-schedules into consideration and reflect a minimum load cost of negative $300, which would then be netted against the resource's other eligible bid costs.

C. The need to apply the incremental and decremental minimum load cost accounting rules for cases in which the resources are committed in the same configuration

The scenarios and explanations below illustrate that even when the resource is either self- or CAISO-committed in the same configuration in the day-ahead and real-

time, the current rules create the potential for a multi-stage resource to receive excessive bid cost recovery uplift payment. The rules reflected in section 11.8.1.3 (1) (c) and (d) currently govern over these scenarios.

Table 4
Dispatches involving the same configuration (CAISO)

Scenario		Market	Commitment	Minimum load cost (MLC) settlement		Total cost
			SS = self-schedule ISO = ISO commitment	Description	Calculation ($/hour)	($/hour)
			[A]	[B]	[C]	[D]
[1a]	Current rule for ISO commitment in both markets	IFM	C1 - ISO	IFM MLC	C1 - n/a: $700 - $0 = $700	$700
		RTM	C1 - ISO	RTM ISO committed configuration MLC minus IFM ISO committed configuration MLC	C1 - C1: $700 - $700 = $0	
[1b]	Proposed rule for ISO commitment in both markets	IFM	C1 - ISO	IFM MLC	C1 - n/a: $700 - $0 = $700	$700
		RTM	C1 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C1 - max(C1, n/a): $700 - max($700, $0) = $0	
[2a]	Current rule for self-schedule commitment in day-ahead market	IFM	C1 - SS	No MLC contribution	n/a	$700
		RTM	C1 - ISO	RTM committed configuration MLC	C1: $700	
[2b]	Proposed rule for self-schedule commitment in day-ahead market	IFM	C1 - SS	No MLC contribution	n/a	$0
		RTM	C1 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C1 - max(C1, n/a): $700 - max($700, $0) = $0	
[3a]	Current rule for self-schedule commitment in real-time market	IFM	C1 - ISO	IFM MLC	C1 - n/a: $700 - $0 = $700	$700
		RTM	C1 - SS	No MLC contribution	n/a	
[3b]	Proposed rule for self-schedule commitment in real-time market	IFM	C1 - ISO	IFM MLC	C1 - n/a: $700 - $0 = $700	$700
		RTM	C1 - SS	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C1 - max(C1, C1): $700 - max($700, $700) = $0	

In scenario 1, the CAISO commits the resource in C1 and in the real-time the CAISO again commits the resource in C1. In this case, the minimum load costs of the IFM CAISO-committed configuration (C1) are included in day-ahead bid cost recovery. No minimum load costs are included in real-time market bid cost recovery because the resource is committed in the same configuration in the real-time market as it was in the day-ahead market; thus, it did not incur any additional minimum load costs as a result of its real-time market dispatch. This is the outcome under the currently effective Section 11.8.1.3 (1)(c), which requires that when the CAISO commits a resource in the same configuration in both markets, the resource's minimum load costs will be based on the resource's IFM minimum load costs. Scenario 1b shows that the CAISO's proposed new rule does not change this result.

Scenario 2 shows the case where the resource self-schedules in C1 in the day-ahead, then bids in the same capacity in the real-time, and the CAISO economically dispatches it at C1. In accordance with existing section 11.8.1.3 (1)(d), the CAISO would include the $700 of minimum load costs of the real-time committed configuration

in the resource's bid cost recovery determination, even though there was no change in the resource's configuration or costs incurred. Scenario 2b shows that the incremental rules should apply here as well to account for the fact that the resource already indicated its willingness to be a price-taker and cover its own minimum load costs in the day-ahead. Therefore, the proposed formula appropriately accounts for only the incremental costs between the day-ahead and real-time configurations, which are zero because the resource has not changed configurations.

Scenario 2 illustrates a case where there is the potential for resources to inappropriately inflate bid cost recovery payments under the current rules. A resource may self-commit in the day-ahead market reflecting a decision to run and cover its minimum load costs for the self-commitment. In the real-time market, the resource economically bids in a manner that results in a high probability that the CAISO will dispatch the resource in real-time to its day-ahead schedule. For example, the resource may submit low bids for configuration C1 but high bids above C1. This can be accomplished because in the CAISO market, resources are permitted to rebid their day-ahead energy schedules. Similarly, constraints such as minimum up times, minimum down times, and reliability-based limitations on unit de-commitment in the optimization may also require the resource to stay in the same configuration. Under these constraints, the resource may not even need to submit the lower and higher bids but only an economic bid versus a self-schedule to recover excess minimum load costs. While the resource will receive little or no revenue in the real-time market under both of these strategies, the end result is that the minimum load cost will be accounted for in the real-time market with no other offsetting revenues and all of the revenues will be accounted for in the day-ahead market with no offsetting costs. Scenario 2b applies the proposed formula to appropriately account for the self-schedule under the same configuration between markets.

Finally, Scenario 3 shows the scenario where the CAISO commits a resource in C1 and then the resource self-schedules in the real-time at C1. The rules in Section 11.8.1.3 (1)(c) govern in this scenario, and require the CAISO to pay the resource the IFM minimum load costs only, as in scenario 1. Scenario 3b shows that applying the proposed new rule does not change the result from that under the existing rules in 11.8.1.3 (1)(c).

D. Need to apply the decremental minimum load cost accounting rule in the EIM

The current bid cost recovery rules in the CAISO market also apply to resources that participate in the Energy Imbalance Market with some variation. The bid cost recovery rules for the Energy Imbalance Market specified in Section 29.11 (f) point to the real-time bid cost recovery rules as they apply to CAISO resources. Section 29.11(f) (2) also specifies that CAISO will treat the base schedules of an EIM entity as self-schedules and will treat the interval in which an Energy Imbalance Market resource is dispatched as a self-committed interval for the purposes of determining whether the

resource is eligible for minimum load costs in accordance with Section 11.8.4.1.2. No change is needed to these rules with respect to the real-time incremental minimum load cost accounting described in Section II.A above, because these rules already dictate the correct result.[17] The CAISO's rules do not, however, allow the CAISO to apply the decremental minimum load cost accounting rule reflected in Section 11.8.4.1.2 so that the CAISO can factor in the cost savings incurred when the resource is decremented in the lower scenario. This occurs because the current rules do not allow the CAISO to treat the base schedule as an IFM self-schedule.

1. Multi-stage generating resources in the Energy Imbalance Market should receive the same minimum load costs treatment as CAISO multi-stage generating resources.

The scenarios in table 5 show that the existing incremental minimum load costs recovery rules applicable to Energy Imbalance Market multi-stage resources will continue to apply under the proposed formulation. Table 6 similarly shows that the current rules will continue to apply when the resource has a base schedule and is also CAISO-committed or self-committed in the same configuration. The proposal to treat the base schedule as an IFM self-schedule does not change the rules in these scenarios.

[17] *See* FN 11 above.

