

Comments and proposed **redlines** from Brian Theaker, NRG Energy, Inc.

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Some of the changes proposed are extensive and are being presented for the first time long after the associated stakeholder process has ended. NRG tried to thoroughly review all this tariff language but was not able to do things like check all the cross references. Where NRG proposed to modify tariff language, NRG highlighted that change in yellow.

The following lists the sections to which NRG made changes or imbedded a question or comment:

- 27.4.3.6 – struck “final”
- 30.4.1 (b) – cross-reference correct?
- 30.4.4.4.1 – added “the”
- 30.4.4.2 and 30.4.4.3: The current tariff – and the most recent pending modifications to Appendix A - includes a hyphen between “Use” and “Limited” in the defined term “Use-Limited Resource”
- 30.4.4.4 – deleted “case”
- 30.4.4.6 – deleted “s” in “cases”
- 30.4.5.1 (d) and 30.4.5.2 (d) – changed “minus” to “and”; added “those costs are”
- 30.4.6.2.2 – added a comment
- 30.7.3.4 – proposed to tweak the language
- 30.7.11 (b) – added “the”
- 30.7.11 (c) – added “ology” to make parallel to (b)
- 30.7.12.4 – changed “for” to “or”, added “y” to “recover”
- 30.7.12.5 – question
- 30.11.1 – deleted “d” at the end of “calculated”
- 30.11.1.1 – singular and plural language seemed misaligned
- 30.11.1.2.1 - singular and plural language seemed misaligned
- 30.11.1.3 – tweaked language
- 30.11.1.4 – added a comma
- 30.11.2.1 – comment
- 30.11.2.2 – added “the”, deleted “calculated” and deleted “daily”
- 30.11.3.1 – question, changed “accepted” to “accept”
- 30.11.3.2 – added “Scheduling Coordinator provide the CAISO with”
- 30.11.3.4 (a) – comment; changes to consistently use defined term,
- 30.11.3.4 (b) – language tweaks and a question
- 30.11.4.1 – comment
- 30.11.5 – question
- 30.11.6 – added “a”, “-fired”
- 30.12.5 – question
- 30.12.5.2 – added “that”, added “reflecting the revised Bid Cost Recovery amounts”
- 30.12.6 – changed “of” to “or”, deleted “in”
- 39.7.1.1.1.3 (b) and (c) – comments and questions
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Definitions touched:

- Documentation of Contemporaneously Available Information
- Default Energy Bid



***Commitment Costs and Default
Energy Bid Enhancements –
Draft Tariff Language***

- IFM AS Bid Cost
- IFM Energy Bid Cost
- Minimum Load Bid
- Minimum Load Bid Cost
- Minimum Load Cost Hard Cap
- Reasonableness Threshold
- Reference Level Change Request
- Start-Up Bid Cost
- Transition Bid
- RTM AS Bid Cost

4.12.1 General Responsibilities

4.12.1.1 Operate Pursuant to Relevant Provisions of CAISO Tariff

Resource-Specific System Resource owners shall operate, or cause their facilities to be operated, in accordance with the relevant provisions of this CAISO Tariff, including but not limited to the following.

- (i) A Resource-Specific System Resource shall only be eligible for Bid Cost Recovery if the Resource-Specific System Resource has complied with a Start-Up Instruction or Dispatch Instruction issued by the CAISO as specified in Section 11.8.
- (ii) In order to be eligible for Bid Cost Recovery ~~pursuant to Sections 30.4 and 30.5.2.4~~, a Resource-Specific System Resource owner shall ensure that its Scheduling Coordinator makes an election for Default Start-Up CostBids and Default Minimum Load CostBids ~~pursuant to Sections 30.4 and 30.5.2.4~~.
- (iii) A Resource-Specific System Resource owner shall ensure that any Ancillary Services Bids submitted by its Scheduling Coordinator are submitted in accordance with Section 30.5.2.6.
- (iv) Owners of Dynamic Resource-Specific System Resources that are Resource Adequacy Resources shall comply with additional availability requirements to the extent required by Section 40.6.5.1.
- (v) Each Resource-Specific System Resource owner shall immediately inform the CAISO, through its respective Scheduling Coordinator and using the CAISO's outage management system as described in Section 9, of any change or potential change in the current status of any Resource-Specific System Resource that may affect a submitted Bid. This will include, but not be limited to, any change in status of equipment that could affect the maximum output of a Resource-Specific System Resource, the Minimum Load of a Resource-Specific System Resource, or the ability of a Resource-Specific System Resource to provide Ancillary Services in accordance with its Bid.
- (vi) In the event that a Resource-Specific System Resource owner cannot meet its Generation schedule as specified in the Day-Ahead Schedule, or comply with a Dispatch



Instruction, whether due to a Resource-Specific System Resource trip or the loss of a piece of equipment causing a reduction in capacity or output, the Resource-Specific System Resource owner shall notify the CAISO, through its Scheduling Coordinator, at once. If a Resource-Specific System Resource owner will not be able to meet a time commitment or requires the cancellation of a Resource-Specific System Resource Start-Up, it shall notify the CAISO, through its Scheduling Coordinator, at once.

6.5.2.2.2 Day-Ahead Market Bid Submittal

Seven (7) days prior to any Trading Day, Scheduling Coordinators can begin submitting Bids for the DAM for that Trading Day.

6.5.2.2.3 Advisory Day-Ahead Market Results

The CAISO may provide to the responsible Scheduling Coordinator its resource's hourly Energy schedules produced in the non-financially binding RUC process the CAISO conducts two (2) days prior to the Trading Day based on Bids and forecasts of system conditions as available in the CAISO Market systems at the time the CAISO conducts the non-financially binding RUC process. This information is advisory and is not financially binding.

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6.5.2.3.4 Greenhouse Gas Price Indices

The CAISO will publish ~~relevant natural gas price indices and~~ daily greenhouse gas price indices when available.

6.5.3.1.3 Between 5:00 a.m. and 10:00 a.m., the CAISO will provide feedback to Scheduling



Coordinators about their validated ETC and TOR quantities, and calculated Default Energy Bids curves and in addition, the RMR Proxy Bids for Energy and the Minimum Load Bid and Start-Up Cost Bid curves for Legacy RMR Units.

6.5.4.2.2 No later than forty (40) minutes before the Trading Hour, on an hourly basis, the CAISO will publish on OASIS the following:

- (a) Total HASP Block Intertie Schedules and HASP Advisory Schedules that involve an Intertie transaction for imports and exports by TAC Area and for the entire CAISO Balancing Authority Area;
- (b) HASP advisory LMPs by PNode and APNode;
- (c) HASP Shadow Prices of binding Transmission Constraints and an indication of whether the constraints were binding because of the base operating conditions or contingencies and if caused by a contingency, the identity of the specific contingency; and
- (d) Total HASP system Marginal Losses in MWh for the next Operating Hour.

6.5.4.2.3 The CAISO will publish the natural gas price indices used for the Real-Time Market when available.

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6.5.6.1.2 Start-Up and Minimum Load Costs

Within seven (7) days after the Trading Day, the CAISO will publish via OASIS ~~all~~total Start-Up Costs and Minimum Load Costs for CAISO committed resources.



8.4.1.2 Regulation Energy Management

The CAISO will make Regulation Energy Management available to Scheduling Coordinators for Non-Generator Resources located within the CAISO Balancing Authority Area that require Energy from the Real-Time Market to offer their full capacity as Regulation. A Scheduling Coordinator for a resource using Regulation Energy Management may submit a Regulation Bid for capacity (MW) of up to four (4) times the maximum Energy (MWh) the resource can generate or curtail for fifteen (15) minutes after issuance of a Dispatch Instruction. In the Real-Time Market, a Scheduling Coordinator for a resource using Regulation Energy Management will produce energy as needed to satisfy the sixty (60) minute continuous Energy requirement for Regulation Awards in the Day-Ahead Market.

Scheduling Coordinators may request to use Regulation Energy Management for these Non-Generator Resources by submitting a request to certify such a resource to provide Regulation using Regulation Energy Management. The owner or operator of a Resource using Regulation Energy Management must execute both a Participating Generator Agreement and/or Participating Load Agreement and may provide only Regulation in the CAISO Market. A resource using Regulation Energy Management may not provide Energy other than Energy associated with Regulation. Scheduling Coordinators for Resources using Regulation Energy Management may define a Ramp Rate for operating as Generation and a Ramp Rate for operating as Load, respectively. These resources shall comply with the requirements to provide Regulation as specified in this Section 8, Appendix K, and the CAISO's Operating Procedures, including the requirement to undergo a market simulation using Regulation Energy Management as part of the certification procedure.

Scheduling Coordinators for resources using Regulation Energy Management shall register these resources in the Master File. Scheduling Coordinators may only submit Bids for Regulation Up and Regulation Down and Mileage for these resources. Scheduling Coordinators may not submit Energy Bids, Energy Self-Schedules, Residual Unit Commitment Bids, or Ancillary Service Bids other than Regulation and Mileage for these resources. Scheduling Coordinators may not submit any type of commitment costs as part of their Regulation Up and Regulation Down Bids for resources using Regulation Energy Management, including Start-Up BidsCost, Minimum Load CostBids, Pumping Cost or



Pump Shut-Down Cost **Bids**, or Transition **BidsCost**. All other bidding rules for Regulation set forth in Section 30 shall apply to resources using Regulation Energy Management.

The CAISO will settle Dispatches from resources using Regulation Energy Management as energy. The portion of Demand of Non-Generator Resources using Regulation Energy Management that is dispatched as Regulation in any Settlement Interval shall not be considered Measured Demand for purposes of allocating payments and charges pursuant to Section 11 during that Settlement Interval.

The CAISO shall control the resource's operating set point through its Energy Management System with the objective of maintaining the resource's operating set point at its preferred operating point. In the Day-Ahead Market and FMM, the procurement of Regulation from resources using Regulation Energy Management will not be constrained by the resource's MWh limit to generate, curtail the consumption of, or consume Energy continuously. In the Real-Time Dispatch, the CAISO will base the Dispatches on the resource's capability to provide Regulation. When the resource has a physical MWh limit, the CAISO will observe the resource's MWh constraint during Real-Time Dispatch and will assess whether the CAISO can support the resource's self-provided Regulation capacity or Regulation award with Real-Time Market Dispatches. To the extent the CAISO determines in the Integrated Forward Market or FMM that the MWh constraint of resources using Regulation Energy Management limits the capability of the CAISO, through Real-time Dispatch, to support these resources' self-provided Regulation capacity or Regulation awards, the CAISO may disqualify resources using Regulation Energy Management on a pro rata basis across the System Region from providing Regulation, which shall result in the rescission of the disqualified portion of the resources' self-provided or awarded Regulation capacity payments.

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9.3.10.6.1 Outage Reporting By NRS-RA Resources

The Scheduling Coordinator for a **n**Non-Resource-Specific System Resource that provides Resource Adequacy Capacity shall report to the CAISO through the outage management system any Forced Outage of a Generating Unit or Forced Outage or Constraint of transmission facilities external to the CAISO Balancing Authority Area that directly results in the inability of the resource to deliver all or a



portion of the Resource Adequacy Capacity identified in the resource's Supply Plan to the CAISO Balancing Authority Area. The Scheduling Coordinator for a **n**Non-Resource-Specific System Resource that provides Resource Adequacy Capacity is required to provide to the CAISO notice of the Forced Outage or Constraint within sixty (60) minutes after becoming aware of the circumstance. The Scheduling Coordinator for a **n**Non-Resource-Specific System Resource that provides Resource Adequacy Capacity shall promptly provide information requested by the CAISO to enable the CAISO to review the Forced Outage or Constraint and its impact on the ability of the resource to deliver Resource Adequacy Capacity to the CAISO Balancing Authority Area.

DMM shall identify and notify FERC's Office of Enforcement staff of instances in which the reporting of the Forced Outage or Constraint may require investigation. DMM is to make a non-public referral to FERC in all instances where DMM has reason to believe that the reporting of the Forced Outage or Constraint constitutes a Market Violation other than those Market Violations identified in Section 11.1.13 of Appendix P. While DMM need not be able to prove that a Market Violation has occurred, DMM is to provide sufficient credible information to warrant further investigation by FERC. Once DMM has obtained sufficient credible information to warrant referral to the Commission, DMM is to immediately refer the matter to FERC and desist from independent action related to the alleged Market Violation. This does not preclude DMM from continuing to monitor for any repeated instances of the activity by the same or other entities, which would constitute new Market Violations. DMM is to respond to requests from FERC for any additional information in connection with the alleged Market Violation it has referred.

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11.5.6.2.5.2 Allocation of Exceptional Dispatch Costs to Scheduling Coordinators

Excess Cost Payments for the Exceptional Dispatches used for emergency conditions and to avoid Market Disruption and System Emergencies as determined pursuant to Section 11.5.6.1.1 shall be charged to Scheduling Coordinators as follows in a two-step process. First, each Scheduling Coordinator's charge shall be the lesser of:

- (i) the pro rata share of total Excess Cost Payment based upon the ratio of each Scheduling



Coordinator's Net Negative Uninstructed Deviations to the total system Net Negative Uninstructed Deviations; or

- (ii) the amount obtained by multiplying the Scheduling Coordinator's Net Negative Uninstructed Deviation for each Settlement Interval and a weighted average price. The weighted average price is equal to the total Excess Cost Payments to be allocated divided by the MWh of FMM Exceptional Dispatch Energy or RTD Exceptional Dispatch Energy associated with the Excess Cost Payment.

Second, any remaining unallocated costs shall be allocated to all Scheduling Coordinators pro-rata based on their Measured Demand. For a Scheduling Coordinator of an MSS Operator that has elected to follow Load, allocation of this second category of Excess Cost Payments will be based on net metered MSS Demand. In addition, to the extent the Exceptional Dispatches are made to resolve congestion internal to the MSS, the Scheduling Coordinator for such an MSS will also be subject to these two categories of Excess Cost Payments.

A Scheduling Coordinator shall be exempt from the first category of the Excess Cost Payment allocation for a Settlement Interval if the Scheduling Coordinator has sufficient incremental Energy Bids that are from physically available resources in the Real-Time Market for Energy to cover its Net Negative Uninstructed Deviation in the given Settlement Interval and that have been approved by the CAISO consistent with Sections 30.7.12 and 30.11. the prices of such Energy Bids do not exceed the applicable maximum Bid level as set forth in Section 39.

11.8 Bid Cost Recovery

For purposes of determining the Unrecovered Bid Cost Uplift Payments for each Bid Cost Recovery Eligible Resource as determined in Section 11.8.5 and the allocation of Unrecovered Bid Cost Uplift Payments for each Settlement Interval, the CAISO shall sequentially calculate the Bid Costs, which can be positive (IFM, RUC or RTM Bid Cost Shortfall) or negative (IFM, RUC or RTM Bid Cost Surplus) in the IFM, RUC and the Real-Time Market, as the algebraic difference between the respective IFM, RUC or



RTM Bid Cost and the IFM, RUC or RTM Market Revenues as further described below in this Section

11.8. The RTM Energy Bid Costs and RTM Market Revenues include the FMM Energy Bid Costs. In any Settlement Interval a resource is eligible for Bid Cost Recovery payments pursuant to the rules described in the subsections of Section 11.8 and Section 11.17. Bid Cost Recovery Eligible Resources for different MSS Operators are supply resources listed in the applicable MSS Agreement. All Bid Costs shall be based on Bids as mitigated pursuant to the requirements specified in Section 39.7. Virtual Awards are not eligible for Bid Cost Recovery. Virtual Awards are eligible for make-whole payments due to price corrections pursuant to Section 11.21.2. In order to be eligible for Bid Cost Recovery, Non-Dynamic Resource-Specific System Resources must provide to the CAISO SCADA data by telemetry to the CAISO's EMS in accordance with Section 4.12.3 demonstrating that they have performed in accordance with their CAISO commitments. Scheduling Coordinators for Non-Generator Resources are not eligible to recover Start-Up Bid Costs, Minimum Bid Load Costs, Pumping Costs, Pump Shut-Down Costs, or Transition Bid Costs but are eligible to recover Energy Bid Costs, RUC Availability Payments and Ancillary Service Bid Costs.

11.8.1 CAISO Determination ~~Of~~ Self-Commitment Periods

For the purposes of identifying the periods during which a Bid Cost Recovery Eligible Resource is deemed self-committed and thus ineligible for Start-Up Bid Costs, Transition Bid Costs, Minimum Load Bid Costs, IFM Pump Shut-Down Costs and IFM Pumping Costs, the CAISO derives the Self-Commitment Periods as described below. The CAISO will determine the Self-Commitment Periods for Multi-Stage Generating Resources based on the applicable MSG Configuration. MSS resources designated for Load following are considered to be self-committed if they have been scheduled with non-zero Load following capacity, or are otherwise used to follow Load in the Real-Time. The IFM and RUC Self-Commitment Periods will be available as part of the Day-Ahead Market results provided to the applicable Scheduling Coordinator. The interim RTM Self-Commitment Periods as reflected in the RTM will be available as part of the RTM results for the relevant Trading Hour as provided to the applicable Scheduling Coordinator. The final RTM Self-Commitment Period is determined ex-post for Settlements purposes. ELS Resources committed through the ELC Process described in Section 31.7 are considered to have been committed in the IFM Commitment Period for the applicable Trading Day for the purposes of



determining BCR settlement in this section 11.8.

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

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For the settlement of the Multi-Stage Generating Resource Start-Up Bid Costs, Minimum Load Bid Costs, and Transition Bid Costs in the IFM, RUC, and RTM, the CAISO will determine the applicable Commitment Period and select the applicable Start-Up Bid Costs, Minimum Load Bid Costs, and Transition Bid Costs 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 Bid Costs and Transition Bid Costs 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 Bid Cost and Transition Bid 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 Bid Costs and Transition Bid Costs will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Bid Costs and Transition Bid Costs, 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 Bid Costs and Transition Bid Costs will be settled based on the CAISO IFM Commitment Period and/or CAISO RUC Commitment Period MSG Configuration(s) Start-Up Bid Costs and Transition Bid Costs 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 Self-Commitment Period 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 Bid Costs and Transition Bid Costs will be settled based on the CAISO RTM Commitment Period MSG Configuration Start-Up Bid Costs and Transition Bid Costs as described in Section 11.8.4.1.
- (2) For the purpose of determining which MSG Configuration Minimum Load Bid 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 Bid Costs included in the RTM Minimum Load Costs 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 Bid Costs as the RTM Minimum Load Costs 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 Bid Costs attributed to the MSG



- Configuration either self-Scheduled or CAISO-committed in the IFM or RUC; and (B) the Minimum Load Bid Costs attributed to the MSG Configuration Self-Scheduled in the RTM.
- b. If there is no Real-Time Market Self-Schedule, the Minimum Load Bid 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 CAISO 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 Bid Cost, Minimum Load Bid Cost, and Transition Bid Cost will be settled based on the CAISO RUC Commitment Period MSG Configuration Start-Up Bid Cost, Minimum Load Bid Cost, and Transition Bid 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 Bid Cost, Minimum Load Bid Cost, and Transition Bid Cost will be based on the CAISO IFM Commitment Period MSG Configuration Start-Up Bid Cost, Minimum Load Bid Cost, and Transition Bid Cost as described in Section 11.8.2.1.

11.8.2.1 IFM Bid Cost Calculation

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



IFM Pump Shut-Down Cost, IFM Energy Bid Cost, IFM Pumping Cost, and IFM AS Bid Cost. For Multi-Stage Generating Resources, in addition to the specific IFM Bid Cost rules described in Section 11.8.2.1, the CAISO will apply the rules described in Section 11.8.1.3 to further determine the applicable MSG Configuration-based CAISO Market Start-Up Bid Cost, Transition Bid Cost, and Minimum Load Bid Cost in any given Settlement Interval. For Multi-Stage Generating Resources, the incremental IFM Start-Up Costs, IFM Minimum Load Costs, and IFM Transition Costs to provide Energy Scheduled in the Day-Ahead Schedule or awarded RUC or Ancillary Service capacity for an MSG Configuration other than the self-scheduled MSG Configuration are determined by the IFM rules specified in Section 31.3.

11.8.2.1.1 IFM Start-Up Cost

The IFM Start-Up Cost for any IFM Commitment Period shall be equal to the Start-Up Bid Costs ~~submitted by the Scheduling Coordinator applicable to the CAISO for~~ the IFM divided by the number of Settlement Intervals within the applicable IFM Commitment Period. For each Settlement Interval, only the IFM Start-Up Cost in a CAISO IFM Commitment Period is eligible for Bid Cost Recovery. The CAISO will determine the IFM Start-Up Costs for Multi-Stage Generating Resources based on the CAISO-committed MSG Configuration. The following rules shall apply sequentially to qualify the IFM Start-Up Cost in an IFM Commitment Period:

- (a) The IFM Start-Up Cost for an IFM Commitment Period shall be zero if there is an IFM Self-Commitment Period within or overlapping with that IFM Commitment Period.
- (b) The IFM Start-Up Cost for an IFM Commitment Period shall be zero if the Bid Cost Recovery Eligible Resource is manually pre-dispatched under a Legacy RMR Contract prior to the Day-Ahead Market or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule in the Day-Ahead Market anywhere within the applicable IFM Commitment Period.
- (c) The IFM Start-Up Cost for an IFM Commitment Period shall be zero if there is no actual Start-Up at the start of the applicable IFM Commitment Period because the IFM Commitment Period is the continuation of an IFM Commitment Period, RUC Commitment Period, or RTM Commitment Period from the previous Trading Day.
- (d) If an IFM Start-Up is terminated in the Real-Time within the applicable IFM Commitment



Period through an Exceptional Dispatch Shut-Down Instruction issued while the Bid Cost Recovery Eligible Resource was starting up, the IFM Start-Up Cost for that IFM Commitment Period shall be prorated by the ratio of the Start-Up Time before termination over the total IFM Start-Up Time.

- (e) The IFM Start-Up Cost is qualified if an actual Start-Up occurs within the applicable IFM Commitment Period. An actual Start-Up is detected when the relevant metered Energy in the applicable Settlement Intervals 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 Intervals that fall within the CAISO IFM Commitment Period. The CAISO will determine whether the resource is On for this purpose based on whether the resource's metered Energy is at or above the resource's Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3.
- (f) The IFM Start-Up Cost will be qualified if an actual Start-Up occurs earlier than the start of the IFM Commitment Period if the advance Start-Up is a result of a Start-Up instruction issued in a RUC or Real-Time Market process subsequent to the IFM, or the advance Start-Up is uninstructed but is still within the same Trading Day and the Bid Cost Recovery Eligible Resource actually stays on until the targeted IFM Start-Up.
- (g) The Start-Up Bid Costs for a Bid Cost Recovery Eligible Resource that is a Short Start Unit committed by the CAISO in the IFM and that further receives a Start-Up Instruction from the CAISO in the Real-Time Market to start within the same CAISO IFM Commitment Period, will be qualified for the CAISO IFM Commitment Period instead of being qualified for the CAISO RTM Commitment Period; and Start-Up Bid Costs for subsequent Start-Ups will be further qualified as specified in Section 11.8.4.1.1(h).