Table 5
Dispatches involving incremental changes in configuration (EIM)

Scenario		Market	Commitment SS = self-schedule ISO = ISO commitment	Minimum load cost (MLC) settlement Description	 Calculation ($/hour)	Total cost ($/hour)
[1a]	Current EIM rule for ISO commitment in real-time market	BS	C2 - SS	n/a	n/a	$200
		RTM	C3 - ISO	RTM MSG configuration MLC minus MLC of the MSG configuration SS in the BS	C3 - C2:$1,200 - $1,000 = $200	
[1b]	Proposed new formula for EIM for ISO commitment in real-time market	BS	C2 - SS	n/a	n/a	$200
		RTM	C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C2,n/a): $1,200 - max($1,000,n/a) = $200	
[2a]	Current EIM rule for self-schedule commitment in real-time market	BS	C2 - SS	n/a	n/a	$200
		RTM	C1 - SS C3 - ISO	RTM MSG configuration MLC minus MLC of the MSG configuration SS in the BS	C3 - C2 : $1,200 - $1000 = $200	
[2b]	Proposed new formula for EIM for self schedule commitment in real-time market	BS	C2 - SS	n/a	n/a	$200
		RTM	C1 - SS C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C2,C1): $1,200 - max($1,000, 700) = $200	
[3a]	Current EIM rule for self-schedule commitment in real-time market	BS	C1 - SS	n/a	n/a	$200
		RTM	C2 - SS C3 - ISO	RTM MSG configuration MLC minus MLC of the MSG configuration SS in the RTM	C3 - C2 : $1,200 - $1,000 = $200	
[3b]	Proposed new formula for EIM for self schedule commitment in real-time market	BS	C1 - SS	n/a	n/a	$200
		RTM	C2 - SS C3 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C3 - max(C2,C1): $1,200 - max($1,000, 700) = $200	

Scenario 1 illustrates the application of the current tariff rules to base schedules submitted by the EIM resources. In scenario 1, the resource has submitted a base schedule in C2 and also has submitted an economic bid in C3. The CAISO commits the resource to C3. Under the current tariff rules, the CAISO treats the base schedule like a real-time self-schedule and, consistent with Sections 29.11 (f) and 11.8.4.1, calculates the minimum load costs as the incremental difference between the configuration in the base schedule and the one dispatched by the CAISO in real-time. Scenario 1b shows that the proposed application results in the same outcome if the CAISO treats the base schedule as an IFM self-schedule and treats the corresponding interval as an IFM self-committed interval. In 1b, the minimum load cost of the base scheduled configuration of $1,000 is considered and determined to be the maximum of the minimum load attributable to the "IFM self-scheduled configuration" ($1,000) and the real-time self-scheduled configuration ($0). Therefore, in both cases the resource would still be assigned only $200 in minimum load costs.

Scenario 2 provides a similar scenario, but the resource submits a self-schedule in a lower configuration than the one submitted in its base schedule. In 2a, because the base schedule is treated as a self-schedule, the resource is effectively considered to have two self-schedules in C1 and C2. Currently, the two self-schedules are effectively stacked and the resource only receives incremental costs from between C3 and C2 consistent with the existing rules requiring the calculation of incremental minimum load

costs as specified in section 11.8.4.1. Scenario 2b shows that under the proposed formulation, the resource continues to receive the same treatment because the minimum load cost attributed to the "IFM self-scheduled" configuration is higher than the one attributed to the real-time self-scheduled configuration.

Scenario 3 shows a similar outcome when the resource submits a base schedule in the lower configuration, a self-schedule in the higher configuration C2, and an economic bid at C3 to which the CAISO commits it. Again the existing rules require the CAISO only to account for minimum load costs incremental to the base schedule: in this example $200. Because the base scheduled configuration is lower than the self-scheduled configuration, the effective stacking of the self-scheduled configurations results in accounting for the incremental costs between C3 and C2 only. Scenario 3b shows that under the proposed formulation, pursuant to which the CAISO would treat the base scheduled configuration C1 as an IFM self-schedule, $200 of minimum load costs would also be accounted for because the resource's self-scheduled configuration is higher than the one in the base schedule.

These scenarios show that under both the current and proposed tariff rule, when there is an incremental commitment from the base scheduled configuration, there are no minimum load costs eligible for recovery associated with the configuration submitted in the base schedule because base schedules are treated as self-commitments.

Table 6
Dispatches involving the same configuration (EIM)

Scenario		Market	Commitment	Minimum load cost (MLC) settlement		Total cost
			SS = self-schedule ISO = ISO commitment	Description	Calculation ($/hour)	($/hour)
[1a]	Current EIM rule for self-schedule commitment in real-time market	BS	C2 - SS	na	n/a	$0
		RTM	C1 - SS C2 - ISO	RTM MSG Configuration MLC - RTM SS MSG congifuration in BS	C2 - C2: $1,000 - $1,000 = $0	
[1b]	Proposed new formula for EIM for self-schedule commitment in real-time market	BS	C2 - SS	na	na	$0
		RTM	C1 - SS C2 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C2 - max(C1, C2): $1000 - max($1,000, $700) = 0	
[2a]	Current EIM rule for ISO commitment in real-time market	BS	C2 - SS	na	n/a	$0
		RTM	C2 - ISO	RTM MSG Configuration MLC - RTM SS MSG congifuration in BS	C2 - C2: $1,000 - $1,000 = $0	
[2b]	Proposed new formula for EIM for ISO commitment in real-time market	BS	C2 - SS	na	na	$0
		RTM	C2 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C2 - max(n/a, C2): $1000 - max($1,000, n/a) = 0	

The scenarios in table 6 above also show the current application of the CAISO tariff rules as they apply to the EIM when there is no change in configuration. Under the proposed formulation these rules would still apply because in both scenarios the

treatment of the base schedule as IFM self-schedules results in no minimum load cost accounting.

2. The decremental minimum load costs accounting rules that apply to CAISO multi-stage resources should also apply to the Energy Imbalance Market resources.

As discussed above, the current tariff rules do not allow the CAISO to account for the negative minimum load costs associated with multi-stage generating resources when they are dispatched to lower configurations in real-time. This is also true of multi-stage resources that participate in the Energy Imbalance Market. The table below shows why the current rules applicable to the Energy Imbalance Market do not appropriately account for the cost savings that a resource realizes as a result of the CAISO committing it in real-time at a lower configuration than the one indicated in its base schedule.