11.8.2.1.2 IFM Minimum Load Cost

The IFM Minimum Load Cost for the applicable Settlement Interval shall be the Minimum Load Bid Cost ~~submitted to the CAISO in the IFM, and as modified pursuant to Section 30.7.10.2, if applicable to the~~ IFM, divided by the number of Settlement Intervals in a Trading Hour subject to the rules described below.

- (a) For each Settlement Interval, only the IFM Minimum Load Cost in a CAISO IFM Commitment Period is eligible for Bid Cost Recovery.
- (b) The IFM Minimum Load Cost for any Settlement Interval is zero if: (1) the Settlement Interval is in an IFM Self Commitment Period for the Bid Cost Recovery Eligible Resource; or (2) the Bid Cost Recovery Eligible Resource is manually pre-dispatched under a Legacy RMR Contract prior to the Day-Ahead Market or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule for the applicable Settlement Interval.
- (c) If the CAISO commits a Bid Cost Recovery Eligible Resource in the Day-Ahead and the resource receives a Day-Ahead Schedule and the CAISO subsequently de-commits the resource in the Real-Time Market, the IFM Minimum Load Costs are subject to the Real-Time Performance Metric for each case specified in Section 11.8.4.4.
- (d) If a Multi-Stage Generating Resource is committed by the CAISO and receives a Day-Ahead Schedule and subsequently is committed by the CAISO to a lower MSG Configuration where its Minimum Load capacity as registered in the Master File in the Real-Time Market is lower than the CAISO IFM Commitment Period MSG Configuration's Minimum Load as registered in the Master File, the resource's IFM Minimum Load Costs are subject to the Real-Time Performance Metric for each case specified in Section 11.8.4.4. ↪
- (e) If the conditions in Sections 11.8.2.1.2 (c) and (d) do not apply, then the IFM Minimum Load Cost for any Settlement Interval is zero if the Bid Cost Recovery Eligible Resource is determined to be Off during the applicable Settlement Interval. For the purposes of determining IFM Minimum Load Cost, a Bid Cost Recovery Eligible Resource is assumed to be On if its metered Energy in a Settlement Interval is equal to or greater than the difference between its (i) Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3, and (ii) the Tolerance Band, and the Metered Energy is greater than zero (0) MWh. Otherwise, such resource is determined to be Off.
- (f) For Multi-Stage Generating Resources, the commitment period is determined based on



application of section 11.8.1.3. If application of section 11.8.1.3 dictates that the IFM is the eCommitment pPeriod, then the calculation of the IFM Minimum Load Costs will depend on whether the IFM CAISO Committed MSG Configuration is determined to be On. If it is determined to be On, then, the IFM Minimum Load Costs will be based on the Minimum Load Bid Costs of the IFM committed MSG Configuration. For the purposes of determining IFM Minimum Load Cost for a Multi-Stage Generating Resource, a Bid Cost Recovery Eligible Resource is determined to be On if its metered Energy in a Settlement Interval is equal to or greater than the difference between its IFM MSG Configuration Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3, and the Tolerance Band, and the Metered Energy is greater than zero (0) MWh. Otherwise, such resource is determined to be Off.

- (g) The IFM Minimum Load Costs calculation is subject to the Shut-Down State Variable and is disqualified as specified in Section 11.17.2.

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11.8.2.3.2 MSS Elected Net Settlement

For an MSS Operator that has elected net Settlement, regardless of other MSS optional elections (Load following or RUC opt-in or out), the Energy bBid eCosts and revenues for IFM Bid Cost Recovery is settled at the MSS level. The IFM Bid Cost as described in Section 11.8.2.1 above and IFM Market Revenue as provided in Section 11.8.2.2 above, of each MSS will be, respectively, the total of the IFM Bid Costs and IFM Market Revenues over all BCR Eligible Resources within the MSS where each BCR Eligible Resource's IFM Market Revenues for its Energy shall be calculated as described in Section 11.2.3.2 at the relevant IFM MSS price. The IFM Bid Cost Shortfalls and Surpluses for Energy and AS are first calculated separately for the MSS for each Trading Hour of the Trading Day with qualified Start-Up Bid Costs and qualified Minimum Load Bid Costs included in the IFM Bid Cost Shortfalls and Surpluses for Energy calculation. The MSS's overall IFM Bid Cost Shortfall or Surplus is then calculated as the algebraic sum of the IFM Bid Cost Shortfall or Surplus for Energy and the IFM Bid Cost Shortfall or



Surplus for AS for each Trading Hour.

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11.8.3.1 RUC Bid Cost Calculation

For each Settlement Interval, the CAISO shall determine the RUC Bid Cost for a Bid Cost Recovery Eligible Resource as the algebraic sum of the RUC Start-Up Cost, RUC Transition Cost, RUC Minimum Load Cost and RUC Availability Bid Cost. For Multi-Stage Generating Resources, in addition to the specific RUC Bid Cost rules described in Section 11.8.3.1, the rules described in Section 11.8.1.3 will be applied to further determine the applicable MSG Configuration-based CAISO Market Start-Up Bid Costs, Transition Bid Costs, and Minimum Load Bid Costs, ~~as modified pursuant to Section 30.7.10.2, if applicable, in any given Settlement Interval.~~ For Multi-Stage Generating Resources, the incremental RUC Start-Up Costs, RUC Minimum Load Costs, and RUC Transition Costs to provide RUC awarded capacity for an MSG Configuration other than the self-scheduled MSG Configuration are determined by the RUC optimization rules in specified in Section 31.5.

11.8.3.1.1 RUC Start-Up Cost

The RUC Start-Up Cost for any Settlement Interval in a RUC Commitment Period shall consist of Start-Up Bid Cost of the Bid Cost Recovery Eligible Resource ~~submitted to the CAISO~~ for the applicable RUC Commitment Period divided by the number of Settlement Intervals in the applicable RUC Commitment Period. For each Settlement Interval, only the RUC Start-Up Cost in a CAISO RUC Commitment Period is eligible for Bid Cost Recovery. The CAISO will determine the RUC Start-Up Cost for a Multi-Stage Generating Resource based on the MSG Configuration committed by the CAISO in the RUC.

The following rules shall be applied in sequence and shall qualify the RUC Start-Up Cost in a RUC Commitment Period:

- (a) The RUC Start-Up Cost for a RUC Commitment Period is zero if there is an IFM Commitment Period within that RUC Commitment Period.
- (b) The RUC Start-Up Cost for a RUC Commitment Period is zero if the Bid Cost Recovery Eligible Resource is manually pre-dispatched under an RMR Contract prior to the Day-Ahead Market or is flagged as an RMR Dispatch in the Day-Ahead Schedule anywhere



within that RUC Commitment Period.

- (c) The RUC Start-Up Cost for a RUC Commitment Period is zero if there is no RUC Start-Up at the start of that RUC Commitment Period because the RUC Commitment Period is the continuation of an IFM Commitment Period, RUC Commitment Period, or RTM Commitment Period from the previous Trading Day.
- (d) The RUC Start-Up Cost for a RUC Commitment Period is zero if the Start-Up is delayed beyond the RUC Commitment Period in question or cancelled by the Real-Time Market prior to the Bid Cost Recovery Eligible Resource starting its start-up process.
- (e) If a RUC-Start-Up in the RUC is terminated in the Real-Time within the applicable RUC Commitment Period through an Exceptional Dispatch Shut-Down Instruction issued while the Bid Cost Recovery Eligible Resource is starting up the, RUC Start-Up Cost is prorated by the ratio of the Start-Up Time before termination over the RUC Start-Up Time.
- (f) The RUC Start-Up Cost for a RUC Commitment Period is qualified if an actual Start-Up occurs within that RUC Commitment Period. An actual Start-Up is detected when the relevant metered Energy in the applicable Settlement Intervals indicates that the resource 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 Intervals that fall within the CAISO RUC Commitment Period. The CAISO will determine whether the resource is On for this purpose based on whether its metered Energy is at or above the resource's Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3.
- (g) The RUC Start-Up Cost shall be qualified if an actual Start-Up occurs. An actual Start-Up is detected when the relevant metered Energy in the applicable Settlement Intervals 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 Intervals that fall within the CAISO RUC Commitment Period.



11.8.3.1.2 RUC Minimum Load Cost

The RUC Minimum Load Cost for the applicable Settlement Interval shall be the Minimum Load Bid Cost of the Bid Cost Recovery Eligible Resource, ~~as adjusted pursuant to Section 30.7.10.2, if applicable,~~ divided by the number of Settlement Intervals in a Trading Hour. For each Settlement Interval, only the RUC Minimum Load Cost in a CAISO RUC Commitment Period is eligible for Bid Cost Recovery. The RUC Minimum Load Cost for any Settlement Interval is zero if: (1) the Bid Cost Recovery Eligible Resource is manually pre-dispatched under a Legacy RMR Contract or the resource is flagged as an RMR Dispatch in the Day-Ahead Schedule in that Settlement Interval; (2) the Bid Cost Recovery Eligible Resource is not committed or Dispatched in the Real-time Market in the applicable Settlement Interval; or (3) the applicable Settlement Interval is included in an IFM Commitment Period. For the purposes of determining RUC Minimum Load Cost for a Bid Cost Recovery Eligible Resource recovery of the RUC Minimum Load Costs is subject to 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. The RUC Minimum Load Cost calculation will be subject to the Shut-Down State Variable and disqualified as specified in Section 11.17.2.

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 Bid Cost, Transition Bid Cost, and Minimum Load Bid Cost, ~~as modified pursuant to Section 30.7.10.2, if applicable,~~ in a given Settlement Interval. For Multi-Stage Generating Resources, the incremental RTM Start-Up Cost, RTM Minimum Load Cost, ~~as~~



~~modified pursuant to Section 30.7.10.2, if applicable,~~ and ~~RTM~~ 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-RTM~~ Commitment Period, the ~~Real-Time Market-RTM~~ Start-Up Cost shall consist of the Start-Up ~~Bid~~ Cost of the Bid Cost Recovery Eligible Resource ~~submitted to the CAISO for applicable to~~ the Real-Time Market divided by the number of Settlement Intervals in the applicable ~~RTMReal-Time Market~~ Commitment Period. For each Settlement Interval, only the ~~Real-Time Market-RTM~~ Start-Up Cost in a CAISO ~~Real-Time Market-RTM~~ 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 ~~the~~ RTM. The following rules shall be applied in sequence and shall qualify the ~~Real-Time Market-RTM~~ Start-Up Cost in ~~an~~ ~~Real-Time Market-RTM~~ Commitment Period:

- (a) The ~~Real-Time Market-RTM~~ Start-Up Cost is zero if there is a ~~Real-Time Market-RTM~~ Self-Commitment Period within the ~~Real-Time Market-RTM~~ Commitment Period.
- (b) The ~~Real-Time Market-RTM~~ Start-Up Cost is zero if the Bid Cost Recovery Eligible Resource has been manually pre-dispatched under a Legacy RMR Contract or the resource is flagged as a Legacy RMR Dispatch in the Day-Ahead Schedule or Real-Time Market anywhere within that ~~Real-Time Market-RTM~~ 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 34.11.2 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-RTM~~ Start-Up Cost is zero if there is no ~~Real-Time Market-RTM~~ Start-Up at the start of that ~~Real-Time Market-RTM~~ Commitment Period because the ~~Real-Time Market-RTM~~ Commitment Period is the continuation of an IFM ~~Commitment Period~~ or RUC Commitment Period from the previous Trading Day.



- (e) If an Real-Time Market RTM Start-Up is terminated in the Real-Time within the applicable Real-Time Market RTM Commitment Period through an Exceptional Dispatch Shut-Down Instruction issued while the Bid Cost Recovery Eligible Resource is starting up, the Real-Time Market RTM 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 RTM Start-Up Cost shall be qualified if an actual Start-Up occurs within that Real-Time Market RTM 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 RTM Commitment Period. The CAISO will determine whether the resource is On for this purpose based on whether its metered Energy is at or above the resource's Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3. The CAISO will determine that the Multi-Stage Generating Resource is On based on the MSG Configuration that the CAISO has committed in the Real-Time Market.
- (g) The Real-Time Market RTM Start-Up Cost for an Real-Time Market RTM Commitment Period shall be qualified if an actual Start-Up occurs earlier than the start of the Real-Time RTM 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 RTM Start-Up, otherwise the Start-Up Bid Cost is zero for the Real-Time Market RTM Commitment Period.
- (h) For Short-Start Units, the first Start-Up Bid Costs within a CAISO IFM Commitment Period are qualified IFM Start-Up Costs as described above in Section 11.8.2.1.1(g). 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 Period within the CAISO IFM Commitment Period, the Start-Up Bid Costs shall be qualified as Real-Time RTM Start-Up eCosts, 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 Bid Cost of the Bid Cost Recovery Eligible Resource ~~submitted to the CAISO applicable~~ for the Real-Time Market, ~~as adjusted pursuant to Section 30.7.10.2, if applicable,~~ 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 a Legacy RMR Contract or the resource has been flagged as a Legacy 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 34.11.2 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 Cost Bids for Energy between the Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3, and zero (0) MWhs.

11.8.4.3.2 MSS Elected Net Settlement

For MSS entities that have elected net Settlement regardless of other MSS optional elections (i.e., Load following or not, or RUC opt-in or out), unlike non-MSS resources, the RUC Bid Cost Shortfall or RUC Bid



Cost Surplus and RTM Bid Cost Shortfall or RTM Bid Cost Surplus is treated at the MSS level and not at the resource specific level, and is calculated as the RUC Bid Cost Shortfall or RUC Bid Cost Surplus and RTM Bid Cost Shortfall or RTM Bid Cost Surplus of all BCR Eligible Resources within the MSS. In calculating the Energy RTM Market Revenue for all the resources within the MSS as provided in Section 11.8.4.2, the CAISO will use the FM-M_{MSS} Price or the RTD MSS Price, as applicable. The RUC Bid Cost Shortfall, RUC Bid Cost Surplus, and RTM Bid Cost Shortfall, and RTM Bid Cost Surplus for Energy, RUC Availability and Ancillary Services are first calculated separately for the MSS for each Settlement Interval of the Trading Day, with qualified Start-Up Bid Costs, qualified Minimum Load Bid Costs, and qualified Multi-Stage Generator Transition Bid Costs included into the RUC Bid Cost Shortfalls, RUC Bid Cost Surpluses, and RTM Bid Cost Shortfalls, and RTM Bid Cost Surpluses of Energy calculation. The MSS's overall RUC Bid Cost Shortfall or RUC Bid Cost Surplus, and RTM Bid Cost Shortfall or RTM Bid Cost Surplus is then calculated as the algebraic sum of the RUC Bid Cost Shortfall or RUC Bid Cost Surplus and RTM Bid Cost Shortfall or RTM Bid Cost Surplus for Energy and the RUC Bid Cost Shortfall or RUC Bid Cost Surplus and RTM Bid Cost Shortfall or Surplus AS for each Settlement Interval.

11.8.4.4.1 If the RTM Energy Bid Cost plus the RUC and RTM Minimum Load Costs and the RTM Market Revenues are greater than or equal to zero (0), the CAISO will apply the Real-Time Performance Metric to RTM Energy Bid Costs, RUC and RTM Minimum Load Costs, and not the RTM Market Revenues. In addition, for the cases described in Sections 11.8.2.1.2 (c) and (d), if the IFM Energy Bid Cost plus the IFM Minimum Load Cost and the IFM Market Revenues are greater than or equal to zero (0), the CAISO will apply the Real-Time Performance Metric instead of Day-Ahead Metered Energy Adjustment Factor to the IFM Minimum Load Costs and IFM Energy Bid Costs, and not the IFM Market Revenues.

11.8.4.4.2 If the RTM Energy Bid Costs plus the RUC Minimum Load Costs and RTM Minimum Load Costs are greater than or equal to zero (0) and the RTM Market Revenues are negative, the CAISO will apply the Real-Time Performance Metric to the RTM Energy Bid Costs, RUC Minimum Load Costs



and RTM Minimum Load Costs and the RTM Market Revenues. In addition, for the cases described in Sections 11.8.2.1.2 (c) and (d), if the IFM Energy Bid Costs plus the IFM Minimum Load Cost are greater than or equal to zero (0) and the IFM Market Revenues are negative the CAISO will apply the Real-Time Performance Metric instead of the Day-ahead Metered Energy Adjustment Factor to the IFM Minimum Load Costs and IFM Energy Bid Costs, and IFM Market Revenues.

11.8.4.4.3 If the RTM Energy Bid Costs plus the RUC Minimum Load Costs and RTM Minimum Load Costs are negative and the RTM Market Revenues are greater than or equal to zero (0), the CAISO will not apply Real-Time Performance Metric to the RTM Energy Bid Costs, RUC Minimum Load Costs and RTM Minimum Load Costs or the RTM Market Revenues. In addition, for the cases described in Sections 11.8.2.1.2 (c) and (d), if the sum of IFM Energy Bid Costs the IFM Minimum Load Costs is negative and IFM Market Revenue is greater than or equal to zero (0), the CAISO will not apply the Real-Time Performance Metric to the IFM Minimum Load Costs, IFM Energy Bid Costs or the IFM Market Revenues.

11.8.4.4.4 If the RTM Energy Bid Costs plus the RUC Minimum Load Costs and RTM Minimum Load Costs, and the RTM Market Revenues are negative, the CAISO will apply the Real-Time Performance Metric to the RTM Market Revenues but not the RTM Energy Bid Costs or the RUC Minimum Load Costs and RTM Minimum Load Costs. In addition, for the cases described in Sections 11.8.2.1.2 (c) and (d), if the IFM Energy Bid Costs plus the IFM Minimum Load Costs and the IFM Market Revenues are negative, the CAISO will apply the Real-Time Performance Metric instead of the Day-Ahead Metered Energy Adjustment Factor to the IFM Market Revenues but not the IFM Minimum Load Costs and IFM Energy Bid Costs.

11.8.4.4.5 If for a given Settlement Interval the absolute value of the resource's Metered Energy, less Regulation Energy and less Expected Energy, is less than or equal to the Performance Metric Tolerance Band, then the CAISO will not apply the Real-Time Performance Metric to the calculation of the RTM Energy Bid Cost, RUC Minimum Load Cost and RTM Minimum Load Cost, or RTM Market Revenue.



11.17.2 Shut-Down Adjustment

11.17.2.1 Disqualification Based on Advisory Schedules

From the Dispatch Interval in which the CAISO has determined that the Dispatch Operating Point minus the Shut-Down State Variable is less than or equal to the Minimum Load as registered in the Master File, or if applicable, as modified pursuant to Section 9.3.3, and until the Shut-Down State Variable is reset, the IFM Minimum Load Costs, RUC Minimum Load Costs, or RTM Minimum Load Costs, as applicable, will be disqualified from the Bid Cost Recovery calculation.

11.17.2.2 Disqualification Based on ADS Shut-Down Instruction

In the event that the CAISO issues a binding Shut-Down Instruction through ADS, a resource will not be eligible for recovery of RTM Minimum Load Costs or RUC Minimum Load Costs from the point of the Shut-Down Instruction forward for the duration of the resource's registered Minimum Down Time. If a resource ignores the binding Shut-Down Instruction and it has a Day-Ahead Schedule, the resource is not eligible for IFM Minimum Load Cost recovery as specified in Section 11.8.2.1.2 for the minimum of: 1) the resource's Minimum Down Time; and 2) the IFM Commitment Period.

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27.1.2.3.1 Regulation Down Pricing – Insufficient Supply

When the shortage of supply to meet the Regulation Down requirement in the Expanded System Region or in an Ancillary Service Sub-Region is less than or equal to thirty-two (32) MW, the Scarcity Reserve Demand Curve Value for Regulation Down shall be fifty (50) percent of the maximum Hard Energy Bid price permitted under Section 39.6.1.1Cap. When the shortage of supply to meet the Regulation Down requirement in the Expanded System Region is less than or equal to eighty-four (84) MW but greater than thirty-two (32) MW, the Scarcity Reserve Demand Curve Value for Regulation Down shall be sixty (60) percent of the maximum Hard Energy Bid price permitted under Section 39.6.1.1Cap. When the shortage of supply to meet the Regulation Down requirement in the Expanded System Region is greater than eighty-four (84) MW, the Scarcity Reserve Demand Curve Value for Regulation Down shall be seventy



(70) percent of the ~~maximum-Hard Energy Bid price permitted under Section 39.6.1.1Cap.~~

27.1.2.3.2 Non-Spinning Reserve Pricing – Insufficient Supply

When the shortage of supply to meet the Non-Spinning Reserve requirement in the Expanded System Region or in an Ancillary Service Sub-Region is less than or equal to seventy (70) MW, the Scarcity Reserve Demand Curve Value for Non-Spinning Reserve shall be fifty (50) percent of the ~~maximum-Hard Energy Bid price permitted under Section 39.6.1.1Cap.~~ When the shortage of supply to meet the Non-Spinning Reserve requirement in the Expanded System Region is less than or equal to two-hundred ten (210) MW but greater than seventy (70) MW, the Scarcity Reserve Demand Curve Value for Non-Spinning Reserve shall be sixty (60) percent of the ~~maximum-Hard Energy Bid price permitted under Section 39.6.1.1Cap.~~ When the shortage of supply to meet the Non-Spinning Reserve requirement in the Expanded System Region is greater than two-hundred ten (210) MW, the Scarcity Reserve Demand Curve Value for Non-Spinning Reserve shall be seventy (70) percent of the ~~maximum-Hard Energy Bid price permitted under Section 39.6.1.1Cap.~~

27.1.2.3.3 Spinning Reserve Pricing – Insufficient Supply

The Scarcity Reserve Demand Curve Value for Spinning Reserve in the Expanded System Region or in an Ancillary Service Sub-Region shall be ten (10) percent of the ~~maximum-Hard Energy Bid price permitted under Section 39.6.1.1Cap.~~

27.1.2.3.4 Regulation Up Pricing – Insufficient Supply

The Scarcity Reserve Demand Curve Value for Regulation Up in the Expanded System Region or in an Ancillary Service Sub-Region shall be twenty (20) percent of the ~~maximum-Hard Energy Bid price permitted under Section 39.6.1.1Cap.~~

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27.4.3.1 Scheduling Parameters for Transmission Constraint Relaxation

In the IFM, the enforced internal and Intertie Transmission Constraint scheduling parameter is set to ~~\$510,000~~ per MWh for the purpose of determining when the SCUC and SCED software in the IFM will relax an enforced Transmission Constraint rather than adjust Supply or Demand bids or Non-priced



Quantities as specified in Sections 31.3.1.3, 31.4 and 34.12 to relieve Congestion on the constrained facility. This scheduling parameter is set to \$4,5003,000 per MWh for the RTM. The effect of this scheduling parameter value is that if the optimization can re-dispatch resources to relieve Congestion on a Transmission Constraint at a cost of \$510,000 per MWh or less for the IFM (or \$4,5003,000 per MWh or less for the RTM), the Market Clearing software will utilize such re-dispatch, but if the cost exceeds \$510,000 per MWh in the IFM (or \$4,5003,000 per MWh for the RTM) the market software will relax the Transmission Constraint. The corresponding scheduling parameter in RUC is set to \$4,2502,500 per MWh.