Table 7
Dispatches involving decremental changes in configuration (EIM)

Scenario		Market	Commitment (SS = self-schedule, ISO = ISO commitment)	Minimum load cost (MLC) settlement		Total cost ($/hour)
				Description	Calculation ($/hour)	
[1a]	Current EIM rule for ISO commitment in real-time market	BS	C2 - SS	na	n/a	$0
		RTM	C1 - ISO	No MLC contribution for this scenario	$0	
[1b]	Proposed new formula for EIM for ISO commitment in real-time market	BS	C2 - SS	na	na	($300)
		RTM	C1 - ISO	RTM MSG configuration MLC minus max(IFM committed MLC, MLC of the MSG configuration SS in the RTM)	C1 - max(C2,n/a): $700 - max($1000, n/a) = ($300)	

Scenario 1a shows the application of the current tariff rules to the Energy Imbalance Market multi-stage energy resources and shows that the decremental minimum load cost accounting rules in Section 11.8.4.1.2 do not apply. In scenario 1a, the resource has a base schedule at C2, but the CAISO economically commits the resource at a lower configuration at C1. The rules in 29.11(f) require the CAISO to treat the C2 base schedule as a self-schedule. Because Section 29.11(f) specifies that the minimum load costs are based on the real-time minimum load cost accounting specified in Section 11.8.4.1, the CAISO currently treats the base schedule as a real-time self-schedule. This prevents the CAISO from correctly applying the rule in the last sentence of Section 11.8.4.1.2, which provides that the CAISO will account for decremental minimum load costs for multi-stage generating resources that "the *CAISO commits down* to a lower MSG Configuration with its Minimum Load capacity lower than the Day-Ahead *CAISO Committed* MSG Configuration's Minimum Load capacity, either through an Exceptional Dispatch or an Economic Dispatch through the Real-Time Market, from its *IFM MSG Configuration that was also from a CAISO Commitment Period*."

Scenario 1b shows that the CAISO's proposed new minimum load cost calculation formulation would correctly apply the decremental rule in 11.8.4.1.2 in cases where the resource was CAISO- or self-committed in the IFM, thereby enabling the

CAISO to account for the negative minimum load costs in the Energy Imbalance Market, consistent with the outcome for the CAISO's other markets as discussed above in Section II.B.

E. Impact

The CAISO has analyzed the impact of the current tariff rules and estimates that the minimum load cost settlement impact of this tariff gap on the CAISO market has been approximately $2.5 million since May 1, 2014. The CAISO used the following method to determine this estimate: if the multi-stage resource was self-scheduled in the day-ahead and committed by the CAISO in the real-time market in the same or higher configuration, then the impact is considered to be the difference between the current minimum load cost settlement amount and the amount of minimum load costs that would be calculated under the rule proposed in this filing. Of the $2.5 million total impact, approximately $2.0 million is attributable to the over-accounting of minimum load costs when the multi-stage resource was self-committed in the same configuration in the day-ahead and real-time markets, and the remaining amount, approximately $511,000, is attributable to the over accounting of minimum load costs when the multi-stage resource was self-committed in the day-ahead and the CAISO committed the resource in the real-time market at a higher configuration.

Because the CAISO nets these minimum load costs with other costs and revenues, the CAISO cannot be certain as to the exact magnitude of the inflated bid cost recovery payments that have resulted from this tariff gap. Nevertheless, the potential exists for market participants to increase these amounts over time simply by self-scheduling in the day-ahead in one configuration and then bidding in the real-time in a manner that allows them to recover minimum load costs in the real-time, without allowing the CAISO to offset their minimum load costs with the market revenues earned in the day-ahead for their minimum load energy. This tariff amendment eliminates this opportunity and ensures fair recovery of minimum load costs for all multi-stage generating resources.

III. Proposed Tariff Revisions

As explained above, the CAISO proposes to modify its tariff in order to make clear that multi-stage generating resources will receive bid cost recovery for minimum load costs based on the incremental difference between the minimum load costs for their configurations committed in the day-ahead and real-time market, regardless of whether such commitments are CAISO commitments or self-commitments. The CAISO proposes to implement this change by adding to Section 11.8.1.3 of its tariff a new subsection (2) containing a formulation of the incremental recovery rule that will apply to all of the various commitment and configuration permutations for multi-stage resources.

This rule specifies that a multi-stage generating resource's minimum load costs will be determined as follows:

- First, if there is a CAISO commitment in the day-ahead (either the integrated forward market or residual unit commitment process), the CAISO will calculate the minimum load costs based on the multi-stage generator's configuration committed by the CAISO in the day-ahead market, pursuant to the existing tariff rules for doing so, as set forth in Sections 11.8.2.1 and 11.8.3.1, respectively.

- The CAISO will calculate a multi-stage resource's minimum load costs eligible for recovery in real-time as the difference between:

    (i) The minimum load costs associated with the multi-stage generator's configuration committed in the real-time market, regardless of whether the commitment is a CAISO commitment or a self-commitment; and

    (ii) If there is a self-schedule in the real-time market, the maximum of (a) the minimum load costs associated with the configuration either self-scheduled or committed by the CAISO in the day-ahead and (b) the minimum load costs associated with the configuration self-scheduled in the real-time market.

    (iii) If there is no real-time market self-schedule, the minimum load costs attributable to the configuration either self-scheduled or committed by the CAISO in the day-ahead.

The CAISO proposes to remove the references to minimum load costs in Section 11.8.1.3 subpart (1), so those rules would no longer apply to the calculation of minimum load costs. Instead, the CAISO would calculate minimum load costs for all variations of commitments between day-ahead and real-time pursuant to subpart (2), in addition to the existing rules in Section 11.8.2.1, 11.8.3.1, and 11.8.4.1 which also apply to the calculation of minimum load costs in the IFM, RUC and RTM.

The CAISO also proposes to delete the last sentence of Section 11.8.4.1.2, which specifies that the CAISO will account for the negative minimum load costs in cases where the resources are decremented from a higher configuration in the day-ahead to the lower configuration in the real-time. As discussed in the scenarios in part II.B above, this rule is subsumed in the new proposed formulation in Section 11.8.1.3 (2). The existing rules as they apply to the scenarios currently defined in Section 11.8.1.3 would not change. The new rule expands the same treatment to all scenarios as described above.

The CAISO also proposes to modify section 29.11 (f) to now specify that for the purposes of calculating the minimum load costs the base schedules will be considered as the IFM self-schedule. This will ensure the appropriate treatment of base schedules for purposes of bid cost recovery, consistent with the discussion in part II.D above.

IV. Effective Date

The CAISO requests that the Commission grant waiver of the 60-day notice and comment period to allow the tariff changes contained in this filing to go into effect one day after the date of this filing, March 13, 2015. Waiver of the 60-day requirement is appropriate because, as explained above, the current tariff rule over-accounts for minimum load costs and there is a potential for market participants to expand such overpayments through strategic bidding practices, particularly after this gap is identified in this public tariff amendment filing. Allowing the existing rules to remain in effect while the Commission considers the amendment would have the perverse effect of enabling market participants to exploit the existing gap and inappropriately increase such payments until the new rules become effective.

The proposed amendment will remedy this tariff gap consistent with the policy approved by the Commission in its order on the September 2013 amendment. Allowing this amendment to go into effect immediately will permit the CAISO to settle bid cost recovery payments based on the corrected tariff rules for trading dates beginning with the effective date.[18] This is particularly important because this filing provides explicit notice of the opportunity for over-recovery of minimum load costs and, without immediate effectiveness, market participants may be incentivized to bid in a manner so as to maximize their bid cost recovery payments prior to this amendment going into effect.

The CAISO elected not to conduct a stakeholder process in preparing this tariff amendment because continued application of the existing tariff rule while the Commission considers it could result in additional over-accounting for minimum load costs. This could become more significant if parties change their bidding practices to take advantage of the rules. Also, the proposed amendment is consistent with the policy the Commission previously approved. As discussed above, there are a number of cases in which bidding strategies could expand these payments significantly. Conducting a stakeholder process prior to making this filing and publicly notifying market participants of the tariff gap could have had the perverse effect of providing an opportunity for market participants to attempt to increase their bid cost recovery payments through strategic bidding in the interim period, thereby resulting in over-recovery of minimum load costs.