27.4.3.2 Pricing Parameters for Transmission Constraint Relaxation

For the purpose of determining how the relaxation of a Transmission Constraint will affect the determination of prices in the IFM and RTM, the pricing parameter of the Transmission Constraint being relaxed is set to the maximum-Hard Energy Bid price specified in Section 39.6.1.1-Cap. In the case of Contingency-related Transmission Constraints, the CAISO will determine the amount of relaxation required to clear the market using the most limiting condition among the applicable Contingencies and the base case. The CAISO will establish prices based on the parameter pricing specified in this Section as it applies to the most limiting Contingency and base case. The corresponding pricing parameter used in the RUC is set at the maximum RUC Availability Bid price specified in Section 39.6.1.2.

27.4.3.3 Insufficient Supply to Meet Self-Scheduled Demand in IFM

In the IFM, when available supply is insufficient to meet all self-scheduled Demand, self-scheduled Demand is reduced to the point where the available supply is sufficient to clear the market. For price-setting purposes in such cases, the cleared self-scheduled Demand is deemed to be willing to pay the maximum-Hard Energy Bid price specified in Section 39.6.1.1-Cap.

27.4.3.4 Insufficient Supply to Meet CAISO Forecast of CAISO Demand in the RTM

In the RTM, in the event that Energy offers are insufficient to meet the CAISO Forecast of CAISO Demand, the SCUC and SCED software will relax the system energy-balance constraint. In such cases the software utilizes a pricing parameter set to the maximum-Hard Energy Bid price specified in Section 39.6.1.1-Cap for price-setting purposes.

27.4.3.6 Effectiveness Threshold

The CAISO Markets software includes a lower effectiveness threshold setting that governs whether the software will consider a bid “effective” for managing congestion on a congested Transmission Constraint, which in the case of Nomograms will be applied to the individual flowgates that make up the Nomogram, rather than to the final Nomogram itself. The CAISO will set this threshold at two (2) percent.

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27.7.1 Election of Constrained Output Generator Status

A Scheduling Coordinator on behalf of a Generating Unit eligible for Constrained Output Generator status must make an election to have the resource treated as a Constrained Output Generator before each calendar year by registering the resource’s PMin in the Master File as equal to its PMax less 0.01 MW (PMin = PMax – 0.01 MW) within the timing requirements specified for Master File changes described in the applicable Business Practice Manual. Generating Units with Constrained Output Generator status will be eligible to set LMPs in the IFM and RTM based on their Calculated Energy Bids.

As with all Generating Units that are not Use-Limited Resources, a Scheduling Coordinator on behalf of a Constrained Output Generator that is not a Use-Limited Resource must use the Proxy Cost methodology, as provided in Section 30.4, for determining its Default Start-Up CostBids and Default Minimum Load CostBids. A Scheduling Coordinator on behalf of a Constrained Output Generator that is a Use-Limited Resource must elect to use either the Proxy Cost methodology or the Registered Cost methodology, as provided in Section 30.4, for determining its Default Start-Up CostBids and Default Minimum Load CostBids. A Calculated Energy Bid of a Constrained Output Generator that is not a Use-Limited Resource will be calculated based on the Proxy Cost methodology. A Calculated Energy Bid of a Constrained Output Generator that is a Use-Limited Resource will be calculated based on its election of the Proxy Cost methodology or the Registered Cost methodology. Whenever a Scheduling Coordinator for a Constrained Output Generator submits an Energy Bid into the IFM or RTM, the CAISO will override that Bid and substitute the Calculated Energy Bid if the submitted Bid is different from the Calculated



Energy Bid.

27.7.3 Constrained Output Generators in the IFM

In the IFM, resources electing Constrained Output Generator status are modeled as though they are not constrained and can operate flexibly between zero (0) and their PMax. A Constrained Output Generator is eligible to set IFM LMPs based on its Calculated Energy Bid in any Settlement Period in which a portion of its output is needed as a flexible resource to serve Demand. A Constrained Output Generator is not eligible for recovery of Minimum Load Costs or BCR in the IFM due to the conversion of its Minimum Load Cost to an Energy Bid and its treatment by the IFM as a flexible resource. A Constrained Output Generator is eligible for Start-Up Bid Cost recovery based on its Commitment Period as determined in the IFM, RUC, STUC or RTUC.

27.7.5 Constrained Output Generators in the Real-Time Market

A Constrained Output Generator that can be started up and complete its Minimum Run Time within a five-hour period can be committed by the STUC. A Constrained Output Generator that can be started up within the applicable RTUC run as described in Section 34.3 can be committed by the RTUC. The RTD will dispatch a Constrained Output Generator up to its PMax or down to zero (0) to ensure a feasible Real-Time Dispatch. The Constrained Output Generator is eligible to set the RTM LMP in any Dispatch Interval in which a portion of its output is needed to serve Demand, not taking into consideration its Minimum Run Time constraint. For the purpose of making this determination and setting the RTM LMP, the CAISO treats a Constrained Output Generator as if it were flexible with an infinite Ramp Rate between zero (0) and its PMax, and uses the Constrained Output Generator's Calculated Energy Bid. In any Dispatch Interval where none of the output of a Constrained Output Generator is needed as a flexible resource to serve Demand, the CAISO shall not dispatch the unit. In circumstances in which the output of the Constrained Output Generator is not needed as a flexible resource to serve Demand, but the unit



nonetheless is online as a result of a previous commitment or Dispatch Instruction by the CAISO, the Constrained Output Generator is eligible for Minimum Load Bid Cost compensation.

29.30 Bid and Self-Schedule Submission for CAISO Markets.

- (a) **In General.** The provisions of Section 30 that are applicable to the Real-Time Market, as supplemented by Section 29.30, shall apply to EIM Market Participants.
- (b) **Start Up and Minimum Load.** For the Proxy Cost determination of Proxy Start-Up Costs and Proxy Minimum Load Costs, the CAISO will utilize the Market Services Charge and System Operations Charge reflected in the EIM Administrative Charge.

30.4 Default Start-Up Bids, Default Minimum Load Bids, and Default Transition Bids~~Proxy Cost and Registered Cost Methodologies~~

30.4.1 Generally

The CAISO will calculate Default Commitment Cost Bids using the Proxy Cost methodology for all resources, except for –

- (a) ~~Non-Resource-Specific Resources and Non-Generating Resources; or~~
- (b) ~~a resource that is qualified by the CAISO as a Use-Limited Resource and Scheduling Coordinators for Generating Units and Resource-Specific System Resources must use the Proxy Cost methodology for their Start-Up Costs and Minimum Load Costs, as well as for Transition Costs in the case of Multi-Stage Generating Resources unless the resource has fewer than twelve (12) consecutive months of fifteen-minute LMPs for Energy at the resource's PNode or Aggregated PNode, in which case and meets the resource's definition~~ Default Commitment Cost Bids will be determined as Registered Costs pursuant to Section 30.4.6 of a Use-Limited Resource.

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30.4.2 Transition of Use-Limited Resources to Proxy Costs

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Scheduling Coordinators on behalf of Use-Limited Resources with fewer than 12 months of data can elect to use the Registered Cost methodology and remain on that methodology for a two-month period once 12 months of pricing data is collected, while the Scheduling Coordinator and the CAISO are going through the process of determining what Opportunity Costs, if any, apply to the Use-Limited Resource. Once this process concludes, all such Use-Limited Resources must be subject to the Proxy Cost methodology.

For Use-Limited Resources eligible for the Registered Cost methodology, Scheduling Coordinators may elect on a thirty (30) day basis to use either the Proxy Cost methodology or the Registered Cost methodology for ~~specifying-calculating~~ their Default Start-Up CostBids and Default Minimum Load CostBids to be used for those resources in the CAISO Markets Processes, as well as for Default Transition CostBids in the case of Multi-Stage Generating Resources. The elections are independent as to Default Start-Up CostBids and Default Minimum Load CostBids; that is, a Scheduling Coordinator for such a Use-Limited Resource may elect to use either the Proxy Cost methodology or the Registered Cost methodology for Default Start-Up CostBids and may make a different election for Default Minimum Load CostBids. However, in the case of Multi-Stage Generating Resources, the Scheduling Coordinator must make the same election (Proxy Cost methodology or Registered Cost methodology) for Default Transition CostBids as it makes for Default Start-Up CostBids. If a Scheduling Coordinator has not made an election, the CAISO will assume the Proxy Cost methodology as the default.

30.4.3 Scheduling Coordinator Reference Level Change Requests

The CAISO will verify Reference Level Change Requests for changes to Default Start-Up Bids and Default Minimum Load Bids as described in Section 30.11.

30.4.4 Default Commitment Cost Bids

30.4.4.1 Using Proxy Cost Methodology

For resources under the Proxy Cost methodology, the CAISO will calculate a resource's Default Commitment Cost Bids as **the** applicable Proxy Cost multiplied by one hundred and twenty-five percent (125%).

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30.4.4.2 Use-Limited Resources

For ~~Use-Limited~~ Resources using the Proxy Cost methodology, the CAISO will calculate a resource's Default Commitment Cost Bids as the applicable Proxy Cost multiplied by one hundred and twenty-five percent (125%) plus the Opportunity Start-Up Cost or Opportunity Minimum Load Cost as applicable.

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30.4.4.3 Registered Costs

For ~~Use-Limited~~ Resources using the Registered Costs methodology, the CAISO will use the Registered Costs as registered in the Master File as the Default Commitment Cost Bids.

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30.4.4.4 Insufficient Information

In the event that the Scheduling Coordinator for a resource other than a Multi-Stage Generating Resource or for a Multi-Stage Generating Resource in its lowest ~~startable~~ configuration ~~in which case it can be started~~ does not provide sufficient data for the CAISO to determine the resource's ~~Start-Up or Minimum Load-Default Commitment Cost Bids~~ or one or more components of the resource's ~~Start-Up or Minimum Load-Default Commitment Cost Bids~~, the CAISO will assume that the resource's ~~Start-Up Costs or Minimum Load-Default Commitment Cost Bids~~, or the indeterminable component(s) of the resource's ~~Start-Up Costs or Minimum Load-Default Commitment Cost Bids~~, are zero. In the event that the Scheduling Coordinator for a Multi-Stage Generating Resource does not provide such data for an MSG Configuration beyond its lowest ~~startable~~ configuration ~~in which the resource can be started~~, Section 30.4.4.3 applies.

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30.4.4.5 Resources with Greenhouse Gas Compliance Obligations

For each resource registered with the California Air Resources Board as having a greenhouse gas compliance obligation, the information provided to the CAISO by the Scheduling Coordinator must be consistent with information submitted to the California Air Resources Board.

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30.4.4.6 Maximum Default Start-Up and Minimum Load Costs Bid

In no case shall the Default Minimum Load Bid exceed the Minimum Load Cost Hard Cap.

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30.4.4.4 Proxy Cost Methodology

The CAISO will calculate Proxy Costs as described in this Section 30.4.5.

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30.4.1.15.1 Natural Gas-Fired Resources

For each natural gas-fired resource, the ~~Proxy Cost methodology uses formulas for Start-Up Costs and Minimum Load~~ CAISO will calculate a resource's Proxy Costs based on the resource's actual unit-specific performance parameters. ~~The Start-Up Cost and Minimum Load Cost values utilized for each such resource in the CAISO Markets Processes will be either (a), if the Scheduling Coordinator does not submit a Start-Up or Minimum Load Cost Bid, or (b) and applicable gas prices as described~~ below.:

- (a) **Fuel Input.** ~~The CAISO will calculate Proxy Costs using F~~ formulaic natural gas cost values adjusted for fuel-cost variation, ~~based on a daily basis using the~~ natural gas price calculated pursuant to Section 39.7.1.1.1.3, ~~and consistent with the requirements specified below.~~

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(b) **Proxy Start-Up Cost.** Proxy Start-Up Costs will also include:

- (i) ~~the~~ cost of auxiliary power calculated using the unit-specific MWh quantity of auxiliary power used for Start-Up multiplied by a resource-specific electricity price;
- (ii) ~~a~~ greenhouse gas cost adder for each resource located in the CAISO Balancing Authority Area or an EIM Entity Balancing Authority Area in California, and registered with the California Air Resources Board as having a greenhouse gas compliance obligation, ~~which is calculated for each Start-Up as the product of the resource's fuel requirement per Start-Up, the greenhouse gas emissions rate authorized by the California Air Resources Board, and the applicable Greenhouse Gas Allowance Price; and~~
- (iii) ~~the~~ rates for the Market Services Charge and System Operations Charge multiplied by the shortest Start-Up Time listed for the resource in the Master File, multiplied by the PMin of the resource as registered in the Master File, multiplied by 0.5; (iv) a resource-specific adder, if applicable, for major maintenance expenses (\$ per Start-Up) determined by the

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CAISO ~~or Independent Entity selected by the CAISO to determine such major maintenance expenses; and~~

~~(v) for a Use-Limited Resource, Start-Up Opportunity Costs determined pursuant to Section 30.4.1.1.6, if any.~~

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(c) Proxy Cost Minimum Load Costs. ~~Proxy Cost Minimum Load Costs will also~~ include:

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(i) ~~operation and maintenance costs as provided in Section 39.7.1.1.2;~~ (ii) a greenhouse gas cost adder for each resource located in the CAISO Balancing Authority Area or an EIM Entity Balancing Authority Area in California, and registered with the California Air Resources Board as having a greenhouse gas compliance obligation, which is calculated for each run-hour as the product of the resource's fuel requirement at Minimum Load as registered in the Master File, the greenhouse gas emissions rate authorized by the California Air Resources Board, and the applicable Greenhouse Gas Allowance Price;

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(iii) ~~the rates for the Market Services Charge and System Operations Charge multiplied by the PMin of the resource as registered in the Master File;~~

(iv) ~~the Bid Segment Fee; and~~

(v) ~~a resource-specific adder, if applicable, for major maintenance expenses (\$ per operating hour) determined pursuant to Section 30.4.51.1.4; and (vi) for a Use-Limited Resource, Minimum Load Opportunity Costs determined pursuant to Section 30.4.1.1.6, if any.~~

(d) Proxy Transition Costs. ~~For each Multi-Stage Generating Resource under the Proxy Cost methodology, the CAISO will calculate the Proxy Transition Costs utilized for each feasible transition from a given MSG Configuration to a higher MSG Configuration based on the difference between the Proxy Start-Up Costs for the higher MSG Configuration, and minus the Proxy Start-Up Costs for the lower MSG Configuration, as those costs are determined in accordance with the Proxy Start-Up Cost calculation methodology set forth~~

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in Section 30.4.1.1. If the result of this calculation is negative for any transition between two MSG Configurations, then the associated Proxy Transition Cost shall be zero.

(e) **Major Maintenance Adders.** Proxy Costs will include any major maintenance adders determined pursuant to Section 30.4.5.4.(b) — Start-Up or Minimum Load Cost Bids specified by Scheduling Coordinators pursuant to Sections 30.7.9 and 30.7.10, subject to the provisions applicable to Multi-Stage Generating Resources set forth in Section 30.4.1.1.3.

30.4.1.15.2 Non-Natural Gas-Fired Resources

For each non-natural gas-fired resource, the CAISO shall calculate the Proxy Start-Up Cost and Proxy Minimum Load Cost values under the Proxy Cost methodology shall be based on either (a) if the Scheduling Coordinator does not submit a Start-Up or Minimum Load Cost Bid, or (b) as specified below.:

(a) **Fuel Input.** The Scheduling Coordinator for the resource will provide the fuel or fuel equivalent input costs, which the CAISO will maintain in the Master File, pursuant to Section 39.7.1.1.1.2.

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(b) Proxy Start-Up Costs.

For Proxy Start-Up Costs, the CAISO will also include, if applicable:

- (i) greenhouse gas allowance costs for each resource located in the CAISO Balancing Authority Area or an EIM Entity Balancing Authority Area in California, and registered with the California Air Resources Board as having a greenhouse gas compliance obligation, as provided to the CAISO by the Scheduling Coordinator;
- (ii) the rates for the Market Services Charge and System Operations Charge multiplied by the shortest Start-Up Time listed for the resource in the Master File, multiplied by the PMin of the resource as registered in the Master File, multiplied by 0.5; and
- (iii) a resource-specific adder, if applicable, for major maintenance expenses (\$ per Start-Up) determined by the CAISO or Independent Entity selected by the CAISO to determine such major maintenance expenses; and (iv) for a Use-Limited

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~~Resource, Start-Up Opportunity Costs determined pursuant to Section 30.4.1.1.6, if any.~~

(c) Proxy Minimum Load Costs. For ~~Proxy~~ Minimum Load Costs, the CAISO will also include, if applicable:

- (i) ~~___~~ operation and maintenance costs as provided in Section 39.7.1.1.2;
- (ii) ~~___~~ greenhouse gas allowance costs for each resource registered located in the CAISO Balancing Authority Area or an EIM Entity Balancing Authority Area in California, and with the California Air Resources Board as having a greenhouse gas compliance obligation, as provided to the CAISO by the Scheduling Coordinator;
- (iii) ~~___~~ the rates for the Market Services Charge and System Operations Charge multiplied by the PMin of the resource as registered in the Master File;
- (iv) ~~___~~ the Bid Segment Fee; and
- (v) ~~___~~ a resource-specific adder, if applicable, for major maintenance expenses (\$ per operating hour) determined by the CAISO ~~or an Independent Entity selected by the CAISO;~~ and (vi) for a Use-Limited Resource, Minimum Load Opportunity Costs determined pursuant to Section 30.4.1.1.6, if any.

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(d) Proxy Transition Costs. For each Multi-Stage Generating Resource under the Proxy Cost methodology, the CAISO will calculate the Proxy Transition Costs utilized for each feasible transition from a given MSG Configuration to a higher MSG Configuration based on the difference between the Proxy Start-Up Costs for the higher MSG Configuration, and minus the Proxy Start-Up Costs for the lower MSG Configuration, as those costs are determined in accordance with the Proxy Start-Up Cost calculation methodology set forth in Section 30.4.1.1. If the result of this calculation is negative for any transition between two MSG Configurations, then the associated Proxy Transition Cost shall be zero.

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(e) Major Maintenance Adders. Proxy Costs will include any major maintenance adders determined pursuant to Section 30.4.5.4.

~~For each resource registered with the California Air Resources Board as having a~~



greenhouse-gas-compliance obligation, the information provided to the CAISO by the Scheduling Coordinator must be consistent with information submitted to the California Air Resources Board. Adders for major maintenance expenses will be determined pursuant to Section 30.4.1.1.4, if any.

(b) — Bids specified by Scheduling Coordinators pursuant to Sections 30.7.9 and 30.7.10, subject to the provisions applicable to Multi-Stage Generating Resources set forth in Section 30.4.1.1.3.

In the event that the Scheduling Coordinator for a resource other than a Multi-Stage Generating Resource or for a Multi-Stage Generating Resource in its lowest startable configuration does not provide sufficient data for the CAISO to determine the resource's Start-Up or Minimum Load Costs or one or more components of the resource Start-Up or Minimum Load Costs, the CAISO will assume that resource's Start-Up or Minimum Load Costs, or the indeterminable component(s) of the resource's Start-Up Costs or Minimum Load Costs, are zero. In the event that the Scheduling Coordinator for a Multi-Stage Generating Resource does not provide such data for an MSG Configuration beyond its lowest startable configuration, Section 30.4.1.1.3 applies.

30.4.1.15.3 Multi-Stage Generating Resources

30.4.5.3.1 Application of Proxy Costs

For Multi-Stage Generating Resource under T, the Proxy Cost methodology, the CAISO for calculating Start-Up Costs and Minimum Load Costs will apply the Proxy Cost methodology to all the MSG Configurations, for a Multi-Stage Generating Resource that is not a Use-Limited Resource and for a Multi-Stage Generating Resource that is a Use-Limited Resource and elects to use the Proxy Cost methodology. The Proxy Costs (Start-Up Cost, Transition Cost, and Minimum Load Cost) for Multi-Stage Generating Resources will be calculated for each specific MSG Configuration, including for each MSG Configuration that cannot be directly started.

30.4.5.3.2 Insufficient Information

Notwithstanding the rules set forth in Sections 30.4.1.15.1(b) and 30.4.1.15.2(b), to the extent that a Scheduling Coordinator for a Multi-Stage Generating Resource, other than in its lowest startable configuration in which the Multi-Stage Generating Resource can be started, does not provide sufficient

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data for the CAISO to determine a component of the Proxy Start-Up Costs or Proxy Minimum Load Costs for a particular MSG Configuration, the CAISO will, if feasible, use the value for that component associated with the next-lowest MSG Configuration.

30.4.1-15.4 Adders for Major Maintenance Expenses

30.4.5.4.1 Generally

Scheduling Coordinators may propose adders for major maintenance expenses as a component of Proxy Start-Up Costs, Proxy Minimum Load Costs, or both. Such proposed adders must be based solely on resource-specific information derived from actual maintenance costs, when available, or estimated maintenance costs provided by the Scheduling Coordinators to the CAISO ~~and the Independent Entity~~.

30.4.5.4.2 CAISO Process

Scheduling Coordinators may submit updated resource-specific major maintenance information for purposes of seeking a change to any major maintenance adder, no sooner than thirty (30) days after a major maintenance adder has been determined. The CAISO ~~or Independent Entity~~ will evaluate the information provided by Scheduling Coordinators, and may require Scheduling Coordinators to provide additional information, to enable the CAISO ~~or Independent Entity~~ to determine reasonable adders for major maintenance expenses or to conduct audits of major maintenance expenses. Within fifteen (15) days of receipt of the information or any requested additional information, the CAISO ~~or Independent Entity~~ will notify the Scheduling Coordinator in writing whether it has sufficient and accurate information to determine reasonable major maintenance adders to be included in Proxy Start-Up Cost or Proxy Minimum Load Cost calculations, or both. Within ten (10) days after providing written notification to the Scheduling Coordinator that the information is sufficient and accurate, the CAISO ~~or Independent Entity~~ will determine the reasonable adder for major maintenance expenses to be included in Proxy Start-Up Costs or Proxy Minimum Load Costs, or both, and will so inform the Scheduling Coordinator in writing. In the event of a dispute regarding the sufficiency or accuracy of the information provided by the Scheduling Coordinator, the CAISO ~~or Independent Entity~~ and the Scheduling Coordinator will enter a period of good faith negotiations that terminates sixty (60) days after the date the dispute began. If the CAISO ~~or Independent Entity~~ and the Scheduling Coordinator resolve the dispute during the 60-day negotiation period, within ten (10) days of such agreement, the CAISO ~~or Independent Entity~~ will

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determine the reasonable adder for major maintenance expenses and will provide the adder to the Scheduling Coordinator in writing. If the CAISO-~~or Independent Entity~~ and the Scheduling Coordinator fail to agree upon the sufficiency or accuracy of the information during the 60-day negotiation period, the Scheduling Coordinator has the right to petition FERC to resolve the dispute as to the sufficiency or accuracy of its information.

In the event of a dispute regarding the CAISO's-~~or Independent Entity's~~ determination of adders for major maintenance expenses, the CAISO-~~or Independent Entity~~ and the Scheduling Coordinator will enter a period of good faith negotiations that terminates sixty (60) days after the date the dispute began. If the CAISO-~~or Independent Entity~~ and the Scheduling Coordinator resolve the dispute during the 60-day negotiation period, the agreed-upon values will be effective as of the first Business Day following the resolution date.

30.4.5.4.3 FERC Process

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If the CAISO-~~or Independent Entity~~ and the Scheduling Coordinator fail to agree on the major maintenance values for either Proxy Start-Up Costs or Proxy Minimum Load Costs following the 60-day negotiation period, the Scheduling Coordinator has the right to file proposed values and supporting information for major maintenance adders for Proxy Start-Up Costs or Proxy Minimum Load Costs with FERC pursuant to Section 205 of the Federal Power Act.

30.4.5.4.4 Interim Adders Pending Dispute Resolution

In the event of a dispute regarding the reasonableness of the adder for major maintenance expenses determined by the CAISO-~~or Independent Entity~~, but not a dispute regarding the sufficiency or accuracy of the information provided by the Scheduling Coordinator, the CAISO-~~or Independent Entity~~ will determine a reasonable interim adder for major maintenance expenses until the adder for major maintenance expenses is determined by agreement between the CAISO-~~or Independent Entity~~ and the Scheduling Coordinator or by FERC. Any subsequent agreement or FERC order determining the adder for major maintenance expenses will be reflected in an adjustment to the interim adder for major maintenance expenses in the next applicable Settlement Statement.

30.4.1.1.5 Proxy Transition Cost

~~For each Multi-Stage Generating Resource under the Proxy Cost methodology, the CAISO will calculate~~



~~the Transition Costs utilized for each feasible transition from a given MSG Configuration to a higher MSG Configuration based on the difference between the Start-Up Costs for the higher MSG Configuration, minus the Start-Up Costs for the lower MSG Configuration, as determined in accordance with the Start-Up Cost calculation methodology set forth in Section 30.4.1.1. If the result of this calculation is negative for any transition between two MSG Configurations, then the associated Transition Cost shall be zero. The Transition Costs calculated by the CAISO will be utilized in the CAISO Markets Processes unless the Scheduling Coordinator submits Transition Costs for the Multi-Stage Generating Resource in the form of daily Bids that are not negative and are less than or equal to the sum of (i) one hundred twenty-five (125) percent of the Transition Costs other than the portion of the Transition Costs that consist of Start-Up Opportunity Costs determined by the CAISO, if any; and (ii) one hundred (100) percent of the portion of the Transition Costs that consist of Start-Up Opportunity Costs determined by the CAISO, in which case the Transition Costs submitted in the form of daily Bids will be utilized in the CAISO Markets Processes.~~

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30.4.1.1.6 Use-Limited Resources

30.4.1.1.6.1 Registration and Validation Process

A Scheduling Coordinator seeking to obtain Use-Limited Resource status for resource(s) will follow the registration and validation process set forth in this CAISO Tariff and the Business Practice Manual. The registration and validation process requires each Scheduling Coordinator to demonstrate on an annual basis that the resource has one or more limits that meet the Use-Limited Resource criteria as set forth in Section 30.4.1.1.6.1.1 and the Business Practice Manual, and allows each Scheduling Coordinator to seek to recover Opportunity Costs for Use-Limited Resources by making the demonstration set forth in Section 30.4.1.1.6.1.2.

30.4.1.1.6.1.1 Use-Limited Resource Criteria

In order for a resource to be considered a Use-Limited Resource, a Scheduling Coordinator must provide sufficient documentation demonstrating that the resource has one or more limit that meet all three of the following criteria:

- (1) The resource has one or more limitations affecting its number of starts, its number of run-hours, or its Energy output due to (a) design considerations, (b) environmental restrictions, or (c) qualifying contractual limitations;
- (2) The CAISO Market Process used to dispatch the resource cannot recognize the resource's limitation(s); and
- (3) The resource's ability to select hours of operation is not dependent on an energy source outside of the resource's control being available during such hours but the resource's usage needs to be rationed.

Design considerations that satisfy the requirements of this Section are those resulting from physical equipment limitations. A non-exhaustive list of such physical equipment limitations includes restrictions documented in original equipment manufacturer recommendations or bulletins, or limiting equipment such as storage capability for hydroelectric generating resources. Other design considerations that satisfy the requirements of this Section are those resulting from performance criteria for Demand Response Resources established pursuant to programs or contracts approved by Local Regulatory Authorities. Environmental restrictions that satisfy the requirements of this Section are those imposed by regulatory bodies, legislation, or courts. A non-exhaustive list of such environmental restrictions includes limits on emissions, water use restrictions, run-hour limitations in operating permits or other environmental limits that directly or indirectly limit starts, run hours, or MWh limits, but excludes restrictions with soft caps that allow the resource to increase production above the soft caps through the purchase of additional compliance instruments. Qualifying contractual limitations that satisfy the requirements of this Section are those contained in long-term contracts that: (i) were reviewed and approved by a Local Regulatory Authority on or before January 1, 2015, or were pending approval by a Local Regulatory Authority on or before January 1, 2015 and were later approved; and (ii) were evaluated by the Local Regulatory Authority for the overall cost-benefit of those contracts taking into consideration the overall benefits and burdens, including the limitations on such resources' numbers of starts, numbers of run-hours, or Energy output. Contracts limits that provide for higher payments when start-up, run-hour, or Energy output thresholds are exceeded are not qualifying contractual limitations. Effective April 1, 2022, no contractual



limitations will constitute qualifying contractual limitations that satisfy the requirements of this Section.

Pursuant to a process set forth in the Business Practice Manual, the CAISO will review the limits and the supporting documentation provided by the Scheduling Coordinator as well as any translation of indirect limits to determine whether the Scheduling Coordinator has made the required showing under this Section. Any dispute regarding the CAISO's determination will be subject to the generally applicable CAISO ADR Procedures set forth in Section 13, which apply except where a CAISO Tariff provision expressly provides for a different means of resolving disputes.

The following types of resources are not eligible to register as Use-Limited Resources: Reliability Demand Response Resources, Regulatory Must-Take Generation, where 100% of the capacity is regulatory must-take, Combined Heat and Power Resources where 100% of the capacity is dedicated to a host industrial process, and Variable Energy Resources.

30.4.1.1.6.1.2 Establishing Opportunity Cost Adders

A Scheduling Coordinator for a Use-Limited Resource that elects the Proxy Cost methodology may seek to establish Opportunity Cost adders for any limitation(s) that meet all three (3) of the following criteria:

- (1) Satisfy the requirements of Section 30.4.1.1.6.1.1;
- (2) Apply for period(s) longer than the time horizon considered in the applicable Day-Ahead Market process; and
- (3) Can be reflected in a monthly, annual, and/or rolling twelve (12) month period.

The CAISO will review the documentation provided by the Scheduling Coordinator and determine whether the CAISO can calculate an Opportunity Cost pursuant to the methodology set forth in Section 30.4.1.1.6.2 using the Opportunity Cost calculator, or whether the Opportunity Cost for the limitation must instead be established pursuant to the negotiation process set forth in Section 30.4.1.1.6.3. Resources with limits that can be modelled using the Opportunity Cost calculator, are not eligible for a negotiated Opportunity Cost. Any Opportunity Cost formula rate resulting from either through the calculated or negotiated process, will remain in place unless and until the formula rate is modified or terminated by the CAISO. Opportunity Costs determined pursuant to a formula rate will remain in place until updated pursuant to Section 30.4.1.1.6.2.1 or Section 30.4.1.1.6.3 to reflect any changes in input values to the formula rate. Any Opportunity Cost bid adder will not be available until the first day of the month following



the effective date of this tariff section.

A Scheduling Coordinator may submit documentation, either to establish a new limitation or to modify an existing limitation, in which case the Scheduling Coordinator can request reconsideration that may result in a new formula rate. In addition, Scheduling Coordinators must demonstrate on an annual basis that the resource has one or more limits that meet the Use-Limited Resource criteria as required pursuant to Section 30.4.1.1.6.1. In accordance with Section 39.7.1.3.2.2, the CAISO will make informational filings with FERC of any new, modified, or terminated Opportunity Cost formula rate developed pursuant to Section 30.4.1.1.6.2 or negotiated pursuant to Section 30.4.1.1.6.3.

A Use-Limited Resource to the extent it has a limitation that satisfies the requirements of Section 30.4.1.1.6.1 but applies for a period less than or equal to the time horizon considered in the Day-Ahead Market, is not eligible for an Opportunity Cost for any limitation.

30.4.1.1.6.2 Calculation of Opportunity Cost Adders

30.4.1.1.6.2.1 Calculation Schedule

The CAISO will calculate, and will update the most recent calculations of, Start-Up Opportunity Costs for each validated limitation on a Use-Limited Resource's number of starts, Minimum Load Opportunity Costs for each validated limitation on a Use-Limited Resource's number of run-hours, and Variable Energy Opportunity Costs for each validated limitation on a Use-Limited Resource's Energy output for which the Scheduling Coordinator has made the required showing under Section 30.4.1.1.6.1.2. Such calculations or updated calculations will actually be used to set the adder for each validated limitation that can be reflected in a monthly or a rolling twelve (12) month period and will be advisory for each validated limitation that can be reflected in an annual period. The CAISO plans to perform the calculations and updated calculations once a month. It is possible that circumstances may prevent the CAISO from performing the calculations on a monthly basis, in which case the CAISO will prioritize the workload based on Opportunity Costs most likely to need updating. The CAISO will provide the results of the calculations or updated calculations for a Use-Limited Resource to its Scheduling Coordinator.

In the event that the CAISO is unable to perform such calculations or updated calculations for all Use-Limited Resources, the CAISO will give priority to performing such calculations or updated calculations for those Use-Limited Resources that are currently on pace to reach their maximum allowed numbers of



starts, maximum allowed numbers of run-hours, or maximum allowed Energy output more quickly than the most recent calculations of Opportunity Costs indicated. To the extent that the CAISO is unable to perform such calculations or updated calculations for a Use-Limited Resource, the CAISO will utilize the most recently calculated or updated Opportunity Costs that have been set or are advisory for the Use-Limited Resource.

30.4.1.1.6.2.2 Methodology for Opportunity Cost Calculator

For the Opportunity Cost calculator developed by the CAISO, each calculation of Opportunity Costs will equal the estimated profits foregone if the Use-Limited Resource had one fewer unit of starts, run-hours, or Energy output, whichever is applicable, in the future time period of the validated limitation. With regard to each validated limitation of the Use-Limited Resource, the calculation will take into account a margin set forth in the Business Practice Manual. The calculation will also take into account the effect of any validated limitation on a Use-Limited Resource's number of starts, number of run-hours, or Energy output in the monthly and annual and/or rolling twelve month periods. For MSG Transitions, the Opportunity Cost for each transition will be derivative of the number of Start-Ups required for the MSG Resource to achieve a specific MSG Configuration.

The CAISO will calculate the estimated profits for each validated limitation over the future time period of the limitation based on the following estimated inputs: (a) the forecasted hourly average of fifteen-minute LMPs for Energy at the Use-Limited Resource's PNode or Aggregated PNode multiplied by (b) the optimal hourly dispatch of the Use-Limited Resource, minus (c) the estimated monthly Proxy Start-Up Cost of the Use-Limited Resource, minus (d) the estimated monthly Proxy Minimum Load Cost of the Use-Limited Resource, minus (e) the estimated monthly variable Energy cost of the Use-Limited Resource multiplied by the difference between (f) the optimal hourly commitment and dispatch of the Use-Limited Resource and (g) the PMin of the Use-Limited Resource, minus (h) the estimated monthly Transition Cost of the Use-Limited Resource.

The CAISO will calculate input (a) listed above by executing the following steps in the order shown below:

- (1) For each future hour, calculate an hourly implied heat rate at each applicable PNode or Aggregated PNode for a Use-Limited Resource based on the hourly average of the fifteen-minute Real-Time LMPs (reflecting the gas price index used in the Real-Time



Market calculated pursuant to Section 39.7.1.1.1.3) from the same hour of the previous year, the Greenhouse Gas Allowance Price, calculated pursuant to Section 39.7.1.1.1.4, from the same day of the previous year, and the gas price index of the applicable fuel region from the same day of the previous year.

(2) For each future month, calculate a monthly future implied heat rate based on the applicable wholesale future power price of the applicable power trading hub as published by Intercontinental Exchange, the most recent Greenhouse Gas Allowance Price calculated pursuant to Section 39.7.1.1.1.4, and the natural gas future commodity price of the applicable fuel region. The CAISO determines the natural gas futures commodity price by fuel region averaging available prices from the following vendors: Intercontinental Exchange, Natural Gas Intelligence, and SNL Energy/BTU's Daily Gas Wire.

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(3) For each future month, calculate a monthly historical implied heat rate based on the wholesale historic power price of the applicable power trading electric pricing hub as published by Intercontinental Exchange for the same month of the previous year, the average Greenhouse Gas Allowance Price calculated pursuant to Section 39.7.1.1.1.4 for the same month of the previous year, and the average natural gas commodity price, reflecting the gas price index used in the Real-Time Market calculated pursuant to Section 39.7.1.1.1.3, of the applicable fuel region for the same month of the previous year.

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(4) For each future month, calculate a monthly power price conversion factor as the ratio of the future implied heat rate calculated under (2) above and the historical implied heat rate calculated under (3) above.

(5) For each future hour, scale the hourly implied heat rate calculated under (1) above by the power price conversion factor calculated under (4) above.

(6) For each future hour, calculate the LMPs by applying the gas price index of the future month and the most recent Greenhouse Gas Allowance Price calculated pursuant to Section 39.7.1.1.1.4 to the scaled implied heat rates calculated under (5) above.

For a Use-Limited Resource that has twelve (12) or fewer months of LMP data at its PNode or Aggregated PNode, the CAISO will calculate input (a) listed above using LMP data from a comparable PNode or Aggregated PNode.

Additional detail regarding the calculation of Opportunity Costs is provided in Appendix N to the Business Practice Manual for Market Instruments. Any dispute regarding the calculation of Opportunity Costs will be subject to the CAISO ADR Procedures set forth in Section 13.

30.4.1.1.6.3 Negotiation of Opportunity Costs

If, after receipt of the documentation required pursuant to Section 30.4.1.1.6.1.2, the CAISO determines that it cannot rely on the Opportunity Cost calculator to calculate Opportunity Costs for an eligible limitation pursuant to Section 30.4.1.1.6.2, the CAISO will establish the Opportunity Costs for the limitation pursuant to this Section. Upon making this determination, the CAISO will notify the Scheduling Coordinator for the resource and request that the Scheduling Coordinator provide the CAISO with a proposed methodology for determining Start-Up Opportunity Costs, Minimum Load Opportunity Costs, and/or Variable Energy Opportunity Costs for the limitation along with documentation supporting the methodology, and a proposed schedule for the CAISO to update such Opportunity Cost(s) under the methodology. The CAISO will either approve the submitted Opportunity Cost methodology or enter into good-faith negotiations with the Scheduling Coordinator to establish an agreed-upon Opportunity Cost methodology and the schedule for updating the Opportunity Costs under the methodology.

If the CAISO and the Scheduling Coordinator enter into good-faith negotiations, the negotiation period will be a minimum of sixty (60) days following the provision of all required documentation by the Scheduling Coordinator. Following the 60-day period, the parties can agree to continue good-faith negotiations or the Scheduling Coordinator can exercise its right to file with FERC as described below. In the event that the CAISO and the Scheduling Coordinator are unable to agree upon negotiated Opportunity Costs before the negotiation period terminates, the CAISO may propose reasonable interim Opportunity Cost value(s) that will apply to the Use-Limited Resource until the CAISO and the Scheduling Coordinator agree upon negotiated Opportunity Costs. The Scheduling Coordinator may accept or reject the proposed interim Opportunity Cost value(s). If the Scheduling Coordinator rejects the proposed interim Opportunity Cost



value(s), the Use-Limited Resource will not receive Opportunity Costs unless and until the CAISO and the Scheduling Coordinator agree upon negotiated Opportunity Costs, or such costs are established by an order issued by FERC. In the event that the negotiation period terminates without the CAISO and the Scheduling Coordinator reaching agreement upon negotiated Opportunity Costs, and the Scheduling Coordinator declines to continue negotiations, the Scheduling Coordinator may file proposed Opportunity Costs and supporting documentation with FERC pursuant to Section 205 of the Federal Power Act. Any updates to the negotiated Opportunity Costs adds established pursuant to this Section will consist solely of updates to the Opportunity Cost values themselves, and shall not affect the methodology for establishing those values. Any change in methodology would require the Scheduling Coordinator to initiate a new request pursuant to Section 30.4.1-4-6.1.2.

30.4.7-4-2 Registered Cost Methodology

Under the Registered Cost methodology, the Scheduling Coordinator for a Use-Limited Resource that is eligible for Opportunity Costs and either (i) does not have at least twelve (12) consecutive months of fifteen-minute LMPs for Energy at the Use-Limited Resource's PNode or Aggregated PNode; or (ii) has at least twelve (12) consecutive months of such LMPs but has not yet reached the start of the second month after the end of the twelfth consecutive month of having such LMPs, may register values of its choosing for Default Start-Up CostBids and/or Default Minimum Load CostBids in the Master File subject to the maximum limit specified in Section 39.6.1.6. A Scheduling Coordinator for a Multi-Stage Generating Resource that is a Use-Limited Resource registering a Default Start-Up Cost-Bid must also register Default Transition CostBids for each feasible MSG Transition, subject to the maximum limit specified in Section 39.6.1.7. For a Use-Limited Resource to be eligible for the Registered Cost methodology there must be sufficient information in the Master File to calculate the value pursuant to the Proxy Cost methodology, which will be used to validate the specific value registered using the Registered Cost methodology. Any such values will be fixed for a minimum of 30 days in the Master File unless: (a) the resource's costs for any such value, as calculated pursuant to the Proxy Cost methodology, exceed the value registered using the Registered Cost methodology, in which case the Scheduling Coordinator may elect to switch to the Proxy Cost methodology for the balance of any 30-day period, except as set forth in Section 30.4.1-27(b); or (b) any cost registered in the Master File exceeds the maximum limit specified in



Section 39.6.1.6 or Section 39.6.1.7 after this minimum 30-day period, in which case the value will be lowered to the maximum limit specified in Section 39.6.1.6 or Section 39.6.1.7. If a Multi-Stage Generating Resource elects to use the Registered Cost methodology, that election will apply to all the MSG Configurations for that resource. The cap for the Registered Cost values for each MSG Configuration will be based on the Proxy Cost values calculated for each MSG Configuration, including for each MSG Configuration that cannot be directly started, which are also subject to the maximum limits specified in Sections 39.6.1.6 and 39.6.1.7.

30.5 Bidding Rules

30.5.1 General Bidding Rules

- (a) All Energy and Ancillary Services Bids of each Scheduling Coordinator submitted to the DAM for the following Trading Day shall be submitted at or prior to 10:00 a.m. on the day preceding the Trading Day, but no sooner than seven (7) days prior to the Trading Day. All Energy and Ancillary Services Bids of each Scheduling Coordinator submitted to the RTM for the following Trading Day shall be submitted starting from the time of publication, at 1:00 p.m. on the day preceding the Trading Day, of DAM results for the Trading Day, and ending seventy-five (75) minutes prior to each applicable Trading Hour in the RTM. Scheduling Coordinators may submit only one set of Bids to the RTM for a given Trading Hour, which the CAISO uses for all Real-Time Market processes. The CAISO will not accept any Energy or Ancillary Services Bids for the following Trading Day between 10:00 a.m. on the day preceding the Trading Day and the publication, at 1:00 p.m. on the day preceding the Trading Day, of DAM results for the Trading Day;
- (b) Bid prices submitted by a Scheduling Coordinator for Energy accepted and cleared in the IFM and scheduled in the Day-Ahead Schedule may be increased or decreased in the RTM. Bid prices for Energy submitted but not scheduled in the Day-Ahead Schedule may be increased or decreased in the RTM. Incremental Bid prices for Energy



associated with Day-Ahead AS or RUC Awards in Bids submitted to the RTM may be revised.