V. Communications

Correspondence and other communications regarding this filing should be directed to:

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[18] This does not constitute a retroactive change because no trade dates prior to the effective date will be impacted.

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VII. Service

The CAISO has served copies of this filing on the California Public Utilities Commission, the California Energy Commission, and all parties with Scheduling Coordinator Agreements under the CAISO tariff. In addition, the CAISO has posted a copy of the filing on the CAISO website.

VIII. Contents of this Filing

In addition to this transmittal letter, this filing includes the following attachments:

Attachment A	Clean CAISO tariff sheets incorporating this tariff amendment
Attachment B	Red-lined document showing the revisions contained in this tariff amendment

IX. Conclusion

For the reasons set forth in this filing, the CAISO respectfully requests that the Commission accept the tariff changes contained in this filing effective as of March 13, 2015.

Respectfully submitted,

By*: /s/ Anna McKenna*

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Attachment A – Clean Tariff Records

Tariff Amendment to Modify Bid Cost Recovery Provisions to Ensure Appropriate Treatment of Minimum Load Compensation for Multi-Stage Generators

California Independent System Operator

11.8.1.3 Multi-Stage Generating Resource Start-Up, Minimum Load, or Transition Costs

For the settlement of the Multi-Stage Generating Resource Start-Up Cost, Minimum Load Cost, and Transition Cost in the IFM, RUC, and RTM, the CAISO will determine the applicable Commitment Period and select the applicable Start-Up Cost, Minimum Load Cost, and Transition Cost based on the following rules.

(1) In any given Settlement Interval, the CAISO will first apply the following rules to determine the applicable Start-Up Cost and Transition Cost for the Multi-Stage Generating Resources. For a Commitment Period in which:

(a) the IFM Commitment Period and/or RUC Commitment Period MSG Configuration(s) are different from the RTM CAISO Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost and Transition Cost will be settled based on the RTM CAISO Commitment Period MSG Configuration Start-Up Cost and Transition Cost, as described in Section 11.8.4.1.

(b) there is a CAISO IFM Commitment Period and/or CAISO RUC Commitment Period in any MSG Configuration and there is also a RTM Self-Commitment Period in any MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost and Transition Cost will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Cost and Transition Cost, as described in Sections 11.8.2.1 and 11.8.3.1, and further determined pursuant to part (2) of this Section below.

(c) the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration is the same as the CAISO RTM Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost and Transition Cost will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Cost and Transition Cost described in Sections

11.8.2.1 and 11.8.3.1, and further determined pursuant to part (3) of this Section below.

(d) the IFM and RUC Self-Commitment Period MSG Configuration(s) are the same as the CAISO RTM Commitment Period MSG Configuration, then the Multi-Stage Generating Resource's Start-Up Cost and Transition Cost will be settled based on the CAISO RTM Commitment Period MSG Configuration Start-Up Cost and Transition Cost as described in Section 11.8.4.1.

(2) For the purpose of determining which MSG Configuration Minimum Load Costs will apply in any given Commitment Interval, the CAISO will apply the following rules.

(a) If there is a CAISO IFM Commitment Period and/or CAISO RUC Commitment Period, the CAISO will calculate the IFM Minimum Load Costs and/or RUC Minimum Load Costs, pursuant to Section 11.8.2.1 or 11.8.3.1, respectively, based on the MSG Configuration committed in the IFM or RUC.

(b) For purposes of determining the MSG Configuration Minimum Load Costs included in the RTM Minimum Load Cost calculated pursuant to Section 11.8.4.1.2, the CAISO will use the difference between the amounts determined under (i) and (ii) below.

(i) The CAISO will calculate the RTM MSG Configuration Minimum Load Costs as the Minimum Load Cost attributed to the MSG Configuration committed in the RTM, whether that MSG Configuration is Self-Scheduled or CAISO-committed.

(ii) The CAISO will determine one of the two applicable amounts:

a. If there is a Real-Time Market Self-Schedule, the maximum of (A) the Minimum Load Costs attributed to the MSG Configuration either self-Scheduled or CAISO-

committed in the IFM or RUC; and (B) the Minimum Load Cost attributed to the MSG Configuration Self-Scheduled in the RTM.

b. If there is no Real-Time Market Self-Schedule, the Minimum Load Costs attributed to the MSG Configuration either self-Scheduled or CAISO-committed in the IFM or RUC.

(3) In any given Settlement Interval, after the rules specified in part (1) and (2) above of this Section have been executed, the ISO will apply the following rules to determine whether the IFM or RUC Start-Up Cost, Minimum Load Cost, and Transition Cost apply for Multi-Stage Generating Resources. For a Commitment Period in which:

(a) the IFM Commitment Period MSG Configuration is different from the CAISO RUC Commitment Period MSG Configuration the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be settled based on the CAISO RUC Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.3.1.

(b) the CAISO IFM Commitment Period MSG Configuration is the same as the CAISO RUC Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be based on the CAISO IFM Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.2.1.

* * *

11.8.4.1 RTM Bid Cost Calculation

For each Settlement Interval, the CAISO shall calculate RTM Bid Cost for each Bid Cost Recovery Eligible Resource, as the algebraic sum of the RTM Start-Up Cost, RTM Minimum Load Cost, RTM

Transition Cost, RTM Pump Shut-Down Cost, RTM Energy Bid Cost, RTM Pumping Cost and RTM AS Bid Cost. For Multi-Stage Generating Resources, in addition to the specific RTM Bid Cost rules described in Section 11.8.4.1, the rules described in Section 11.8.1.3 will be applied to further determine the applicable MSG Configuration-based CAISO Market Start-Up Cost, Transition Cost, and Minimum Load Cost in given Settlement Interval. For Multi-Stage Generating Resources, the incremental RTM Start-Up Cost, Minimum Load Cost, and Transition Cost to provide RTM committed Energy or awarded Ancillary Services capacity for an MSG Configuration other than the self-scheduled MSG Configuration are determined by the RTM optimization rules in specified in Section 34.

11.8.4.1.1 RTM Start-Up Cost

For each Settlement Interval of the applicable Real-Time Market Commitment Period, the Real-Time Market Start-Up Cost shall consist of the Start-Up Cost of the Bid Cost Recovery Eligible Resource submitted to the CAISO for the Real-Time Market divided by the number of Settlement Intervals in the applicable Real-Time Market Commitment Period. For each Settlement Interval, only the Real-Time Market Start-Up Cost in a CAISO Real-Time Market Commitment Period is eligible for Bid Cost Recovery. The CAISO will determine the RTM Start-Up Cost for a Multi-Stage Generating Resource based on the MSG Configuration committed by the CAISO in RTM. The following rules shall be applied in sequence and shall qualify the Real-Time Market Start-Up Cost in a Real-Time Market Commitment Period:

(a) The Real-Time Market Start-Up Cost is zero if there is a Real-Time Market Self-Commitment Period within the Real-Time Market Commitment Period.

(b) The Real-Time Market Start-Up Cost is zero if the Bid Cost Recovery Eligible Resource has been manually pre-dispatched under an RMR Contract or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule or Real-Time Market anywhere within that Real-Time Market Commitment Period.

(c) The Real-Time Market Start-Up Cost is zero if the Bid Cost Recovery Eligible Resource is started within the Real-Time Market Commitment Period pursuant to an Exceptional Dispatch issued in accordance with Section 34.9.2 to (1) perform Ancillary Services testing; (2) perform pre-commercial operation testing for Generating Units; or (3) perform PMax testing.

(d) The Real-Time Market Start-Up Cost is zero if there is no Real-Time Market Start-Up at the start of that Real-Time Market Commitment Period because the Real-Time Market Commitment Period is the continuation of an IFM or RUC Commitment Period from the previous Trading Day.

(e) If a Real-Time Market Start-Up is terminated in the Real-Time within the applicable Real-Time Market Commitment Period through an Exceptional Dispatch Shut-Down Instruction issued while the Bid Cost Recovery Eligible Resource is starting up the Real-Time Market Start-Up Cost is prorated by the ratio of the Start-Up Time before termination over the Real-Time Market Start-Up Time.

(f) The Real-Time Market Start-Up Cost shall be qualified if an actual Start-Up occurs within that Real-Time Market Commitment Period. An actual Start-Up is detected when the relevant metered Energy in the applicable Settlement Interval(s) indicates the unit is Off before the time the resource is instructed to be On as specified in its Start Up Instruction and is On in the Settlement Interval that falls within the CAISO Real-Time Market Commitment Period. The CAISO will determine that the Multi-Stage Generating Resource is On when, based on its metered Energy, the resource has been detected to have delivered the Minimum Load Energy of the MSG Configuration that CAISO has committed in the Real-Time Market. The Minimum Load Energy is the product of the relevant Minimum Load and the duration of the Settlement Interval.

(g) The Real-Time Market Start-Up Cost for a Real-Time Market Commitment Period shall be qualified if an actual Start-Up occurs earlier than the start of the Real-Time Market Start-Up, if the relevant Start-Up is still within the same Trading Day and the Bid Cost Recovery Eligible Resource actually stays on until the Real-Time Market Start-Up, otherwise the Start-Up Cost is zero for the Real-Time Market Commitment Period.

(h) For Short-Start Units, the first Start-Up Costs within a CAISO IFM Commitment Period are qualified IFM Start-Up Costs as described above in Section 11.8.2.1.1(h). For subsequent Start-Ups of Short-Start Units after the CAISO Shuts Down a resource and then the CAISO issues a Start-Up Instruction pursuant to a CAISO RTM Commitment within the CAISO IFM Commitment Period, the Start-Up Costs shall be qualified as Real-Time Start-Up costs, provided that the resource actually Shut-Down and Started-Up based on CAISO Shut-Down and Start-Up Instructions.

11.8.4.1.2 RTM Minimum Load Cost

The RTM Minimum Load Cost is the Minimum Load Cost of the Bid Cost Recovery Eligible Resource submitted to the CAISO for the Real-Time Market divided by the number of Settlement Intervals in a Trading Hour. For each Settlement Interval, only the RTM Minimum Load Cost in a CAISO RTM Commitment Period is eligible for Bid Cost Recovery. The RTM Minimum Load Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) for all resources that are not Multi-Stage Generating Resources, that Settlement Interval is included in an IFM or RUC Commitment Period; or (4) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.9.2 for the purpose of performing Ancillary Services testing, pre-commercial operation testing for Generating Units, or PMax testing. A resource's RTM Minimum Load Costs for Bid Cost Recovery purposes are subject to the application of the Real-Time Performance Metric as specified in Section 11.8.4.4. For Multi-Stage Generating Resources, the commitment period is further determined based on application of Section 11.8.1.3. For all Bid Cost Recovery Eligible Resources that the CAISO Shuts Down, either through an Exceptional Dispatch or an Economic Dispatch through the Real-Time Market, from its Day-Ahead Schedule that was also from a CAISO commitment, the RTM Minimum Load Costs will include negative Minimum Load Costs for Energy between the Minimum Load and zero (0) MWhs.

11.8.4.1.3 RTM Pump Shut-Down Cost

The RTM Pump Shut-Down Cost for each Settlement Interval is the relevant Pump Shut-Down Cost submitted by the Scheduling Coordinator only for Pumped-Storage Hydro Units and Participating Load, divided by the number of Settlement Intervals in which such resource was committed by the Real-Time Market in a Trading Hour with scheduled pumping operation and in which an actual Shut-Down occurs and the resource does not actually operate in pumping mode or serve Load in that Settlement Interval (as detected through Meter Data). The RTM Pump Shut-Down Cost for a Real-Time Market Shut-Down event shall be zero if: (1) it is followed by a RTM Self-Commitment Period in generation mode or offline mode; or (2) the Shut-Down is due to an Outage reported through SLIC.

11.8.4.1.4 RTM Pumping Bid Cost

For Pumped-Storage Hydro Units and Participating Load only, the RTM Pumping Bid Cost for the applicable Settlement Interval shall be the Pumping Cost submitted to the CAISO in the RTM divided by the number of Settlement Intervals in a Trading Hour. The Pumping Cost is negative since it represents the amount the entity is willing to pay to pump or serve Load. The Pumping Cost is included in RTM Bid Cost computation for a Pumped-Storage Hydro Unit and Participating Load committed by the Real-Time Market to pump or serve Load, if it actually operates in pumping mode or serves Load in that Settlement Interval. The RTM Energy Bid Cost for a Participating Load for any Settlement Interval is set to zero for any Energy consumed in excess of instructed Energy. The RTM Pumping Bid Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) the Bid Cost Recovery Eligible Resource is not actually in pumping mode in that Settlement Interval; (4) that Settlement Interval is included in an IFM or RUC Commitment Period; or (5) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.11.2 for the purpose of performing Ancillary Services testing or pre-commercial operation testing.

11.8.4.1.5 RTM Energy Bid Cost

For any Settlement Interval, the RTM Energy Bid Cost for the Bid Cost Recovery Eligible Resource except Participating Loads shall be computed as the sum of the products of each Instructed Imbalance Energy (IIE) portion, except Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, MSS Load Following Energy, Ramping Energy Deviation and Regulating Energy, with the relevant Energy Bid prices, the Default Energy Bid price, or the Locational Marginal Price, if any, as further described in Section 11.17, for each Dispatch Interval in the Settlement Interval. For Settlement Intervals for which the Bid Cost Recovery Eligible Resource is ramping up to or down from a rerated Minimum Load that was increased in SLIC for the Real-Time Market, the RTM Energy incurred by the ramping will be classified as Derate Energy and will not be included in Bid Cost Recovery. For a Bid Cost Recovery Eligible Resource that is ramping up to or down from an Exceptional Dispatch, the relevant Energy Bid Cost related to the Energy caused by ramping will be settled on the same basis as the Energy Bid used in the Settlement of the Exceptional Dispatch that led to the ramping. The RTM Energy Bid Cost for a Bid Cost Recovery Eligible Resource, including Participating Loads and Proxy Demand Response Resources, for a Settlement Interval is subject to the Real-Time Performance Metric as described in Section 11.8.4.4 and the Persistent Deviation Metric as described in Section 11.17. Any Uninstructed Imbalance Energy in excess of Instructed Imbalance Energy is also not eligible for Bid Cost Recovery. For a Multi-Stage Generating Resource the CAISO will determine the RTM Energy Bid Cost based on the Generating Unit level.