- (c) A Scheduling Coordinator may submit in the Real-Time Market new daily ~~Bids for Start-Up CostBids~~, Minimum Load ~~CostBids~~, and Transition ~~Costs-Bids~~ for resources and MSG Configurations for which the Scheduling Coordinator previously submitted such Bids in the Day-Ahead Market, except for: (1) Trading Hours in which a resource or MSG Configuration has received a Day-Ahead Schedule or has received a Start-Up Instruction in RUC; and (2) Trading Hours that span the Minimum Run Time of the resource or MSG Configuration after the CAISO has committed the resource or the Scheduling Coordinator has self-committed the resource in the RTM.
- (d) Scheduling Coordinators may revise ETC Self-Schedules for Supply in the RTM to the extent such a change is consistent with TRTC Instructions provided to the CAISO by the Participating TO in accordance with Section 16.
- (e) Scheduling Coordinators may revise TOR Self-Schedules for Supply only in the HASP to the extent such a change is consistent with TRTC Instructions provided to the CAISO by the Non-Participating TO in accordance with Section 17. Energy associated with awarded Ancillary Services capacity cannot be offered in the Real-Time Market separate and apart from the awarded Ancillary Services capacity.
- (ef) Scheduling Coordinators may submit Energy, AS and RUC Bids in the DAM that are different for each Trading Hour of the Trading Day.
- (eg) Bids for Energy or capacity that are submitted to one CAISO Market, but are not accepted in that market are no longer a binding commitment and Scheduling Coordinators may submit Bids in a subsequent CAISO Market at a different price.
- (eh) The CAISO shall be entitled to take all reasonable measures to verify that Scheduling Coordinators meet the technical and financial criteria set forth in Section 4.5.1 and the accuracy of information submitted to the CAISO pursuant to this Section 30, ~~and~~
- (fi) In order to retain the priorities specified in Section 31.4 and 34.12 for scheduled amounts in the Day-Ahead Schedule associated with ETC and TOR Self-Schedules or Self-



Schedules associated with Regulatory Must-Take Generation, a Scheduling Coordinator must submit to the Real-Time Market ETC or TOR Self-Schedules, or Self-Schedules associated with Regulatory Must-Take Generation, at or below the Day-Ahead Schedule quantities associated with the scheduled ETC, TOR or Regulatory Must-Take Generation Self-Schedules. If the Scheduling Coordinator fails to submit such Real-Time Market ETC, TOR or Regulatory Must-Take Generation Self-Schedules, the defined scheduling priorities of the ETC, TOR, or Regulatory Must-Take Generation Day-Ahead Schedule quantities may be subject to adjustment in the HASP and the Real-Time Market as further provided in Section 31.4 and 34.12 in order to meet operating conditions.

(i~~g~~) For Multi-Stage Generating Resources that receive a Day-Ahead Schedule, are awarded a RUC Schedule, or receive an Ancillary Services Award the Scheduling Coordinator must submit an Energy Bid in the Real-Time Market for the same Trading Hour(s). If the Scheduling Coordinator submits an Economic Bid for such Trading Hour(s), the Economic Bid must be for either: the same MSG Configuration scheduled or awarded in the Integrated Forward Market, or the MSG Configuration committed in RUC. If the Scheduling Coordinator submits a Self-Schedule in the Real-Time Market for such Trading Hour(s), then the Energy Self-Schedule may be submitted in any registered MSG Configuration, including the MSG Configuration awarded in the Day-Ahead Market, that can support the awarded Ancillary Services (as further required by Section 8).

(k) Scheduling Coordinators for Multi-Stage Generating Resources may submit into the Real-Time Market bids from up to six (6) MSG Configurations in addition to the MSG Configuration scheduled or awarded in the Integrated Forward Market and Residual Unit Commitment, provided that the MSG Transitions between the MSG Configurations bid into the Real-Time Market are feasible and the transition from the previous Trading Hour are also feasible.

(h~~i~~) For the Trading Hours that Multi-Stage Generating Resources do not have a CAISO Schedule or award from a prior CAISO Market run, the Scheduling Coordinator can submit up to six (6) MSG Configurations into the RTM.

- (im) A Scheduling Coordinator cannot submit a Bid to the CAISO Markets for a MSG Configuration into which the Multi-Stage Generating Resource cannot transition due to lack of Bids for the specific Multi-Stage Generating Resource in other MSG Configurations that are required for the requisite MSG Transition.
- (nj) In order for Multi-Stage Generating Resource to meet any Resource Adequacy must-offer obligations, the responsible Scheduling Coordinator must submit either an Economic Bid or Self-Schedule for at least one MSG Configuration into the Day-Ahead Market and Real-Time Market that is capable of fulfilling that Resource Adequacy obligation, as feasible. The Economic Bid shall cover the entire capacity range between the maximum bid-in Energy MW and the higher of Self-Scheduled Energy MW and the Multi-Stage Generating Resource plant-level PMin as registered in the Master File.
- (ok) For any given Trading Hour, a Scheduling Coordinator may submit Self-Schedules and/or Submissions to Self-Provide Ancillary Services in only one MSG Configuration for each Generating Unit.
- (pl) In any given Trading Hour in which a Scheduling Coordinator has submitted a Self-Schedule for a Multi-Stage Generating Resource, the Scheduling Coordinator may also submit Bids for other MSG Configurations provided that they concurrently submit Bids that enable the applicable CAISO Market to transition the Multi-Stage Generating Resource to other MSG Configurations.
- (mq) If in any given Trading Hour the Multi-Stage Generating Resource was awarded Regulation or Operating Reserves in the IFM, any Self-Schedules or Submissions to Self-Provide Ancillary Services the Scheduling Coordinator submits for that Multi-Stage Generating Resource in the RTM must be for the same MSG Configuration for which Regulation or Operating Reserve is Awarded in IFM for that Multi-Stage Generating Resource in that given Trading Hour.
- (rt) If a Multi-Stage Generating Resource has received a binding RUC Start-Up Instruction as provided in Section 31, any Self-Schedule or Submission to Self-Provide Ancillary



Services in the RTM must be in the same MSG Configuration committed in RUC.

- (es) If in any given Trading Hour the Multi-Stage Generating Resource is scheduled for Energy in the IFM, any Self-Schedules the Scheduling Coordinator submits for that Multi-Stage Generating Resource in the RTM must be for the same MSG Configuration for which Energy is scheduled in IFM for that Multi-Stage Generating Resource in that given Trading Hour.
- (tp) For a Multi-Stage Generating Resource, the Bid(s) submitted for the resource's configuration(s) shall collectively cover the entire capacity range between the maximum bid-in Energy MW and the higher of the Self-Scheduled Energy MW and the Multi-Stage Generating Resource plant-level PMin as registered in the Master File. This rule shall apply separately to the Day-Ahead Market and the Real-Time Market.
- (qu) A Scheduling Coordinator may submit a Self-Schedule Hourly Block for the RTM as an import to or an export from the CAISO Balancing Authority Area and may also submit Self-Scheduled Hourly Blocks for Ancillary Services imports. Such a Bid shall be for the same MWh quantity for each of the four fifteen (15)-minute intervals that make up the applicable Trading Hour.
- (rv) A Scheduling Coordinator may submit a Variable Energy Resource Self-Schedule for the RTM can be submitted from a Variable Energy Resource. A Scheduling Coordinator can use either the CAISO forecast for Expected Energy in the RTM or can provide its own forecast for Expected Energy pursuant to the requirements specified in Section 4.8.2. The Scheduling Coordinator must indicate in the Master File whether it is using its own forecast or the CAISO forecast for its resource in support of the Variable Energy Self-Schedule. The Scheduling Coordinator is not required to include the same MWh quantity for each of the four fifteen (15)-minute intervals that make up the applicable Trading Hour for the Variable Energy Resource Self-Schedule include. If an external Variable Energy Resource that is not using a forecast of its output provided by the CAISO submits a Variable Energy Resource Self-Schedule and the Expected Energy is not delivered in the FMM, the Scheduling Coordinator for the Variable Energy Resource will be subject to the



Decline Potential Charge as described in Section 11.31. Scheduling Coordinators for Dynamically Scheduled Variable Energy Resources that provide the CAISO with a two-hour rolling forecast with five-minute granularity can submit Variable Energy Resource Self-Schedules.

(sw) Scheduling Coordinators can submit Economic Hourly Block Bids to be considered in the HASP and to be accepted as binding Schedules with the same MWh award for each of the four FMM intervals. Scheduling Coordinator can also submit Economic Hourly Block Bids for Ancillary Services. As specified in Section 11, a cleared Economic Hourly Block Bid is not eligible for Bid Cost Recovery.

(tx) Scheduling Coordinators can submit Economic Hourly Block Bids with Intra-Hour Option. If accepted in the HASP, such a Bid creates a binding schedule with same MWh awards for each of the four FMM intervals. After that, the RTM can optimize such schedules for economic reasons once through an FMM during the Trading Hour. As specified in Section 11, a cleared Economic Hourly Block Bid with Intra-Hour Option is not eligible for Bid Cost Recovery.

(yu) A Scheduling Coordinator submitting Bids to the RTM is not required to submit a Self-Schedule Hourly Block, a Variable Energy Resource Self-Schedule, an Economic Hourly Block Bid, or an Economic Hourly Block Bid with Intra-Hour Option, and may instead choose to participate in the RTM through Economic Bids or Self-Schedules.

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30.5.2.4 Supply Bids for System Resources

In addition to the common elements listed in Section 30.5.2.1, Supply Bids for Resource-Specific System Resources shall also contain: the relevant Ramp Rate; Start-Up CostsBids; and Minimum Load CostsBids. Resource-Specific System Resources are subject to the Proxy Cost methodology or the Registered Cost methodology for Default Start-Up Costs-Bids and Default Minimum Load CostBids as provided in Section 30.4, and Transaction ID as created by the CAISO. Other System Resources are not



eligible to recover Start-Up Costs and Minimum Load Costs. Resource-Specific System Resources are eligible to participate in the Day-Ahead Market on an equivalent basis as Generating Units and are not obligated to participate in RUC or the RTM if the resource did not receive a Day-Ahead Schedule unless the resource is a Resource Adequacy Resource. If the Resource-Specific System Resource is a Resource Adequacy Resource, the Scheduling Coordinator for the resource is obligated to make it available to the CAISO Market as prescribed by Section 40.6. Dynamic Resource-Specific System Resources are also eligible to participate in RTM on an equivalent basis as Generating Units. The quantity (in MWh) of Energy categorized as Interruptible Imports (non-firm imports) can only be submitted through Self-Schedules in the Day-Ahead Market and cannot be incrementally increased in the RTM. Bids submitted to the Day-Ahead Market for ELS Resources will be applicable for two days after they have been submitted and cannot be changed the day after they have been submitted.

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30.6.2.1.2 Real-Time Dispatch Options

For purposes of bidding and scheduling in the Real-Time Market, each Scheduling Coordinator for a Demand Response Provider representing a Reliability Demand Response Resource shall select either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option prior to the start of the initial Reliability Demand Response Services Term applicable to the Reliability Demand Response Resource. The selection for each Reliability Demand Response Resource shall remain in effect until such time as the Scheduling Coordinator for the Reliability Demand Response Resource chooses to change its selection from the Marginal Real-Time Dispatch Option to the Discrete Real-Time Dispatch Option or vice versa, in which case the change in selection shall go into effect at the start of the next Reliability Demand Response Services Term applicable to the Reliability Demand Response Resource. A Reliability Demand Response Resource that is subject to either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option shall have Default Minimum Load CostBids of zero (0) dollars registered in the Master File.

30.6.2.1.2.1 Marginal Real-Time Dispatch Option

A Reliability Demand Response Resource that is subject to the Marginal Real-Time Dispatch Option:

- (a) May submit either a single-segment Bid or a multi-segment bid in the Real-Time Market that must be at least ninety-five (95) percent of the applicable Soft Energy Bid Cap. ~~maximum Bid price and can be no greater than one hundred (100) percent of the applicable maximum Bid price set forth in Section 39.6.1.1.~~
- (b) Shall be dispatched as a marginal resource if it is dispatched by the CAISO.

30.6.2.1.2.2 Discrete Real-Time Dispatch Option

A Reliability Demand Response Resource that is subject to the Discrete Real-Time Dispatch Option:

- (a) May submit only a single-segment Bid in the Real-Time Market that must be at least ninety-five (95) percent of the applicable Soft Energy Bid Cap. ~~maximum Bid price and can be no greater than one hundred (100) percent of the applicable maximum Bid price set forth in Section 39.6.1.1.~~
- (b) Shall be dispatched as a discrete (non-marginal) resource if it is dispatched by the CAISO.

30.7.3 DAM Validation**30.7.3.1 Validation Prior to Market Close and Master File Update**

The CAISO conducts Bid validation in three steps:

Step 1: The CAISO will validate all Bids after submission of the Bid for content validation which determines that the Bid adheres to the structural rules required of all Bids as further described in the Business Practices Manuals. If the Bid fails any of the content level rules the CAISO shall assign it a rejected status and the Scheduling Coordinator must correct and resubmit the Bid.

Step 2: After the Bids are successfully validated for content, but prior to the Market Close of the DAM, the Bids will continue through the second level of validation rules to verify that the Bid adheres to the



applicable CAISO Market rules and if applicable, limits based on Master File data. If the Bid fails any level two validation rules, the CAISO shall assign the Bid as invalid and the Scheduling Coordinator must either correct or resubmit the Bid.

Step 3: If the Bid successfully passes validation in Step 2, it will continue through the third level of validation where the Bid will be analyzed based on its contents to identify any missing Bid components that must be present for the Bid to be valid consistent with the market rules contained in Article III of this CAISO Tariff and as reflected in the Business Practice Manuals. At this stage the Bid will either be automatically modified for correctness and assigned a status of conditionally modified or modified, or if it can be accepted as is, the Bid will be assigned a status of conditionally valid, or valid. A Bid will be automatically modified and assigned a status of modified or conditionally modified Bid, whenever the CAISO inserts or modifies a Bid component. The CAISO will insert or modify a Bid component whenever (1) a Self-Schedule quantity is less than the lowest quantity specified as an Economic Bid for either an Energy Bid or Demand Bid, in which case the CAISO extends the Self-Schedule to cover the gap; (2) for non-Resource Adequacy Resources, the CAISO will either extend the Energy Bid Curve using Proxy Costs or use the Generated Bid to cover any capacity in a RUC Bid component, if necessary; and (3) for a Resource Adequacy Resource that is not a Use-Limited Resource, the CAISO will either extend the Energy Bid Curve using Proxy Costs or use the Generated Bid to cover any capacity in a RUC Bid component and, if necessary, up to the full registered Resource Adequacy Capacity. The CAISO will generate a Proxy Bid or extend an Energy Bid or Self-Schedule to cover any RUC Award or Day-Ahead Schedule in the absence of any Self-Schedule or Economic Bid components, or to fill in any gaps between any Self-Schedule Bid and any Economic Bid components to cover a RUC Award or Day-Ahead Schedule. To the extent that an Energy Bid to the HASP/RTM is not accompanied by an Ancillary Services Bid, the CAISO will insert a Spinning Reserve and Non-Spinning Reserve Ancillary Services Bid at \$ 0/MW for any certified Operating Reserve capacity. The CAISO will also generate a Self-Schedule Bid for any Generating Unit that has a Day-Ahead Schedule but has not submitted Bids in HASP/RTM, up to the quantity in the Day-Ahead Schedule. Throughout the Bid evaluation process, the Scheduling Coordinator shall have the ability to view the Bid and may choose to cancel the Bid, modify and re-submit the Bid, or leave the modified, conditionally modified or valid, conditionally valid Bid as is to be processed



in the designated CAISO Market. The CAISO will not insert or extend any Bid for a Resource Adequacy Resource that is a Use-Limited Resource.

30.7.3.4 Validation after Market Close

To the extent that a Scheduling Coordinator fails to enter a Bid for a resource that is required to submit a Bid in the full range of available capacity consistent with the bidding provisions of Section 30 or the Resource Adequacy provisions of Section 40, the CAISO will create a Bid for the Scheduling Coordinator, which is referred to as the Generated Bid. This does not apply to Load-following MSSs. The Generated Bid will be created only after the Market Close for the DAM and will be based on data registered in the Master File, and, if applicable, published natural gas pricing data and published pricing data for greenhouse gas allowances. The Generated Bid components will be calculated as set forth in Sections 30 and 40.6.8. The Scheduling Coordinator may view Generated Bids, but may not modify such Bids, except if unless the CAISO has approved a Reference Level Change Request for the resource's Default Energy Bid. The CAISO will provide notice to the Scheduling Coordinator of the use of a Generated Bid prior to Market Clearing of the IFM. In addition, validation of export priority pursuant to Sections 31.4 and 34.10.1 and Wheeling Through transactions pursuant to Section 30.5.4 occur after the Market Close for the DAM.

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30.7.8 Format and Validation of Start-Up and Shut-Down Times

For a Generating Unit or a Resource-Specific System Resource, the submitted Start-Up Time expressed in minutes (min) as a function of down time expressed in minutes (min) must be a staircase function with up to three (3) segments defined by a set of 1 to 4 down time and Start-Up Time pairs. The Start-Up Time is the time required to start the resource if it is offline longer than the corresponding down time. The CAISO shall model Start-Up Times for Multi-Stage Generating Resource at the MSG Configuration level and Transition Times are validated based on the Transition Matrix submitted as provided in Section 27.8. The last segment will represent the time to start the unit from a cold start and will extend to infinity. The submitted Start-Up Time function shall be validated as follows:



- (a) The first down time must be zero (0) min.
- (b) The down time entries must match exactly (in number, sequence, and value) the corresponding down time breakpoints of the maximum Start-Up Time function, as registered in the Master File for the relevant resource.
- (c) The Start-Up Time for each segment must not exceed the Start-Up Time of the corresponding segment of the maximum Start-Up Time function, as registered in the Master File for the relevant resource.
- (d) The Start-Up Time function must be strictly monotonically increasing, i.e., the Start-Up Time must increase as down time increases.

For Participating Load and for a Proxy Demand Resource or Reliability Demand Response Resource, a single Shut-Down time in minutes is the time required for the resource to Shut-Down after receiving a Dispatch Instruction. For Multi-Stage Generating Resources, the Scheduling Coordinator must provide Start-Up ~~CostBids~~ for each MSG Configuration into which the resource can be started.

30.7.9 Format and Validation of Start-Up ~~CostBids~~ and Shut-Down Costs

For a Generating Unit or a Resource-Specific System Resource, the submitted Start-Up ~~Cost-Bid~~ expressed in dollars (\$) as a function of down time expressed in minutes must be a staircase function with up to three (3) segments defined by a set of 1 to 4 down time and Start-Up ~~Cost-Bid~~ pairs. The Start-Up ~~Cost-Bid~~ is the cost incurred to start the resource if it is offline longer than the corresponding down time. The last segment of the Start-Up Bid will represent the cost to start the resource from cold Start-Up and will extend to infinity. The ~~CAISO will validate the~~ submitted Start-Up ~~Cost-Bid function shall be validated~~ as follows:

- (a) The first down time must be zero (0) ~~minutes~~.
- (b) The down time entries must match exactly (in number, sequence, and value) the corresponding down time breakpoints of the ~~Start-Up-Cost-function~~ Time information, as registered in the Master File ~~for the relevant resource as either the Proxy Cost or Registered Cost~~.
- (c) The Start-Up Cost for each segment must not be negative ~~and must be equal to the Start-Up Cost of the corresponding segment of the Start-Up Cost function, as registered~~



~~in the Master File for the relevant resource.~~

- ~~(d) The Start-Up Cost Curve must be strictly monotonically increasing non-negative staircase curves, up to three segments, which represent a function of Start-Up Cost versus down time.~~
- ~~(e) In addition, if the Proxy Cost methodology pursuant to Section 30.4 applies to the resource, the Scheduling Coordinator for that resource may submit a daily Start-Up Bid for which the included Start-Up Costs that must not be non-negative and but may be less than or equal to the resource's Default Start-Up Bid, sum of (i) one hundred twenty-five (125) percent of the Proxy Cost other than the portion of the Proxy Cost that consists of Start-Up Opportunity Costs, if any; and (ii) one hundred (100) percent of the portion of the Proxy Cost that consists of Start-Up Opportunity Costs; and if the resource is a Multi-Stage Generating Resource, the Scheduling Coordinator may submit a daily Bid for each MSG Configuration of the resource that must not be negative but may be less than or equal to the sum of (i) one hundred twenty-five (125) percent of the Start-Up Cost for the MSG Configuration other than the portion of the Start-Up Cost for the MSG Configuration that consists of Start-Up Opportunity Costs, if any; and (ii) one hundred (100) percent of the portion of the Start-Up Cost for the MSG Configuration that consists of Start-Up Opportunity Costs.~~
- ~~(f) For a resource that is eligible and has elected to use the Registered Cost methodology pursuant to Section 30.4, if a Start-Up Cost value is submitted in a Start-Up Bid, for the Start-Up Cost, it will be overwritten by the CAISO will override that submitted Start-Up Cost with the Registered Cost reflected in the Master File.~~
- ~~(g) If no value for Start-Up Cost is submitted in a Bid, the CAISO will insert the Master-File value, as either the Proxy Start-Up Cost or the Master File Registered Cost based on the methodology elected pursuant to Section 30.4.~~
- ~~(hd) The Start-Up Cost Curvefunction must be strictly monotonically increasing, i.e., the Start-Up Cost must increase as down time increases.~~

(i) The Start-Up ~~Cost Bid~~ for a Reliability Demand Response Resource shall be zero (0).

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(j) For Participating Loads and Proxy Demand Resources, a single Shut-Down Cost in dollars (\$) is the cost incurred to Shut-Down the resource after receiving a Dispatch Instruction. The submitted Shut-Down Cost must ~~not~~ be non-negative.

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(k) For Multi-Stage Generating Resources, for any MSG Configuration for which a Bid is submitted, the Scheduling Coordinator must provide the Start-Up Bid Costs for each MSG Configuration into which the resource can be started.

30.7.10 Format and Validation of Minimum Load ~~Costs~~Bids

30.7.10.1 In General

Scheduling Coordinators may submit a Minimum Load Bid ~~F~~ for a Generating Unit or a Resource-Specific System Resource, Participating Load, Reliability Demand Response Resource, Proxy Demand Resource, ~~the submitted Minimum Load Cost~~ expressed in dollars per hour (\$/hr) ~~is representing~~ the cost incurred for operating the unit at Minimum Load as registered in the Master File or as modified pursuant to Section 30.7.10.2. The CAISO will validate the Minimum Load Bids as follows:

(a) The submitted Minimum Load Cost must ~~not~~ be non-negative. ~~In addition, if~~ the Proxy Cost methodology pursuant to Section 30.4 applies to the resource, the Scheduling Coordinator for that resource may submit a daily Bid for the Minimum Load ~~Cost Bid~~ that must ~~not~~ be non-negative ~~but and~~ may be less than or equal to the ~~sum of (i) one hundred twenty-five (125) percent of the Proxy Cost value other than the portion of the Proxy Cost value that consists of Minimum Load Opportunity Costs, if any; and (ii) one hundred (100) percent of the portion of the Proxy Cost value that consists of Minimum Load Opportunity Costs~~ Default Minimum Load Bid.

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(b) For a resource that is eligible and has elected to use the Registered Cost methodology pursuant to Section 30.4, any submitted Minimum Load Cost must be equal to the Minimum Load Cost as registered in the Master File.

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30.7.10.3 Participating Loads

For Participating Loads, the submitted Minimum Load Cost (\$/hr) is the cost incurred while operating the resource at reduced consumption after receiving a Dispatch Instruction. The submitted Minimum Load Cost must not be negative.