11.8.4.1.6 RTM AS Bid Cost

For each Settlement Interval, the Real-Time Market AS Bid Cost shall be the product of the average Real-Time Market AS Award from each accepted AS Bid submitted in the Settlement Interval for the Real-Time Market, reduced by any relevant tier-1 No Pay capacity in that Settlement Interval (but not below zero), with the relevant AS Bid price. The average Real-Time Market AS Award for a given AS in a Settlement Interval is the sum of the 15-minute Real-Time Market AS Awards in that Settlement Interval, each divided by the number of 15-minute Commitment Intervals in a Trading Hour and prorated to the duration of the Settlement Interval (10/15 if the Real-Time Market AS Award spans the entire Settlement Interval, or 5/15 if the Real-Time Market AS Award spans half the Settlement Interval). For a Multi-Stage

Generating Resource the CAISO will determine the RTM AS Bid Cost based on the Generating Unit level. The Real-Time Market AS Bid Cost shall also include Mileage Bid Costs. For each Settlement Interval, the Real-Time Mileage Bid Cost shall be the product of Instructed Mileage associated with a Real-Time Regulation capacity award, as adjusted for accuracy consistent with Section 11.10.1.7, and the relevant Mileage Bid price divided by the number of Settlement Intervals for the Real-Time Market in a Trading Hour. The CAISO will determine and calculate the Real Time Market Mileage Bid Cost for a Multi-Stage Generating Resource at the Generating Unit level.

11.8.4.1.7 RTM Transition Cost

For each Settlement Interval, the RTM Transition Costs shall be based on the MSG Configuration to which the Multi-Stage Generating Resource is transitioning and are allocated to the CAISO commitment period of that MSG Configuration.

11.8.4.1.7.1 RTM Transition Costs Applicability

Within any eligible RTM CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the RTM Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resource is actually transitioning from the “from” MSG Configuration and reaches the Minimum Load of the “to” MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

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29.11. Settlements And Billing For EIM Market Participants

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(f) **Real-Time Bid Cost Recovery.**

(1) **In General**. The CAISO will provide EIM Participating Resources RTM Bid Cost Recovery.

(2) **Calculation of Real-Time Bid Cost Recovery**. The CAISO will calculate Real-Time Bid Cost Recovery in accordance with Section 11.8.4, except that the CAISO will treat a non-zero EIM Base Schedule of an EIM Participating Resource as an IFM Self-Schedule and the corresponding intervals as IFM self-commitment intervals.

Attachment B – Marked Tariff Records

Tariff Amendment to Modify Bid Cost Recovery Provisions to Ensure Appropriate Treatment of Minimum Load Compensation for Multi-Stage Generators

California Independent System Operator

11.8.1.3 Multi-Stage Generating Resource Start-Up, Minimum Load, or Transition Costs

For the settlement of the Multi-Stage Generating Resource Start-Up Cost, Minimum Load Cost, and Transition Cost in the IFM, RUC, and RTM, the CAISO will determine the applicable Commitment Period and select the applicable Start-Up Cost, Minimum Load Cost, and Transition Cost based on the following rules.

(1) In any given Settlement Interval, the CAISO will first apply the following rules to determine the applicable Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost for the Multi-Stage Generating Resources. For a Commitment Period in which:

(a) the IFM Commitment Period and/or RUC Commitment Period MSG Configuration(s) are different from the RTM CAISO Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost ~~, Minimum Load Cost,~~ and Transition Cost will be settled based on the RTM CAISO Commitment Period MSG Configuration Start-Up Cost~~,~~ and Transition Cost, as described in Section 11.8.4.1. ~~This rule does not apply in cases where there is a CAISO IFM Commitment Period, in which case the Minimum Load Costs will be settled based on the: (i) CAISO IFM Commitment Period MSG Configuration's Minimum Load costs, plus (ii) the positive or negative difference of the CAISO RTM Commitment Period MSG Configuration's Minimum Load Costs and the CAISO IFM Commitment Period MSG Configuration's Minimum Load Costs.~~

(b) there is a CAISO IFM Commitment Period and/or CAISO RUC Commitment Period in any MSG Configuration and there is also a RTM Self-Commitment Period in any MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost, as described in

Sections 11.8.2.1 and 11.8.3.1, and further determined pursuant to part (2) of this Section below.

(c) the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration is the same as the CAISO RTM Commitment Period MSG Configuration, the Multi-Stage Generating Resource's Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost described in Sections 11.8.2.1 and 11.8.3.1, and further determined pursuant to part (3~~2~~) of this Section below.

(d) the IFM and RUC Self-Commitment Period MSG Configuration(s) are the same as the CAISO RTM Commitment Period MSG Configuration, then the Multi-Stage Generating Resource's Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost will be settled based on the CAISO RTM Commitment Period MSG Configuration Start-Up Cost~~, Minimum Load Cost,~~ and Transition Cost as described in Section 11.8.4.1.

(2) For the purpose of determining which MSG Configuration Minimum Load Costs will apply in any given Commitment Interval, the CAISO will apply the following rules.

(a) If there is a CAISO IFM Commitment Period and/or CAISO RUC Commitment Period, the CAISO will calculate the IFM Minimum Load Costs and/or RUC Minimum Load Costs, pursuant to Section 11.8.2.1 or 11.8.3.1, respectively, based on the MSG Configuration committed in the IFM or RUC.

(b) For purposes of determining the MSG Configuration Minimum Load Costs included in the RTM Minimum Load Cost calculated pursuant to Section 11.8.4.1.2, the CAISO will use the difference between the amounts determined under (i) and (ii) below.

(i) The CAISO will calculate the RTM MSG Configuration Minimum Load Costs as the Minimum Load Cost attributed to the MSG Configuration committed in the RTM, whether that MSG Configuration is Self-Scheduled or CAISO-committed.

(ii) The CAISO will determine one of the two applicable amounts:

a. If there is a Real-Time Market Self-Schedule, the maximum of (A) the Minimum Load Costs attributed to the MSG Configuration either self-Scheduled or CAISO-committed in the IFM or RUC; and (B) the Minimum Load Cost attributed to the MSG Configuration Self-Scheduled in the RTM.

b. If there is no Real-Time Market Self-Schedule, the Minimum Load Costs attributed to the MSG Configuration either self-Scheduled or CAISO-committed in the IFM or RUC.

(3~~2~~) In any given Settlement Interval, after the rules specified in part (1) and (2) above of this Section have been executed, the ISO will apply the following rules to determine whether the IFM or RUC Start-Up Cost, Minimum Load Cost, and Transition Cost apply for Multi-Stage Generating Resources. For a Commitment Period in which:

(a) the IFM Commitment Period MSG Configuration is different from the CAISO RUC Commitment Period MSG Configuration the Multi-Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be settled based on the CAISO RUC Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.3.1.

(b) the CAISO IFM Commitment Period MSG Configuration is the same as the CAISO RUC Commitment Period MSG Configuration, the Multi-

Stage Generating Resource's Start-Up Cost, Minimum Load Cost, and Transition Cost will be based on the CAISO IFM Commitment Period MSG Configuration Start-Up Cost, Minimum Load Cost, and Transition Cost as described in Section 11.8.2.1.

* * *

11.8.4.1 RTM Bid Cost Calculation

For each Settlement Interval, the CAISO shall calculate RTM Bid Cost for each Bid Cost Recovery Eligible Resource, as the algebraic sum of the RTM Start-Up Cost, RTM Minimum Load Cost, RTM Transition Cost, RTM Pump Shut-Down Cost, RTM Energy Bid Cost, RTM Pumping Cost and RTM AS Bid Cost. For Multi-Stage Generating Resources, in addition to the specific RTM Bid Cost rules described in Section 11.8.4.1, the rules described in Section 11.8.1.3 will be applied to further determine the applicable MSG Configuration-based CAISO Market Start-Up Cost, Transition Cost, and Minimum Load Cost in given Settlement Interval. For Multi-Stage Generating Resources, the incremental RTM Start-Up Cost, Minimum Load Cost, and Transition Cost to provide RTM committed Energy or awarded Ancillary Services capacity for an MSG Configuration other than the self-scheduled MSG Configuration are determined by the RTM optimization rules in specified in Section 34.

11.8.4.1.1 RTM Start-Up Cost

For each Settlement Interval of the applicable Real-Time Market Commitment Period, the Real-Time Market Start-Up Cost shall consist of the Start-Up Cost of the Bid Cost Recovery Eligible Resource submitted to the CAISO for the Real-Time Market divided by the number of Settlement Intervals in the applicable Real-Time Market Commitment Period. For each Settlement Interval, only the Real-Time Market Start-Up Cost in a CAISO Real-Time Market Commitment Period is eligible for Bid Cost Recovery. The CAISO will determine the RTM Start-Up Cost for a Multi-Stage Generating Resource based on the MSG Configuration committed by the CAISO in RTM. The following rules shall be applied in sequence and shall qualify the Real-Time Market Start-Up Cost in a Real-Time Market Commitment Period:

(a) The Real-Time Market Start-Up Cost is zero if there is a Real-Time Market Self-Commitment Period within the Real-Time Market Commitment Period.

(b) The Real-Time Market Start-Up Cost is zero if the Bid Cost Recovery Eligible Resource has been manually pre-dispatched under an RMR Contract or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule or Real-Time Market anywhere within that Real-Time Market Commitment Period.

(c) The Real-Time Market Start-Up Cost is zero if the Bid Cost Recovery Eligible Resource is started within the Real-Time Market Commitment Period pursuant to an Exceptional Dispatch issued in accordance with Section 34.9.2 to (1) perform Ancillary Services testing; (2) perform pre-commercial operation testing for Generating Units; or (3) perform PMax testing.

(d) The Real-Time Market Start-Up Cost is zero if there is no Real-Time Market Start-Up at the start of that Real-Time Market Commitment Period because the Real-Time Market Commitment Period is the continuation of an IFM or RUC Commitment Period from the previous Trading Day.

(e) If a Real-Time Market Start-Up is terminated in the Real-Time within the applicable Real-Time Market Commitment Period through an Exceptional Dispatch Shut-Down Instruction issued while the Bid Cost Recovery Eligible Resource is starting up the Real-Time Market Start-Up Cost is prorated by the ratio of the Start-Up Time before termination over the Real-Time Market Start-Up Time.

(f) The Real-Time Market Start-Up Cost shall be qualified if an actual Start-Up occurs within that Real-Time Market Commitment Period. An actual Start-Up is detected when the relevant metered Energy in the applicable Settlement Interval(s) indicates the unit is Off before the time the resource is instructed to be On as specified in its Start Up Instruction and is On in the Settlement Interval that falls within the CAISO Real-Time Market Commitment Period. The CAISO will determine that the Multi-Stage Generating Resource is On when, based on its metered Energy, the resource has been detected to have delivered the Minimum Load Energy of the MSG Configuration that CAISO has committed in

the Real-Time Market. The Minimum Load Energy is the product of the relevant Minimum Load and the duration of the Settlement Interval.

(g) The Real-Time Market Start-Up Cost for a Real-Time Market Commitment Period shall be qualified if an actual Start-Up occurs earlier than the start of the Real-Time Market Start-Up, if the relevant Start-Up is still within the same Trading Day and the Bid Cost Recovery Eligible Resource actually stays on until the Real-Time Market Start-Up, otherwise the Start-Up Cost is zero for the Real-Time Market Commitment Period.

(h) For Short-Start Units, the first Start-Up Costs within a CAISO IFM Commitment Period are qualified IFM Start-Up Costs as described above in Section 11.8.2.1.1(h). For subsequent Start-Ups of Short-Start Units after the CAISO Shuts Down a resource and then the CAISO issues a Start-Up Instruction pursuant to a CAISO RTM Commitment within the CAISO IFM Commitment Period, the Start-Up Costs shall be qualified as Real-Time Start-Up costs, provided that the resource actually Shut-Down and Started-Up based on CAISO Shut-Down and Start-Up Instructions.

11.8.4.1.2 RTM Minimum Load Cost

The RTM Minimum Load Cost is the Minimum Load Cost of the Bid Cost Recovery Eligible Resource submitted to the CAISO for the Real-Time Market divided by the number of Settlement Intervals in a Trading Hour. For each Settlement Interval, only the RTM Minimum Load Cost in a CAISO RTM Commitment Period is eligible for Bid Cost Recovery. The RTM Minimum Load Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) for all resources that are not Multi-Stage Generating Resources, that Settlement Interval is included in an IFM or RUC Commitment Period; or (4) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.9.2 for the purpose of performing Ancillary Services testing, pre-commercial operation testing for Generating Units,

or PMax testing. A resource's RTM Minimum Load Costs for Bid Cost Recovery purposes are subject to the application of the Real-Time Performance Metric as specified in Section 11.8.4.4. For Multi-Stage Generating Resources, the commitment period is further determined based on application of Section 11.8.1.3. For all Bid Cost Recovery Eligible Resources that the CAISO Shuts Down, either through an Exceptional Dispatch or an Economic Dispatch through the Real-Time Market, from its Day-Ahead Schedule that was also from a CAISO commitment, the RTM Minimum Load Costs will include negative Minimum Load Costs for Energy between the Minimum Load and zero (0) MWhs. ~~In addition, for all Multi-Stage Generating Resources that the CAISO commits down to a lower MSG Configuration with its Minimum Load capacity lower than the Day-Ahead CAISO Committed MSG Configuration's Minimum Load capacity, either through an Exceptional Dispatch or an Economic Dispatch through the Real-Time Market, from its IFM MSG Configuration that was also from a CAISO Commitment Period, the Minimum Load Costs will be equal to the RTM Minimum Load Cost less the IFM or RUC Minimum Load Cost, as applicable.~~

11.8.4.1.3 RTM Pump Shut-Down Cost

The RTM Pump Shut-Down Cost for each Settlement Interval is the relevant Pump Shut-Down Cost submitted by the Scheduling Coordinator only for Pumped-Storage Hydro Units and Participating Load, divided by the number of Settlement Intervals in which such resource was committed by the Real-Time Market in a Trading Hour with scheduled pumping operation and in which an actual Shut-Down occurs and the resource does not actually operate in pumping mode or serve Load in that Settlement Interval (as detected through Meter Data). The RTM Pump Shut-Down Cost for a Real-Time Market Shut-Down event shall be zero if: (1) it is followed by a RTM Self-Commitment Period in generation mode or offline mode; or (2) the Shut-Down is due to an Outage reported through SLIC.