30.7.11 Format and Validation of Transition Bids

The Scheduling Coordinator may submit Transition Bids for a Multi-Stage Generating Resource that must meet the following requirements:

- (a) The Transition Bids are not negative.
- (b) For resources under the Proxy Cost methodology, Transition Bids must be less than or equal to the Default Transition Bids calculated under the Proxy Cost methodology.
- (c) For resources under the Registered Costs methodology, Transitions Bids must equal the Default Transition Bids registered in the Master File.
- (d) If no Transition Cost is submitted in a Bid, the CAISO will insert the Proxy Transition Costs or the Master File Registered Cost based on the methodology elected pursuant to Section 30.4.

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30.7.12 Validation of Bids in Excess of Soft Energy Bid Cap or Hard Energy Bid Cap**30.7.12.1 Generally**

The validation rules in this Section apply to all Energy Bids and Minimum Load Bids submitted by Scheduling Coordinators. The provisions of this Section do not apply to Virtual Bids and Energy Bids submitted for Non-Resource-Specific System Resources.

30.7.12.2 Energy Bids that Exceed the Soft Energy Bid Cap

In addition to all other Bid validation rules that apply to Energy Bids, if a Scheduling Coordinator submits an Energy Bid price that exceeds the Soft Energy Bid Cap, the CAISO will modify the Energy Bid price for purposes of clearing the relevant CAISO Market Process to the higher of the Soft Energy Bid Cap or the resource's Default Energy Bid as modified pursuant to Section 30.11.

30.7.12.3 Energy Bids and Minimum Load Bids the Exceed the Hard Energy Bid Cap



All Energy Bid prices and Minimum Load Bid prices used in the CAISO Market Processes shall not exceed the Hard Energy Bid Cap or the Minimum Load Cost Hard Cap, respectively.

30.7.12.4 After-Market Cost Recovery

For any Energy Bid or Minimum Load Bid price submitted above the Energy Bid price or the Minimum Load Bid the CAISO uses in the CAISO Market Processes, the Scheduling Coordinator may be eligible for after-market cost recovery pursuant to Section 30.12.

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30.7.12.5 Virtual Bids and Non-Resources-Specific System Resources

The CAISO will reject Virtual Bid prices for Non-Resource-Specific System Resources that exceed the Hard Energy Bid Cap.

Commented [A5]: Will the CAISO be rejecting prices or bids? The latter, I presume.

* * * * *

30.11 Pre-CAISO Market Processes Adjustments to Reference Levels

The CAISO will adjust Reference Levels prior to executing the applicable CAISO Market Process as described in this Section 30.11. Filings to Recover Commitment-Related Fuel Costs

If a Scheduling Coordinator incurs but cannot recover through the Bid-Cost-Recovery process any actual marginal fuel procurement costs that exceed (i) the limit on Bids for Start-Up Costs set forth in Section 30.7.9, (ii) the limit on Bids for Minimum Load Costs set forth in Section 30.7.10, or (iii) the limit on Bids for Transition Costs set forth in Section 30.4.1.1.5, the Scheduling Coordinator for the resource may seek to recover those costs through a FERC filing made pursuant to Section 205 of the Federal Power Act. The Scheduling Coordinator must notify the CAISO within thirty (30) Business Days after the Operating Day on which the resource incurred the unrecovered costs, and must submit the filing to FERC within ninety (90) Business Days after that Trading Day. Within sixty (60) Business Days after the Trading Day for which the Scheduling Coordinator provides notice to the CAISO per this Section, the CAISO will provide the Scheduling Coordinator with a written explanation of any effect that events or circumstances in the CAISO Markets and fuel market conditions may have had on the resource's inability to recover the costs on the Trading Day.

Each filing the Scheduling Coordinator submits to FERC must include:

- (1) Data supporting the Scheduling Coordinator's claim to the unrecovered costs it seeks, including Invoices for the unrecovered costs;
- (2) A description of the resource's participation in any gas pooling arrangements;
- (3) An explanation of why recovery of the costs is justified; and
- (4) A copy of the written explanation from the CAISO to the Scheduling Coordinator described above in this Section.

To the extent that FERC authorizes the Scheduling Coordinator to recover any costs pursuant to the Scheduling Coordinator's filing, the CAISO will pay the Scheduling Coordinator any amounts the Commission deems recoverable and will allocate such amounts pursuant to Section 11.14.

30.11.1 Reasonable Thresholds

The CAISO will calculate Reasonableness Thresholds for the purpose of evaluating increases to Reference Levels pursuant to this Section 30.11.1.

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30.11.1.1 General Applicability

The CAISO will calculate the Reasonableness Thresholds for all resources except for Non-Resource-Specific System Resources. The CAISO will not calculate Reasonableness Thresholds for evaluating Hydro Default Energy Bids or for Virtual Bids. In no case will the Reasonableness Thresholds be lower than the resources' Default Commitment Cost Bids or Default Energy Bids that were established prior to the submission of the Reference Level Change Request. For resources for which the CAISO does not calculate Default Energy Bids, the CAISO will set the Reasonableness Threshold at the Soft Energy Bid Cap. Reasonableness Thresholds for Default Energy Bid or Default Minimum Load Bid adjustments cannot exceed the Hard Energy Bid Cap or Minimum Load Cost Hard Cap, respectively.

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30.11.1.2 Calculations

30.11.1.2.1 Natural Gas Resources

For a natural gas-fired resource, the CAISO will calculate the Reasonableness Threshold to equal the Proxy Cost based on Default Start-Up Bid, Proxy Cost-based Default Minimum Load Bid, or the Variable Cost-based Default Energy Bid calculated for the specific resource, where the natural gas commodity price component determined pursuant to Section 39.7.1.1.1.3 is multiplied by: (i) one hundred twenty-five percent (125%) for days without a published daily gas price index consistent with the rules in Section

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39.7.1.1.1.3, unless the CAISO has updated natural gas commodity price used to calculate the Reasonableness Threshold pursuant to Section 30.11.1.3, in which case the CAISO will one hundred ten percent (110%); or (ii) one hundred ten percent (110%) for all other days.

30.11.1.2.2 Non-Natural Gas-Fired Resources

For non-natural gas-fired resources, the CAISO will calculate the Reasonableness Threshold to equal the Proxy Cost-based Default Start-Up Bid, Proxy Cost-based Default Minimum Load Bid, or the Variable Cost-based Default Energy Bid, with the fuel or fuel-equivalent cost component of that calculation registered in the Master File being multiplied by one hundred ten percent (110%).

30.11.1.3 CAISO Updates for the Real-Time Market

After the deadline for submissions of manual Reference Level Change Requests specified in Section 30.11.4.2, the CAISO will review the same-day gas price information on trades occurring on the Intercontinental Exchange and will review the same-day gas price information submitted in the manual Reference Levels Change Requests applicable for each commodity gas region, to determine whether the same-day gas prices are greater than ten percent (10%) greater than relative to the gas price index the CAISO previously used to calculate the Reasonableness Thresholds. If the CAISO determines representative same-day gas prices are greater than ten percent (10%) greater than as compared to the index the CAISO previously used to calculate the Reasonableness Thresholds, the CAISO will use the higher of the volume-weighted average price of same-day gas trades occurring on the Intercontinental Exchange and the volume-weighted average of all relevant verified manual Reference Level Change Requests to update the Reasonableness Thresholds for all resources within the applicable fuel region(s). The CAISO will implement the changes to the Reasonableness Thresholds in the next available Real-Time Market interval as soon as practicable. Any updates the CAISO makes to Reasonableness Thresholds through this process will apply to the Real-Time Market throughout the remainder of the Trading Day.

30.11.1.4 CAISO Adjustments for Persistent Conditions

The CAISO may adjust the Reasonableness Thresholds for a specific resource in the event of a resource's actual fuel or fuel-equivalent costs, observed by the CAISO in the after-CAISO Market Processes review pursuant to Section 30.12 are systematically greater than the gas price indices or fuel-

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equivalent costs used by the CAISO in calculating the resource's corresponding Reference Levels.

30.11.2 Reference Level Change Requests

30.11.2.1 Applicability

A Scheduling Coordinator may submit a Reference Level Change Request for all resources, except for Non-Resource-Specific System Resources, for Default Start-Up Bids, Default Minimum Load Bids, Default Energy Bids, as applicable.

Commented [A6]: What do these words add?

30.11.2.2 Requirements

Scheduling Coordinators must calculate their Reference Level Change Requests amounts consistent with the methodology used to calculate the Proxy Cost based Default Start-Up Bid and Default Minimum Load Bid, and the Variable Cost based Default Energy Bid calculated. All Reference Level Change Requests must be based on the Scheduling Coordinator's reasonable expectation that its daily actual fuel cost or fuel-equivalent costs for a given Trading Day will exceed the costs used by the CAISO to calculate the resource's Reference Levels, and must reflect reasonable and prudent procurement practices. All Reference Level Change Requests must be calculated using actual or expected fuel or fuel equivalent costs supported by Documentation of Contemporaneously Available Information.

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30.11.2.3 Energy Bids above Soft Energy Bid Cap

A Scheduling Coordinator whose Default Energy Bid does not exceed the Soft Energy Bid Cap and intends to submit an Energy Bid that exceeds the Soft Energy Bid Cap must submit a Reference Level Change Request. The CAISO will further verify Energy Bids in excess of the Soft Energy Bid Cap pursuant to the applicable rules in Section 30.7.

30.11.3 Automated Reference Level Change Requests

30.11.3.1 Applicability

Scheduling Coordinators may submit automated Reference Level Change Requests. The CAISO will evaluate automated Reference Level Change Requests prior to the time the applicable CAISO Market Process is executed based on the Reasonableness Threshold the CAISO calculates for each resource as specified in Section 30.11.1. The Scheduling Coordinator must not submit a Reference Level Change Request for the purpose of strategically bidding near the Reasonableness Threshold to bid above actual or expected costs. Scheduling Coordinators shall not submit an automated Reference Level Change

Commented [A7]: This term could benefit from being expressly defined.

Commented [A8]: Given the requirements imposed on Reference Level Change Requests in 30.11.2.2 ("All Reference Level Change Requests must be based on the Scheduling Coordinator's reasonable expectation that its actual fuel cost or fuel-equivalent costs for a given Trading Day will exceed the costs used by the CAISO to calculate the resource's Reference Levels, and must reflect reasonable and prudent procurement practices")– is this needed?

Request that the CAISO has previously denied as a manual Reference Level Change Request pursuant to Section 30.11.4 based on the same Documentation of Contemporaneously Available Information submitted with the manual Reference Level Change Request. The CAISO shall not accept^{ed} automated Reference Level Change Requests for Hydro Default Energy Bids.

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30.11.3.2 Contemporaneously Available Supporting Documentation

If the Scheduling Coordinator does not submit Documentation of Contemporaneously Available Information when it submits an automated Reference Level Change Request, the Scheduling Coordinator must retain the Documentation of Contemporaneously Available Information. The CAISO may request the Scheduling Coordinator provide the CAISO with Documentation of Contemporaneously Available Information pursuant to Section 30.11.3.4.

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30.11.3.3 Evaluation of Automated Reference Level Change Requests

If the Reference Level change submitted in the automated Reference Level Change Requests is equal to or less than the applicable Reasonableness Threshold for the resource, the CAISO will approve the revised Reference Level. If the Reference Level change submitted in the automated Reference Level Change Requests exceeds the applicable Reasonableness Threshold for the resource, the CAISO will approve the revised Reference Level to equal the resource's Reasonableness Threshold.

30.11.3.4 CAISO Audit and Penalties

(a) Audit Process.

The CAISO may audit a Scheduling Coordinator that submits an automated Reference Level Change Request at any time and may request the Documentation of Contemporaneously Available Information. In response to a CAISO audit request, the Scheduling Coordinator must submit its cost calculations, including Documentation of Contemporaneously Available Information, within five (5) Business Days of the CAISO request. The CAISO will evaluate the submitted information and determine whether it supports the Scheduling Coordinator's automated Reference Level Change Request within ten (10) Business Days. In the event the CAISO determines the submitted information does not support the Reference Level Change Request, the Scheduling Coordinator may request for CAISO ADR Procedures Dispute Resolution as specified in

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Section 13 of the CAISO Tariff within five (5) Business Days. If the Scheduling Coordinator requests ~~for~~ CAISO ADR Procedures, the penalties specified in subpart (b) of this section will apply until the resolution of the CAISO ADR. Any further changes in determination of non-compliance after the CAISO ADR Procedures are complete will apply prospectively from the date the CAISO ADR Procedures decision is finalized.

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(b) Penalties for Failure to Comply with CAISO Requirements

If the CAISO determines that the information submitted by the Scheduling Coordinator does not support a conclusion that the Scheduling Coordinator's actual or expected fuel costs or fuel-equivalent costs as calculated in Section 30.13.2.2 were higher than those the CAISO used to determine their Reference Levels, the CAISO will penalize the Scheduling Coordinator as follows:

(1) ~~The determination of non-compliance will result in~~ the CAISO shall prohibiting the Scheduling Coordinator from making any Reference Level Change Requests for sixty (60) days from ~~the time the CAISO informs the Scheduling Coordinator of the non-compliance.~~

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(2) Any subsequent determination of non-compliance will result in the CAISO prohibiting the Scheduling Coordinator from making any Reference Level Change Requests for one-hundred and eighty (180) days, from the time the CAISO informs the Scheduling Coordinator of the non-compliance.

Commented [A10]: The CAISO uses the phrase "non-compliance" to describe the situation in which the CAISO determined the submitted documentation does not support the proposed reference level adjustment. Is that the right phrase to use?

Commented [A11]: Does the CAISO have an obligation to notify the Scheduling Coordinator within a defined period of time? If not, the CAISO could move the period during which it will not accept any reference level change requests from a time when gas prices are not volatile to one in which they are.

30.11.4 Manual Reference Level Change Requests

30.11.4.1 Applicability

The Scheduling Coordinator may submit a manual Reference Level Change Request for:

(a) Default Energy Bids, Default Start-Up Bids, and Default Minimum Load Bids, for natural gas resources: and

(b) Default Energy Bids for non-natural gas-fired resources.

Commented [A12]: Can the CAISO please clearly define what are automated reference level change requests and what are manual reference level change request?

30.11.4.2 Requirements

Scheduling Coordinators may request a manual Reference Level Change Request when its actual or expected fuel cost or fuel-equivalent cost exceed the fuel or fuel equivalent cost the CAISO used to



calculate a resource's Reference Level by the greater of 10% or \$0.50/MMBTu, as applicable.

Scheduling Coordinators must submit any manual Reference Level Change Requests by 8:00 a.m. of the Business Day on which the applicable CAISO Market is executed. Upon submission of a manual Reference Level Change Request, the Scheduling Coordinator must submit Documentation of Contemporaneously Available Information that shows their resource's actual or expected costs exceed the fuel or fuel equivalent cost used to calculate a resource's Reference Level.

30.11.4.3 Evaluation of Manual Reference Level Change Requests

The CAISO will evaluate manual Reference Level Change Requests based on information submitted by the Scheduling Coordinator and any other available evidence of current costs that applies to the Reference Level Change Request: (1) as practicable prior to the execution of the applicable Day-Ahead Market; and (2) as soon as practicable after submission of the manual Reference Level Change Request for the Real-Time Market. This evaluation will consist of whether the submitted information supports a change in the Reference Level. If the Reference Level submitted in the manual Reference Level Change Request is accepted, the accepted Reference Level will become the revised Reference Level for use in the CAISO Market Processes and for Settlement purposes. If the CAISO does not approve a manual Reference Level Change Request, the CAISO will make no changes to the Reference Level.

30.11.5 Application of Revised Reference Level

For the Day-Ahead Market, the revised Reference Level will apply to the applicable Trading Day of the Day-Ahead Market. For the Real-Time Market, the Revised Reference Level will apply from the Real-Time Market Trading Hour for which it is practicable for the CAISO to apply the change until the last Trading Hour of the Trading Day for which the Reference Level Change Request was specified. The Scheduling Coordinator may submit an application for after-CAISO Market Process adjustments pursuant to Section 30.12 for any costs not verified through the automated Reference Level Change Request process or that were rejected through the manual Reference Level Change Request process.

Commented [A13]: Is this intended to be a defined term?

30.11.6 Hydro Default Energy Bids

In the event a Scheduling Coordinator that controls both a hydro resource and a gas-fired resource in the same gas region submits a manual Reference Level Change Request to both the hydro resource's Hydro Default Energy Bid and the gas resource's Reference Level, and the CAISO accepts the manual

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Reference Level Change Request for the natural gas **fired** resource, the CAISO may also update the natural gas price used in the calculation of a resource's Hydro Default Energy Bid when the CAISO adjusts the gas price used in the Reasonableness Thresholds for the entire gas fuel region in which the hydro resource is located pursuant to Section 30.11.3.

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30.12 After-CAISO Market Process Cost Recovery [Not-Used]

30.12.1 Applicability [Not-Used]

The Scheduling Coordinator may request additional uplift payment to cover a resource's actual fuel costs or fuel-equivalent costs associated with Start-Up Bid Costs, Minimum Load Bid Costs, Transition Bid Costs, and Energy Bid Costs used in the Bid Cost Recovery mechanism, and that are for:

- (a) amounts in a Reference Level Change Request that were not approved pursuant to Section 30.11; or
- (b) amounts in a Reference Level Change Request for a Default Energy Bid or Default Minimum Load Bid that exceed the Hard Energy Bid Cap or the Minimum Load Cost Hard Cap, respectively.

30.12.2 Notice [Not-Used]

The Scheduling Coordinator must notify the CAISO within thirty (30) Business Days after the applicable Trading Day whether it will:

- (a) request a CAISO evaluation of its costs, pursuant to Section 30.12.4; or
- (b) submit a filing to FERC to recover the costs pursuant to Section 30.12.5.

30.12.3 Supporting Documentation [Not-Used]

Scheduling Coordinators must submit supporting documentation that demonstrates that submitted costs represent actually procured daily fuel or fuel-equivalent costs for a given Trading Day that exceed the fuel costs or fuel-equivalent costs the CAISO used to calculate the resource's Reference Levels. These costs must be reasonable and reflect prudent procurement practices. Permissible supporting documents include invoices for fuel purchased, or other appropriate documentation demonstrating fuel or fuel-equivalent costs actually procured that exceed the fuel or fuel-equivalent costs the CAISO used to calculate the resource's Reference Levels for the applicable Trading Days.

Commented [A14]: Does the CAISO – which does not procure fuel - decide what procurement practices are prudent? What is the CAISO's basis for determining what constitutes "prudent"?

30.12.4 CAISO After-Market Evaluation of Fuel Costs [Not-Used]

30.12.4.1 Process

If the Scheduling Coordinator requests that the CAISO evaluate the costs specified in Section 30.12.1, within sixty (60) Business Days after the Trading Day for which the Scheduling Coordinator provides notice to the CAISO per this Section, the CAISO will:

- (a) provide the Scheduling Coordinator with a written explanation of any effect that events or circumstances in the CAISO Markets and fuel market conditions may have had on the resource's inability to recover the costs on the applicable Trading Day; and
- (b) notify the Scheduling Coordinator whether the costs are eligible for evaluation pursuant to this Section 30.12.2.

30.12.4.2 CAISO Evaluation

In evaluating a request submitted by a Scheduling Coordinator, the CAISO will verify that the submitted costs represent actual procured fuel or fuel-equivalent costs, and that these costs are reasonable and reflect prudent procurement practices.

30.12.4.3 Settlement of Recoverable Amounts

To the extent the CAISO's evaluation results in verification that the resource actually procured costs claimed by the Scheduling Coordinator were not recovered through the Bid Cost Recovery process, the CAISO will resettle Bid Cost Recovery using revised Bid Costs for the resource and will issue Recalculation Settlement Statement(s) within the normal Recalculation Settlement Statements timelines specified in Section 11.29.

30.12.4.4 Extensions

If the CAISO is unable to verify within the sixty (60) Business Day period that the costs are eligible for evaluation pursuant to this Section 30.12.4, the CAISO will provide the Scheduling Coordinator with an extension of thirty (30) Business Days to submit a filing to FERC to recover costs.

30.12.4.5 Ineligibility

If the CAISO determines the resource is ineligible to recover its fuel related costs through this Section 30.12.4, the Scheduling Coordinator may file for fuel cost recovery through Section 30.12.5.

30.12.5 FERC Fuel Cost Recovery Filings**30.12.5.1 Process**

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If the Scheduling Coordinator provides notice of its intent to file for fuel cost recovery with FERC, or if the CAISO has determined that the Scheduling Coordinator is not eligible to recovery fuel costs through Section 30.12.4, the Scheduling Coordinator will have ninety (90) Business Days after the applicable Trading Day, or after the date the CAISO informs the Scheduling Coordinator that it is not eligible to recover its fuel costs through Section 30.12.4, whichever is applicable, to submit its filing to FERC.

30.12.5.2 Settlement of FERC-Approved Amounts

To the extent the FERC issues an order finding the resource actually procured costs claimed by the Scheduling Coordinator that were not recovered through the Bid Cost Recovery process, the CAISO will resettle Bid Cost Recovery using revised Bid Costs for the resource so these costs can be recovered and issue Recalculation Settlement Statement(s) reflecting the revised Bid Cost Recovery amounts within the normal Recalculation Settlement Statements timelines specified in Section 11.29.

30.12.6 Documentation Required with Notices

Scheduling Coordinators must submit supporting documentation that demonstrates that submitted costs represent actually procured daily fuel or fuel-equivalent equivalent costs for a given Trading Day that exceed the fuel costs or fuel equivalent costs the CAISO used to calculate the resource's Reference Levels. These costs must be reasonable and reflect prudent procurement practices. Permissible supporting documents include invoices for fuel purchased or other appropriate documentation demonstrating fuel or fuel-equivalent costs actually procured exceed the fuel or fuel-equivalent costs the CAISO used in to develop the resource's Reference Levels.

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Commented [A16]: I added this because, without it, this sentence merely says that the CAISO will issue Recalculation Settlement Statements, when 11.29 already says that.