11.8.4.1.4 RTM Pumping Bid Cost

For Pumped-Storage Hydro Units and Participating Load only, the RTM Pumping Bid Cost for the applicable Settlement Interval shall be the Pumping Cost submitted to the CAISO in the RTM divided by the number of Settlement Intervals in a Trading Hour. The Pumping Cost is negative since it represents the amount the entity is willing to pay to pump or serve Load. The Pumping Cost is included in RTM Bid Cost computation for a Pumped-Storage Hydro Unit and Participating Load committed by the Real-Time

Market to pump or serve Load, if it actually operates in pumping mode or serves Load in that Settlement Interval. The RTM Energy Bid Cost for a Participating Load for any Settlement Interval is set to zero for any Energy consumed in excess of instructed Energy. The RTM Pumping Bid Cost for any Settlement Interval is zero if: (1) the Settlement Interval is included in a RTM Self-Commitment Period for the Bid Cost Recovery Eligible Resource; (2) the Bid Cost Recovery Eligible Resource has been manually dispatched under an RMR Contract or the resource has been flagged as an RMR Dispatch in the Day-Ahead Schedule or the Real-Time Market in that Settlement Interval; (3) the Bid Cost Recovery Eligible Resource is not actually in pumping mode in that Settlement Interval; (4) that Settlement Interval is included in an IFM or RUC Commitment Period; or (5) the Bid Cost Recovery Eligible Resource is committed pursuant to Section 34.11.2 for the purpose of performing Ancillary Services testing or pre-commercial operation testing.

11.8.4.1.5 RTM Energy Bid Cost

For any Settlement Interval, the RTM Energy Bid Cost for the Bid Cost Recovery Eligible Resource except Participating Loads shall be computed as the sum of the products of each Instructed Imbalance Energy (IIE) portion, except Standard Ramping Energy, Residual Imbalance Energy, Exceptional Dispatch Energy, Derate Energy, MSS Load Following Energy, Ramping Energy Deviation and Regulating Energy, with the relevant Energy Bid prices, the Default Energy Bid price, or the Locational Marginal Price, if any, as further described in Section 11.17, for each Dispatch Interval in the Settlement Interval. For Settlement Intervals for which the Bid Cost Recovery Eligible Resource is ramping up to or down from a rerated Minimum Load that was increased in SLIC for the Real-Time Market, the RTM Energy incurred by the ramping will be classified as Derate Energy and will not be included in Bid Cost Recovery. For a Bid Cost Recovery Eligible Resource that is ramping up to or down from an Exceptional Dispatch, the relevant Energy Bid Cost related to the Energy caused by ramping will be settled on the same basis as the Energy Bid used in the Settlement of the Exceptional Dispatch that led to the ramping. The RTM Energy Bid Cost for a Bid Cost Recovery Eligible Resource, including Participating Loads and Proxy Demand Response Resources, for a Settlement Interval is subject to the Real-Time Performance Metric as described in Section 11.8.4.4 and the Persistent Deviation Metric as described in Section 11.17. Any Uninstructed Imbalance Energy in excess of Instructed Imbalance Energy is also not eligible for Bid

Cost Recovery. For a Multi-Stage Generating Resource the CAISO will determine the RTM Energy Bid Cost based on the Generating Unit level.

11.8.4.1.6 RTM AS Bid Cost

For each Settlement Interval, the Real-Time Market AS Bid Cost shall be the product of the average Real-Time Market AS Award from each accepted AS Bid submitted in the Settlement Interval for the Real-Time Market, reduced by any relevant tier-1 No Pay capacity in that Settlement Interval (but not below zero), with the relevant AS Bid price. The average Real-Time Market AS Award for a given AS in a Settlement Interval is the sum of the 15-minute Real-Time Market AS Awards in that Settlement Interval, each divided by the number of 15-minute Commitment Intervals in a Trading Hour and prorated to the duration of the Settlement Interval (10/15 if the Real-Time Market AS Award spans the entire Settlement Interval, or 5/15 if the Real-Time Market AS Award spans half the Settlement Interval). For a Multi-Stage Generating Resource the CAISO will determine the RTM AS Bid Cost based on the Generating Unit level. The Real-Time Market AS Bid Cost shall also include Mileage Bid Costs. For each Settlement Interval, the Real-Time Mileage Bid Cost shall be the product of Instructed Mileage associated with a Real-Time Regulation capacity award, as adjusted for accuracy consistent with Section 11.10.1.7, and the relevant Mileage Bid price divided by the number of Settlement Intervals for the Real-Time Market in a Trading Hour. The CAISO will determine and calculate the Real Time Market Mileage Bid Cost for a Multi-Stage Generating Resource at the Generating Unit level.

11.8.4.1.7 RTM Transition Cost

For each Settlement Interval, the RTM Transition Costs shall be based on the MSG Configuration to which the Multi-Stage Generating Resource is transitioning and are allocated to the CAISO commitment period of that MSG Configuration.

11.8.4.1.7.1 RTM Transition Costs Applicability

Within any eligible RTM CAISO Commitment Period determined pursuant to the rules specified in Section 11.8.1.3, the CAISO shall apply the RTM Transition Costs for the Settlement Intervals in which the Multi-Stage Generating Resource is actually transitioning from the “from” MSG Configuration and reaches the Minimum Load of the “to” MSG Configuration to which the Multi-Stage Generating Resource is transitioning, subject to the Tolerance Band.

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29.11. Settlements And Billing For EIM Market Participants

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(f) **Real-Time Bid Cost Recovery.**

(1) **In General**. The CAISO will provide EIM Participating Resources RTM Bid Cost Recovery.

(2) **Calculation of Real-Time Bid Cost Recovery**. The CAISO will calculate Real-Time Bid Cost Recovery in accordance with Section 11.8.4, except that the CAISO will treat a non-zero EIM Base Schedule of an EIM Participating Resource as an IFM Self-Schedule and ~~the EIM Participating Resource will not be eligible for recovery of Start-Up Costs and Minimum Load Costs, in accordance with the treatment of costs during~~ the corresponding intervals as IFM self-commitment intervals ~~as specified in Section 11.8.4.1.2~~.