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31.3.1.4 Eligibility to Set the Day-Ahead LMP

All Generating Units, Participating Loads, non-Participating Loads, Proxy Demand Resources, Reliability Demand Response Resources, System Resources, System Units, or Constrained Output Generators subject to the provisions in Section 27.7, with Bids, including Generated Bids, that are unconstrained due to Ramp Rates, MSG Transitions, Forbidden Operating Regions, or other temporal constraints are eligible to set the LMP, provided that (a) the Schedule for the Generating Unit or Resource-Specific System



Resource is between its Minimum Operating Limit and the highest MW value in its Economic Bid or Generated Bid, or (b) the Schedule for the Participating Load, non-Participating Load, Proxy Demand Resources, Reliability Demand Response Resources, ~~r~~Non-Resource-Specific System Resource, or System Unit is between zero (0) MW and the highest MW value in its Economic Bid or Generated Bid. If (a) a resource's Schedule is constrained by its Minimum Operating Limit or the highest MW value in its Economic Bid or Generated Bid, (b) the CAISO enforces a resource-specific constraint on the resource due to a Legacy RMR Dispatch of a Legacy RMR Unit or Exceptional Dispatch, (c) the resource is constrained by a boundary of a Forbidden Operating Region or is Ramping through a Forbidden Operating Region, or (d) the resource's full Ramping capability is constraining its inter-hour change in Schedule, the resource cannot be marginal and thus is not eligible to set the LMP. Resources identified as MSS Load following resources are not eligible to set the LMP. A Constrained Output Generator will be eligible to set the hourly LMP if any portion of its Energy is necessary to serve Demand.

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31.5.6 Eligibility for RUC Compensation

All RUC Capacity is eligible for the RUC Availability Payment except for: (i) RMR Capacity from RMR Resources; (ii) Resource Adequacy Capacity; and (iii) RUC Capacity that corresponds to the resource's Minimum Load, which is compensated through the Bid Cost Recovery as described in Section 11.8. Resources not committed in the IFM that are committed in RUC, including Condition 1 Legacy RMR Units that were not designated for Legacy RMR Dispatches and Resource Adequacy Resources, are also eligible for RUC Cost Compensation, which includes Start-Up, Transition Costs, and Minimum Load Cost compensation, and Bid Cost Recovery, subject to the resource actually following its Dispatch Instructions as verified by the CAISO pursuant to procedures set forth in the Business Practice Manuals.

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31.7 Extremely Long-Start Commitment Process



The CAISO shall perform the Extremely Long-Start Commitment Process (ELC Process) after the regular DAM results are posted. ELS Resources are flagged in the Master File and are the only resources eligible to be committed in the ELC Process. Each day after the DAM results are posted, the CAISO shall conduct the ELC Process to determine commitment of ELS Resources to be available to the CAISO Markets in the second day out. The CAISO will use the latest CAISO Forecast of CAISO Demand available to the CAISO for the Trading Day two days ahead of the current day that the ELC Process is executed. For commitment purposes for a resource whose Start-Up Time would exceed the definition of an ELS Resource based on the resource's initial condition and cooling time, the CAISO will consider DAM Bids from ELS Resources as Bids for the Trading Day two days ahead of the current day that the ELC Process is executed. The CAISO Operator shall use its operator judgment consistent with Good Utility Practice to determine whether ELS Resources for the second day in the 48-hour time period should be committed. The ELC Process does not dispatch Energy for the 48-hour time period and therefore the commitment instructions will not include megawatts schedules greater than the Minimum Load. ELS Resources receiving a commitment instruction are obligated to resubmit the same Bid in the next day's Day-Ahead Market. The CAISO Commitment Period or Self-Commitment Period determination for the ELS Resources depends on the DAM results and the Clean [Bids](#) and Generated Bids, following the same rules that apply to other resources. All Commitment Intervals for the ELS Resources will be classified as CAISO Commitment Periods, unless there is a Self-Schedule or Self-Provided AS for that interval.

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34.1.3 Bids in ~~T~~he Real-Time Market

Scheduling Coordinators may submit Bids, including Self-Schedules, for Supply that the CAISO shall use for the Real-Time Market, starting from the time Day-Ahead Schedules are posted, which is approximately 1:00 p.m., unless the posting of the Day-Ahead Market results are delayed for reasons specified in Section 31.6, until seventy-five (75) minutes prior to each applicable Trading Hour in the Real-Time. Scheduling Coordinators can submit Bids in the form of: (1) an Economic Bid for a Schedule in the RTM; (2) a Self-Schedule for acceptance to the RTM; (3) a Self-Schedule Hourly Block for



acceptance in the HASP; (4) a Variable Energy Resource Self-Schedule for the RTM; (5) an Economic Hourly Block Bid for acceptance in the HASP; or (6) an Economic Hourly Block Bid with Intra-Hour Option for acceptance in the HASP and the FMM. This includes Self-Schedules by Participating Load that is modeled using the Pumped-Storage Hydro Unit. Scheduling Coordinators may not submit Bids, including Self-Schedules, for CAISO Demand in the RTM. Scheduling Coordinators may submit Bids, including Self-Schedules, for exports at Scheduling Points in the RTM. The rules for submitted Bids specified in Section 30 apply to Bids submitted to the RTM. Scheduling Coordinators may not submit Virtual Bids to the Real-Time Market, although Virtual Awards from the DAM are settled for their liquidated positions based on prices from the FMM. In the case of Multi-Stage Generating Resources, the RTM procedures will optimize Transition Costs in addition to the Start-Up and Minimum Load Costs. If a Scheduling Coordinator submits a Self-Schedule or a Submission to Self-Provide Ancillary Services for a given MSG Configuration in a given Trading Hour, all of the RTM processes will consider the Start-Up Cost, Minimum Load Cost, and Transition Cost associated with any Economic Bids for other MSG Configurations as incremental costs between the other MSG Configurations and the self-scheduled MSG Configuration. In such cases, incremental costs are the additional costs incurred to transition or operate in an MSG Configuration in addition to the costs associated with the self-scheduled MSG Configuration.

34.7 General Dispatch Principles

- (7) Through Start-Up Instructions the CAISO may instruct resources to start up or shut down, or may reduce Load for Participating Loads, Reliability Demand Response Resources, and Proxy Demand Resources, over the forward-looking time period for the RTM based on submitted Bids, Start-Up **CestBids** and Minimum Load **CestBids**, Pumping Costs and Pump Shut-Down Costs, as appropriate for the resource, or for Multi-Stage Generating Resource as appropriate for the applicable MSG Configuration, consistent with operating characteristics of the resources that the SCED is able to enforce. In making Start-Up or



Shut-Down decisions in the RTM, the CAISO may factor in limitations on number of run hours or Start-Ups of a resource to avoid exhausting its maximum number of run hours or Start-Ups during periods other than peak loading conditions;

* * * * *

- (12) The CAISO may issue Transition Instructions to instruct resources to transition from one MSG Configuration to another over the forward-looking time period for the RTM based on submitted Bids, Transition Cost Bids and Minimum Load CostBids, as appropriate for the MSG Configurations involved in the MSG Transition, consistent with Transition Matrix and operating characteristics of these MSG Configurations. The RTM optimization will factor in limitations on Minimum Run Time and Minimum Down Time defined for each MSG configuration and Minimum Run Time and Minimum Down Time at the Generating Unit.

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34.10 Dispatch of Energy from Ancillary Services

The CAISO may issue Dispatch Instructions to Participating Generators, Participating Loads, Proxy Demand Resources, (via communication with the Scheduling Coordinators of Demand Response Providers) System Units and System Resources contracted to provide Ancillary Services (either procured through the CAISO Markets, Self-Provided by Scheduling Coordinators, or through Exceptional Dispatch or dispatched in accordance with a Legacy RMR Contract) for the Supply of Energy. During normal operating conditions, the CAISO may Dispatch those Participating Generators, Participating Loads, Proxy Demand Resources, System Units and System Resources that have contracted to provide Spinning and Non-Spinning Reserve, except for those reserves designated as Contingency Only, in conjunction with the normal Dispatch of Energy. Contingency Only reserves are Operating Reserve capacity that have been designated, either by the Scheduling Coordinator or the CAISO, as available to supply Energy in the Real-Time only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency. During normal operating conditions, the CAISO may also elect to designate



**Commitment Costs and Default
Energy Bid Enhancements –
Draft Tariff Language**

any reserve not previously identified as Contingency Only by Scheduling Coordinator as Contingency Only reserves. In the event of an unplanned Outage, a Contingency or a threatened or actual System Emergency, the CAISO may dispatch Contingency Only reserves. If Contingency Only reserves are dispatched through the RTCD, which as described in Section 34.5.2 only Dispatches in the event of a Contingency, such Dispatch and pricing will be based on the original Energy Bids. If Contingency Only reserves are dispatched in response to a System Emergency that has occurred because the CAISO has run out of Economic Bids when no Contingency event has occurred, the RTED will Dispatch such Contingency Only reserves using ~~the Hard Energy Bid Cap maximum Bid prices as provided in Section 39.6.1~~ as the Energy Bids for such reserves and will set prices accordingly. If a Participating Generator, Participating Load, System Unit or System Resource that is supplying Operating Reserve is dispatched to provide Energy, the CAISO shall replace the Operating Reserve as necessary to maintain NERC and WECC reliability standards, including any requirements of the NRC. If the CAISO uses Operating Reserve to meet Real-Time Energy requirements, and if the CAISO needs Operating Reserves to satisfy NERC and WECC reliability standards, including any requirements of the NRC, the CAISO shall restore the Operating Reserves to the extent necessary to meet NERC and WECC reliability standards, including any requirements of the NRC through either the procurement of additional Operating Reserve in the RTM or the Dispatch of other Energy Bids in SCED to allow the resources that were providing Energy from the Operating Reserve to return to their Dispatch Operating Target. The Energy Bid Curve is not used by the AGC system when Dispatching Energy from Regulation. For Regulation Up capacity, the upper portion of the resource capacity from its Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve. For a resource providing Regulation Up or Operating Reserves the remaining Energy Bid Curve shall be allocated to any RTM AS Awards in the following order from higher to lower capacity where applicable: (a) Spinning Reserve; and (b) Non-Spinning Reserve. For resources providing Regulation Up, the applicable upper Regulation Limit shall be used as the basis of allocation if it is lower than the upper portion of the Energy Bid Curve. The remaining portion of the Energy Bid Curve, if there is any, shall constitute a Bid for RTM Energy. For Regulation Down capacity, the lower portion of the resource capacity from its applicable Regulation Limit is allocated to Regulation regardless of its Energy Bid Curve.



34.11 Exceptional Dispatch

The CAISO may issue Exceptional Dispatches for the circumstances described in this Section 34.11, which may require the issuance of forced Shut-Downs, forced Start-Ups, or forced MSG Transitions and shall be consistent with Good Utility Practice. Dispatch Instructions issued pursuant to Exceptional Dispatches shall be entered manually by the CAISO Operator into the Day-Ahead or RTM optimization software so that they will be accounted for and included in the communication of Day-Ahead Schedules and Dispatch Instructions to Scheduling Coordinators. Exceptional Dispatches are not used to establish the LMP at the applicable PNode. The CAISO will record the circumstances that have led to the Exceptional Dispatch. When considering the issuance of an Exceptional Dispatch to RA Capacity, the CAISO shall consider the effectiveness of the resource from which the capacity is being provided, along with Start-Up ~~Cost~~Bids, Transition Cost ~~Bids~~, and Minimum Load ~~Cost~~Bids, as adjusted pursuant to Section 30.7.10.2, if applicable, when issuing Exceptional Dispatches to commit a resource to operate at Minimum Load. When the CAISO issues Exceptional Dispatches for Energy to RA Capacity, the CAISO shall also consider Energy Bids, if available and as appropriate. Additionally, where the Exceptional Dispatch results in a CPM designation, the CAISO shall make CPM designations of Eligible Capacity for an Exceptional Dispatch by applying the criteria and procedures specified in Section 43A.4.

39.6.1 Maximum Bid Prices

Notwithstanding any other provision of this CAISO Tariff, maximum Bid price provisions of this Section 39.6.1 shall apply to limit, Energy Bids, RUC Availability Bids, and Ancillary Service Bids ~~as specified below.~~

39.6.1.1 ~~Maximum Price for~~ Energy Bid Caps



39.6.1.1.1 Soft Energy Bid Cap

All Energy Bids, except for Virtual Bids, Demand Bids, or Bids for Non-Resource-Specific System Resources, are subject to the Soft Energy Bid Cap. Scheduling Coordinators may submit Energy Bids that are subject to the Soft Energy Bid Cap in excess of the Soft Energy Bid Cap, which the CAISO will process pursuant to Section 30.11. For the twelve (12) months following the effective date of this Section, the maximum Energy Bid prices shall be \$500/MWh. After the twelfth month following the effective date of this Section, the maximum Energy Bid price shall be \$750/MWh. After the twenty-fourth month following the effective date of this Section, the maximum Energy Bid price shall be \$1,000/MWh.

39.6.1.1.2 Hard Energy Bid Cap

All Energy Bids are subject to the Hard Energy Price Cap. Scheduling Coordinators may submit Energy Bid prices in excess of the Hard Energy Bid Cap, which the CAISO will cost-verify pursuant to the rules specified in Section 30.11.

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39.6.1.1.3 Minimum Load Costs Hard Cap

All Minimum Load Bids must not exceed the Minimum Load Costs Hard Cap.

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39.6.1.6 Maximum Start-Up Cost and Minimum Load Cost Registered Cost Values

The maximum Start-Up Cost and Minimum Load Cost values registered in the Master File by Scheduling Coordinators for capacity of non-Multi-Stage Generating Resources that are eligible and elect to use the Registered Cost methodology in accordance with Section 30.4 cannot exceed the Minimum Load Cost Hard Cap and will be limited to 150 percent of the Projected Proxy Cost. The maximum Start-Up Cost and Minimum Load Cost values registered in the Master File by Scheduling Coordinators for capacity of Multi-Stage Generating Resources that are eligible and elect to use the Registered Cost methodology in accordance with Section 30.4 will be limited to 150 percent of the Projected Proxy Cost for each MSG Configuration of the resources. The Projected Proxy Cost for natural gas-fired resources will include a gas price component, a major maintenance expense component, if available, a volumetric Grid Management Charge component, and, if eligible, a projected Greenhouse Gas Allowance Price



component calculated as set forth in this Section 39.6.1.6. The Projected Proxy Cost for non-natural gas-fired resources will be based on costs provided to the CAISO pursuant to Section 30.4.54.1.2, a major maintenance expense component, if available, a volumetric Grid Management Charge component, and, if eligible, a projected Greenhouse Gas Allowance Price component calculated as set forth in this Section 39.6.1.6.

39.6.1.6.1 Gas Price Component of Projected Proxy Cost

For natural gas-fired resources, the CAISO will calculate a gas price to be used in establishing ~~maximum~~ Default Start-Up ~~Cost~~Bids and Default Minimum Load ~~Cost~~Bids after the twenty-first day of each month and post it on the CAISO Website by the end of each calendar month. The price will be applicable for Scheduling Coordinators for natural gas-fired Use-Limited Resources electing to use the Registered Cost methodology until a new gas price is calculated and posted on the CAISO Website. The gas price will be calculated as follows:

- (1) Daily closing prices for monthly natural gas futures contracts at Henry Hub for the next calendar month are averaged over the first twenty-one (21) days of the month, resulting in a single average for the next calendar month.
- (2) Daily prices for futures contracts for basis swaps at identified California delivery points, are averaged over the first twenty-one (21) days of the month for the identified California delivery points as set forth in the Business Practice Manual.
- (3) For each of the California delivery points, the average Henry Hub and basis swap prices are combined and will be used as the baseline gas price applicable for calculating the ~~caps for~~Default Start-Up Bids and Default Minimum Load ~~Cost~~Bids for Use-Limited Resources electing to use the Registered Cost methodology. The most geographically appropriate will apply to a particular resource.
- (4) The applicable intra-state gas transportation charge as set forth in the Business Practice Manual will be added to the baseline gas price for each Use-Limited Resource that elects to use the Registered Cost methodology to create a final gas price for calculating the ~~caps for~~Default Start-Up Bids and Default Minimum Load ~~Cost~~Bids for each such resource.



For non-natural gas-fired resources, the Projected Proxy Costs for Default Start-Up CostBids and Default Minimum Load CostBids will be calculated using the information contained in the Master File used for calculating the Proxy Cost, as set forth in the Business Practice Manual.

39.6.1.6.2 Projected Greenhouse Gas Allowance Price

For resources that are registered with the California Air Resources Board as having a greenhouse gas compliance obligation, the CAISO will calculate a projected Greenhouse Gas Allowance Price component to be used in establishing maximum Default Start-Up CostBids and Default Minimum Load CostBids after the twenty-first day of each month and will post it on the CAISO Website by the end of that month. The projected Greenhouse Gas Allowance Price component will be applicable for Scheduling Coordinators on behalf of eligible Use-Limited Resources electing to use the Registered Cost methodology until a new projected Greenhouse Gas Allowance Price component is calculated and posted on the CAISO Website. The projected Greenhouse Gas Allowance Price component will be calculated by averaging the applicable daily Greenhouse Gas Allowance Prices calculated over the first twenty (20) days of the month using the methodology set forth in Section 39.7.1.1.1.4.

39.7.1.1.1.2 Non-Natural Gas-Fired Resources

For non-natural gas-fueled units, incremental fuel cost is calculated based on an average cost curve as described below.

Resource owners for non-natural gas-fueled units shall submit to the CAISO average fuel costs (\$/MW) measured for at least two (2) and up to eleven (11) generating operating points (MW), where the first and last operating points refer to the minimum and maximum operating levels (i.e., PMin and PMax), respectively. The average cost curve formed by the (\$/MWh, MW) pairs is a piece-wise linear curve between operating points, and two (2) average cost pairs yield one (1) incremental cost segment that spans two (2) consecutive operating points. For each segment representing operating levels below eighty (80) percent of the unit's PMax, the incremental cost rate is limited to the maximum of the average



cost rates for the two (2) operating points used to calculate the incremental cost segment. The unit's final incremental fuel cost curve is then adjusted, if necessary, applying a left-to-right adjustment to ensure that the final incremental cost curve is monotonically non-decreasing. The CAISO Cost curves will include, if applicable: (i) greenhouse gas allowance costs for each non-natural gas-fired resource registered with the California Air Resources Board as having a greenhouse gas compliance obligation, as provided to the CAISO by the Scheduling Coordinator for the resource; and (ii) variable operation and maintenance cost; and (iii) a volumetric Grid Management Charge adder that consists of: (i) the Market Services Charge; (ii) the System Operations Charge; and (iii) the Bid Segment Fee divided by the MW in the Bid segment. Cost curves shall be stored, updated, and validated in the Master File.

39.7.1.1.1.3 Calculation of Natural Gas Price

(a) ~~Except as set forth in Section 39.7.1.1.1.3(b), t~~The CAISO will use different gas price indices for the Day-Ahead Market and the Real-Time Market, ~~and a gas price index will be calculated using at least two prices from two or more of the following publications: Natural Gas Intelligence, SNL Energy/BTU's Daily Gas Wire, Platt's Gas Daily, and the Intercontinental Exchange.~~ If a gas price index is unavailable for any reason, the CAISO will use the most recent available gas price index as set forth in Section 39.7.1.1.1.3(c).

(b) For all Trading Days of the Day-Ahead Market, ~~except for Mondays when the Monday-only index is available and meets the liquidity criteria described below,~~ the CAISO will ~~calculate update the a~~ gas price indices ~~between 19:00 and 22:00 Pacific Time using based on~~ natural gas commodity prices reported by the Intercontinental Exchange. For the Real-Time Market, the CAISO will ~~update gas price indices between the hours of 19:00 and 22:00 Pacific Time using natural gas prices published one (1) day prior to the applicable Trading Day between 8:00 a.m. and 9:00 a.m. Pacific Time for natural gas deliveries on the Trading Day. The natural gas commodity prices reported on the Intercontinental Exchange are volume-weighted average prices reported during its next-day trading window.~~ For Monday Trading Days, the CAISO will use the Monday-only index when it is reported by the Intercontinental Exchange three (3) days prior to the

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Monday Trading Day, provided: unless gas prices are not published on that day, in which case the CAISO will use the most recently published prices that are available.

(i) The historical average volume of the Monday-only index at a given location, using no more than 90 days of trading, is at least 25,000 MMBTUs; which the CAISO will test every six (6) months; and

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(ii) On any given day the Monday-only index published at the locations that meet the requirement in part (i) above represents at least five (5) transactions.

Commented [A17]: Sorry, but I don't know what this means, particularly the interaction between the 90 days of data and the testing every six months. Could the CAISO re-write this to clarify what it is proposing? Additionally, and outside of the proposed tariff language, could the CAISO describe to market participants why it chose these criteria?

(c) For all Trading Days of the Real-Time Market, except for Mondays when the Monday-only index is available and meets the liquidity criteria described below, the CAISO will calculate a gas price index using at least one (1) price from the following publications: Natural Gas Intelligence, SNL Energy/BTU's Daily Gas Wire, and Platt's Gas Daily. The CAISO will update the gas price indices for the Real-Time Market between 19:00 and 22:00 Pacific Time using natural gas prices published one (1) day prior to the applicable Trading Day for natural gas deliveries on the Trading Day; unless gas prices are not published on that day, in which case the CAISO will use the most recently published prices that are available. For Monday Trading Days, the CAISO will use the Monday-only index when it is reported by the Intercontinental Exchange three (3) days prior to the Monday Trading Day, provided:

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(i) The historical average volume of the Monday-only index at a given location, using no more than 90 days of trading, is at least 25,000 MMBTUs; which the CAISO will test every six (6) months; and

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(ii) On any given day the Monday-only index published at the locations that meet the requirement in part (i) above represents at least five (5) transactions.

(b) If a daily gas price reported by the Intercontinental Exchange on the morning of the Day-Ahead Market run exceeds one hundred twenty-five (125) percent of any natural gas price index calculated for the Day-Ahead Market between 19:00 and 22:00 Pacific Time on the preceding day, the CAISO will utilize the gas price reported by the Intercontinental Exchange in all CAISO cost formulas and market processes for that day's Day-Ahead



Market that would normally utilize the natural gas price index calculated pursuant to this Section 39.7.1.1.1.3.

39.7.1.1.2 Variable Operation and Maintenance Cost Under the Variable Cost Option

The default value for the variable operation and maintenance cost portion will vary by fuel source or technology as follows: (1) solar \$0.00/MWh; (2) nuclear \$1.00/MWh; (3) coal \$2.00/MWh; (4) wind \$2.00/MWh; (5) hydro \$2.50/MWh; (6) natural gas-fired combined cycle and steam units \$2.80/MWh; (7) geothermal \$3.00 WMh; (8) landfill gas \$4.00/MWh; (9) combustion turbines and reciprocating engines \$4.80/MWh; and (10) biomass \$5.00/MWh. Resource specific values may be negotiated with the CAISO or the Independent Entity charged with calculating the Default Energy Bid. Default operation and maintenance values as well as any negotiated values will also be used to calculate Default Minimum Load CostBids pursuant to Section 30.4.

40.6.8 Use of Generated Bids

- (a) Day-Ahead Market. Prior to completion of the Day-Ahead Market, the CAISO will determine if Resource Adequacy Capacity subject to the requirements of Section 40.6.1 and for which the CAISO has not received notification of an Outage has not been reflected in a Bid and will insert a Generated Bid for such capacity into the CAISO Day-Ahead Market.
(b) Real-Time Market. Prior to running the Real-Time Market, the CAISO will determine if Resource Adequacy Capacity subject to the requirements of Section 40.6.2 and for which the CAISO has not received notification of an Outage has not been reflected in a Bid and will insert a Generated Bid for such capacity into the Real-Time Market.
(c) Partial Bids for RA Capacity. If a Scheduling Coordinator for an RA Resource submits a partial bid for the resource’s RA Capacity, the CAISO will insert a Generated Bid only



for the remaining RA Capacity. In addition, the CAISO will determine if all dispatchable Resource Adequacy Capacity from Short Start Units, not otherwise selected in the IFM or RUC, is reflected in a Bid into the Real-Time Market and will insert a Generated Bid for any remaining dispatchable Resource Adequacy Capacity for which the CAISO has not received notification of an Outage.

~~(d) — **Calculation of Generated Bids.** A Generated Bid for Energy will be calculated pursuant to Sections 30.7.3.4 and 30.7.3.5. A Generated Bid for Ancillary Services will equal zero dollars (\$0/MW-hour).~~

(ed) Exemptions. Notwithstanding any of the provisions of Section 40.6.8, for the following resource types providing Resource Adequacy Capacity, the CAISO only inserts a Bid in the Day-Ahead Market or Real-Time Market where the generally applicable bidding rules in Section 30 call for bid insertion: Use-Limited Resource, Non-Generator Resource, Variable Energy Resource, Hydroelectric Generating Unit, Proxy Demand Resource, Reliability Demand Response Resource, Participating Load, including Pumping Load, Combined Heat and Power Resource, Conditionally Available Resource, Non-Dispatchable Resource, and resources providing Regulatory Must-Take Generation.

(fe) NRS-RA Resources. The CAISO will submit a Generated Bid in the Day-Ahead Market or Real-Time Market for a non-Resource Specific System Resource in each RAIM assessment hour, to the extent that the resource provides Resource Adequacy Capacity subject to the requirements of Sections 40.6.1 or 40.6.2 and does not submit an outage request or Bid for the entire amount of that Resource Adequacy Capacity.

40.6.8.1 Generated Bids for NRS-RA Resources

Generated Bids to be submitted by the CAISO pursuant to Section 40.6.8 for ~~n~~Non-Resource-Specific System Resources that provide Resource Adequacy capacity shall be calculated in accordance with this Section.

40.6.8.1.1 Calculation Options for Generated Bids

The Scheduling Coordinator for each non-Resource Specific System Resource that provides Resource Adequacy Capacity shall select the price taker option, LMP-based option, or negotiated price option as



the methodology for calculating the Generated Bids to be submitted by the CAISO under Section 40.6.8 for both the DAM and RTMs. If no selection is made, the CAISO will apply the price taker option to calculate the Generated Bids. For the first ninety (90) days after a resource becomes a **n**Non-Resource-Specific System Resource, the calculation of Generated Bids for Resource Adequacy capacity is limited to the price taker option or negotiated price option.

40.6.8.1.2 Price Taker Option

The price taker option is a Generated Bid of \$0/MWh plus the CAISO's estimate of the applicable grid management charge per MWh based on the gross amount of MWh scheduled in the DAM and RTM.

40.6.8.1.3 LMP-Based Option

The LMP-based option calculates the Generated Bid as the weighted average of the lowest quartile of LMPs, at the Intertie point designated for the **n**Non-Resource-Specific System Resource's Resource Adequacy Capacity in the Supply Plan, during periods in which the resource was dispatched in the preceding ninety (90) days for which LMPs that have passed the price validation and correction process set forth in Section 35 are available. The weighted average will be calculated based on the quantities Dispatched within each segment of the Generated Bid curve. Each Bid segment created under the LMP-based option for Generated Bids will be subject to a feasibility test, as set forth in a Business Practice Manual, to determine whether there are a sufficient number of data points to allow for the calculation of an LMP-based Generated Bid. The feasibility test is designed to avoid excessive volatility of the Generated Bid under the LMP-based option that could result when calculated based on a relatively small number of prices. If the Scheduling Coordinator for the non-Resource Specific System Resource elects the LMP-based method, it must additionally select either the price-taker method or the negotiated-rate method as the alternative calculation method for the Generated Bids in the event that the feasibility test fails for the LMP-based method.

40.6.8.1.5 Partial Bids

If a Scheduling Coordinator for a **n**Non-Resource-Specific System Resource that provides Resource



Adequacy Capacity submits a bid for a MW quantity less than the Resource Adequacy Capacity identified in the resource’s Supply Plan, the CAISO will insert a Generated Bid only for the remaining Resource Adequacy Capacity by extending the last segment of the resource’s bid curve to the full quantity (MWh) of the Resource Adequacy obligation.

40.6.8.1.6 [Not Used]

Appendix A

Master Definitions Supplement

- Bid Costs

The costs for resources manifested in the Bid components submitted, which include the Start-Up Bid Cost, Minimum Load Bid Cost, Energy Bid Cost, Transition Cost Bid Costs, Pump Shut-Down Cost, Pumping Cost, Ancillary Services Bid Cost and RUC Availability Payment.

- CAISO IFM Curtailed Quantity

In each Trading Hour for each Scheduling Coordinator (a) the maximum of zero or the submitted Day-Ahead Self-Schedule for Demand minus the Day-Ahead Schedule for Demand in each applicable LAP, or (b) in the event a LAP price equals the ~~Hard Energy Bid Cap~~ maximum price for Energy Bids specified in Section 39.6.1.1, the maximum of zero or the submitted Day-Ahead Self-Schedule for Demand plus the quantity of Demand bid at the maximum price for Energy Bids specified in Section 39.6.1.1 minus the Day-Ahead Schedule for Demand in the relevant LAP.

- CAISO Markets Process(es)

The MPM, IFM, RUC, HASP, STUC, FMM, RTUC, and RTD.

- Calculated Energy Bid



The Energy Bid utilized in the IFM and RTM on behalf of a Constrained Output Generator calculated by dividing its Minimum Load Cost by the MW quantity of its PMax.

- Default Commitment Cost Bids

Default Start-Up Bids, Default Minimum Load Bids, and Default Transition Bids.

- Default Energy Bid

The cost-based Energy Bid Curve calculated by the CAISO pursuant to Section 39, and used among other things, in Local Market Power Mitigation pursuant to Section 39.

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- Default Minimum Load Bid

The CAISO's calculation of the resource's Minimum Load Cost pursuant to Section 30.4.

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- Default Start-Up Bid

The CAISO's calculation of the resource's Start-Up Cost Curve pursuant to Section 30.4.

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- Default Transition Bid

A resource's Transition Costs calculated by the CAISO pursuant to Section 30.4.

- Documentation of Contemporaneously Available Information

Documents that exist when a Reference Level Change Request is submitted, that show the price of fuel is based on next-day procurement for the Day-Ahead Market, and for the Real-Time Market is based on same-day or next-day procurement; except for non-standard gas trading days, in which case the documents must show the price of fuel is for procurement no sooner than the most recent standard gas trading day. Such documentation may include: quotes from natural gas suppliers; gas purchased invoices; evidence of a bid price that was part of an unsuccessful good faith effort to purchase fuel; or other appropriate documentation demonstrating fuel or fuel-equivalent costs.

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- Energy Bid Cost

An amount equal to the integral of the Energy Bid for resources ~~that have been selected through the IFM or RTM~~, above PMin.

- Extremely Long-Start Resource (ELS Resource)

A Generating Unit that has a Start-Up Time greater than 18 hours or a System Resource that is either: 1) a ~~n~~Non-Resource-Specific System Resource with contractual limitations that require the Energy be transacted (i.e., committed) prior to the publishing time of the Day-Ahead Market results (1300 hours on the day before the Trading Day) or 2) a Resource-Specific System Resource that has a Start-Up Time greater than 18 hours.

- Generated Bid

A post-market Clean Bid generated by the CAISO, using the applicable Default Energy Bid and Default Commitment Cost Bids, in accordance with the provisions of Section 40 or other applicable provisions of the CAISO Tariff when a Bid is not submitted by the Scheduling Coordinator and is required for a resource adequacy requirement, an Ancillary Services Award, a RUC Award, a Day-Ahead Schedule, or as required by Section 30.7.3.5.

- Hard Energy Bid Cap

The maximum Energy Bid Price the CAISO will use for purposes of clearing the CAISO Market Processes. The Hard Energy Bid Cap is \$2000 per MWh.

- IFM AS Bid Cost

The Bid Cost for Ancillary Service capacity in the IFM which a Scheduling Coordinator for Ancillary Service capacity in the IFM may be eligible to recover through the Bid Cost Recovery Process, calculated pursuant to Section 11.8.2.1.6.

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- IFM Energy Bid Cost

The Energy Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process, calculated pursuant to Section 11.8.2.1.5.

- IFM Minimum Load Cost

The Minimum Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.2.1.2.

- IFM Pump Shut-Down Cost

The Pump Shut-Down Cost a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.2.1.3.

- IFM Pumping Cost

The Pumping Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.2.1.4.

- IFM Start-Up Cost

The Start-Up Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.2.1.1.

- IFM Transition Cost

The Transition Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.2.1.7.

- Minimum Load Bid

The Bid component that indicates the Minimum Load Cost for the Generating Unit, Participating Load, Reliability Demand Response Resource, or Proxy Demand Resource specified by a non-negative number

in dollars per hour, which applies for the entire Trading Day for which it is submitted. Minimum Load Bids are subject to modification pursuant to the rules specified in Sections XX and XX.

Commented [A20]: Presuming the CAISO will fill these in at some point...I confess I have not checked every cross-reference and would probably not have checked these

- Minimum Load Bid Cost

The Minimum Load Costs submitted in a Minimum Load Bid as modified pursuant to Sections 30.7.10, 30.7.12 and 30.11 used for purposes clearing the applicable CAISO Market Process and for the determination of a Bid Cost Recovery.

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- Minimum Load Costs

The costs a Generating Unit, Resource-Specific System Resources, Participating Load, Reliability Demand Response Resource, or Proxy Demand Resource incurs operating at Minimum Load, which in the case of Participating Load, Reliability Demand Response Resource, or Proxy Demand Resource may ~~not~~ be non-negative may be adjusted pursuant to Section 30.7.10.2, if applicable.

- Minimum Load Cost Hard Cap

The maximum Minimum Load Cost used in the CAISO Markets, which shall be set at \$2,000 per MWh. The CAISO will apply calculate this limit to individual resources by dividing the resource's Minimum Load Cost by its Minimum Load. Where the resource's Minimum Load is less than 1 MW, the CAISO will use a set the resource's Minimum Load of 1 MW for the purpose of this calculation.

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Commented [A21]: Did the CAISO mean that it would actually change the resource's Minimum Load if the Minimum Load is less than 1 MW, or will use 1 MW for the purposes of this calculation?

- Non-Resources-Specific System Resource

A System Resource that is not a Resource-Specific System Resource.

- NRS-RA Resource

A ~~n~~Non-Resource-Specific System Resource that provides Resource Adequacy Capacity.



- Projected Proxy Cost

A calculation of a resource's Default Start-Up CostBids and Default Minimum Load CostBids for a prospective period used to determine the maximum Registered Cost for the resource, as set forth in Section 39.6.1.6 for a 30-day period pursuant to Section 30.4.

- Proxy Cost

The Proxy Start-Up Costs, Proxy Transition Costs, or Proxy Minimum Load Costs ~~cost basis~~ of a generating resource for which the operating cost is calculated as an approximation of the actual operating cost pursuant to Section 30.4.~~54.4~~.

- Proxy Minimum Load Cost

The Minimum Load Cost of a resource calculated pursuant to the methodology specified in Section 30.4.5.

- Proxy Start-Up Cost

The Start-Up Costs of a resource calculated pursuant to the methodology specified in Section 30.4.5.

- Proxy Transition Costs

The Transition Costs of a resource calculated pursuant to the methodology specified in Section 30.4.5.

- Reasonableness Threshold

The cost-based criteria the CAISO uses to evaluate Reference Level Change Requests through an automated process, which represents a ~~reasonable~~ cost-based Energy Bid, Start-Up Bid, and Minimum Load Bid, calibrated to the resource's costs as described in Section 30.11.

- Reference Levels

A Default Start-Up Bid, Default Minimum Load Bid, and Default Energy Bid.

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Commented [A22]: Per 30.11.1.2.1, the CAISO will use 25% or 10% adders to calculate Reasonableness Thresholds. If the gas price changes by more than the adder, the Reasonable Threshold calculated will not be reasonable. Is the almost ironically redundant word "reasonable" necessary here?

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- Reference Level Change Request

A change requested by a Scheduling Coordinator to a resource's Reference Levels pursuant to Section 30.11.

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Commented [A23]: This would be a great place for the CAISO to clearly differentiate between automated and manual requests...

- RTM AS Bid Cost

The Bid Cost of a Scheduling Coordinator BCR-Eligible Resource for Ancillary Service capacity in the RTM may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.4.1.6.

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Commented [A24]: Made parallel to definitions below.

- RTM Energy Bid Cost

The Energy Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.4.1.5.

- RTM Minimum Load Cost

The Minimum Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.4.1.2.

- RTM Pump Shut-Down Cost

The Pump Shut-Down Cost a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.4.1.3.

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- RTM Pumping Cost

The Pumping Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost Recovery Process calculated pursuant to Section 11.8.4.1.4.

- RTM Start-Up Cost

The Start-Up Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost

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Recovery Process calculated pursuant to Section 11.8.4.1.1.

- RTM Transition Cost

The Transition Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost

Recovery Process calculated pursuant to Section 11.8.4.1.7.

- RUC Minimum Load Cost

The Minimum Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost

Recovery Process calculated pursuant to Section 11.8.4.1.2.

- RUC Start-Up Cost

The Start-Up Bid Costs a Scheduling Coordinator may be eligible to recover through the Bid Cost

Recovery Process calculated pursuant to Section 11.8.4.1.1.

- Scarcity Reserve Demand Curve Values

Fixed percentages of the ~~maximum-Hard~~ Energy Bid ~~price permitted under Section 39.6.1.1-Cap~~ reflected in the Scarcity Reserve Demand Curve that the CAISO uses to calculate Ancillary Service Shadow Prices for Regulation Up, Spinning Reserve, Non-Spinning Reserve and Regulation Down from which the CAISO determines Ancillary Service Marginal Prices when there is insufficient supply in an Ancillary Service Region or Sub-Region to meet an Ancillary Services minimum procurement requirement.

- Soft Energy Bid Cap

The maximum Energy Bid Price Scheduling Coordinators submitted for resources, except for Virtual Bids and Bids for Non-Resource Specific System Resources, the CAISO will use for purposes of clearing the CAISO Market Processes without cost verification pursuant to Section 30.11. The Soft Energy Bid Cap is \$1,000 per MWh.

- Start-Up Bid

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The Bid component that indicates the Start-Up Time and Start-Up Cost curves for the Generating Unit, which applies for the entire Trading Day for which it is submitted. Start-Up ~~Bids~~Cost curves are subject to modification pursuant to the rule set forth in Section 30.7.8 and 30.11, strictly monotonically increasing non-negative staircase curves, up to three segments, which represent a function of Start-Up Cost versus down time.

- Start-Up Bid Cost

The Start-Up Costs submitted in a Start-Up Bid as modified pursuant to Section 30.7.8 and 30.11 used for purposes of the determination of a Bid Cost Recovery,

- Start-Up Cost Curve

The format of the Start-Up Bid or the Default Start-Up Bids that must be strictly monotonically increasing non-negative staircase curves, of up to three segments, which represent a function of Start-Up Cost versus down time.

- Subset of Hours Contract

A contract between a Load Serving Entity and a ~~n~~Non-Resource-Specific System Resource that requires the resource to make Resource Adequacy Capacity available to the CAISO on designated days and/or during a specified number of hours, less than seven (7) days a week, twenty-four (24) hours a day.

- Transition Bid

The Bid component that indicates the Transition Cost to ~~T~~ransition a Multi-Stage Generating Resource from one MSG Configuration to another. Transition Bids are subject to modification pursuant to the rules specified in Section 30.7.11.

APPENDIX II

Market-Based Rate Authority Suspension, Revocation, or Conditional Participation in the CAISO Markets

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This Appendix details the application of the terms specified above as they apply to Market Participants engaged in transactions under the CAISO Tariff. These additional rates, terms and conditions apply in addition to those already specified in other provisions of the CAISO Tariff, which remain in effect for Scheduling Coordinators subject to this Appendix to the extent not inconsistent with this Appendix.

A. Suspensions or Revocations of Market-Based Rate Authority

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~~Part A of~~ This Appendix provides the rates, terms and conditions that apply to Scheduling Coordinators that submit Bids into the CAISO Markets for resources of Market Participants affected by a suspension or revocation of the Market Participant's market-based rate authority, issued pursuant to Section 35, Subpart H of the Federal Energy Regulatory Commission's Rules of Practice and Procedure (18 C.F.R §§ 35.36 to 35.42) where the Federal Energy Regulatory Commission has restricted participation to the following terms:

- 1) The Market Participant's authority to sell energy, capacity, and ancillary services at market-based rates is suspended or revoked.
- 2) The Market Participant will only be allowed to participate in wholesale electricity markets by either scheduling quantities of energy products without an associated price or by specifying a zero-price in their offer, as the relevant tariffs require.
- 3) The rate received by the Market Participant will be capped at the higher of the applicable Locational Marginal Price or its Default Energy Bid.

~~This Appendix details the application of the terms specified above as they apply to Market Participants engaged in transactions under the CAISO Tariff. These additional rates, terms and conditions apply in addition to those already specified in other provisions of the CAISO Tariff, which remain in effect for Scheduling Coordinators subject to this Appendix to the extent not inconsistent with this Appendix.~~

1. Bids for and Settlement of Energy

- 1.1. The Scheduling Coordinator may only participate in the Day-Ahead and Real-Time Markets for the resources of Market Participants subject to Part A of this Appendix by submitting either a Self-Schedule or an Economic Bid with a price of zero (0) dollars per megawatthour (\$0/MWh).
- 1.2. Prior to the Market Close of the applicable CAISO Market, the CAISO will validate the Bids submitted by such Scheduling Coordinator based on the Resource ID. If the Scheduling Coordinator submits a Bid that is not either a Self-Schedule or an Economic Bid with a price of \$0/MWh, the CAISO will reject the Bid.
- 1.3. Prior to the execution of the applicable CAISO Market run, the CAISO will replace all the resource's Economic Bid segments with a Generated Bid based on the resource's Proxy Costs.
- 1.4. After the execution of the CAISO Market run, for intervals in which the resource is dispatched or committed by the CAISO, including any Exceptional Dispatches, the CAISO will pay the higher of its Default Energy Bid or the applicable Locational Marginal Price.

2. Residual Unit Commitment Bids

- 2.1. The Scheduling Coordinator may only participate in the Residual Unit Commitment for the resources of Market Participants subject to this Appendix by submitting a RUC Availability Bid of zero (0) dollars per megawatt per hour (\$0/MW-hour).
- 2.2. Prior to the Market Close of the applicable CAISO Market, the CAISO will validate the bids submitted by such Scheduling Coordinator based on the Resource ID. If the Scheduling Coordinator submits a RUC Availability Bid that is not a \$0/MW-hour, the CAISO will reject the RUC Availability Bid.

3. Default Energy Bid



- 3.1. The Scheduling Coordinator will not be entitled to select the Negotiated and LMP options for the resources of Market Participants subject to this Appendix and can only select the Variable Cost Option as specified in Section 39.7 of the CAISO Tariff for their Default Energy Bid during the period of the suspension.
- 3.2. If the resource lacks a Variable Cost Option Default Energy Bid during the period of the suspension or revocation, the CAISO will create a Default Energy Bid with a \$0/MWh price for the resource.

4. **Minimum Load, Start-Up, and Transition Default Commitment Costs**

- 4.1. The Scheduling Coordinator responsible for ~~submitting~~ the resource's ~~Minimum Load and Start-Up Default Commitment~~ Costs for the resources of Market Participants subject to ~~Part A of~~ this Appendix will not be entitled to select the Registered Cost option available under Section 30.4.7.1.2 and can only select the Proxy Cost option as specified in Section 30.4.5.1.4 of the CAISO Tariff for ~~their Minimum Load and Start-Up Default Commitment~~ Costs.
- 4.2. If the resource is registered with the CAISO as a Multi-Stage Generating Unit resource, the Scheduling Coordinator may only ~~register receive a~~ Default Transition ~~Cost Bid~~ of \$0 per MW hour.
- 4.3. If the resource lacks a Start-Up ~~Bid, Minimum Load Bid, or Minimum Load Cost Transition Bid~~ in any market intervals, the CAISO will insert the ~~Start-Up or Minimum Load Costs calculated based on the Proxy Cost option-based~~ Default Start-Up Bid, Default Minimum Load Bid, or Default Transition Bid, as appropriate.

5. **Ancillary Services**

- 5.1. The Scheduling Coordinator for the resources of Market Participants subject to this Appendix may only submit either ~~an a Self-Provision of~~ Ancillary Services ~~self-schedule~~ consistent with the requirements of the ~~ISOCAISO~~ tariff or an Ancillary Service Bid with a zero price per megawatt (\$0/MW).
- 5.2. Prior to the Market Close, the CAISO will reject any Ancillary Services Bid submitted for such resource that is not ~~ana Self-Provision of~~ Ancillary Services ~~self-schedule~~ consistent with the requirements of the ~~ISOCAISO~~ tariff or an Ancillary Services Bid with a \$0/MW price.

6. **Ramping Rates**

- 6.1. All of the Operating Reserve, Operational and Regulating Ramp Rates for the resources of Market Participants subject to this Appendix will be based on the maximum ramp rate registered in the Master File.
- 6.2. To the extent the Scheduling Coordinator for such resources submits something other than the maximum ramp rate registered in the Master File for these rates, the CAISO will replace the ramp with the maximum ramp rate value in the Master File.
- 6.3. In the Real-Time Market, the Scheduling Coordinator may only modify their maximum Ramp Rate through a SLIC submission based on actual changes in physical conditions of the resource.

B. Conditional Market-Based Rate Authority

Separate and apart from Part A of this Appendix, Part B provides the rates, terms and conditions that apply to Scheduling Coordinators that submit Bids into the CAISO Markets for resources for which the Federal Energy Regulatory Commission has determined the resource is eligible for market-based rate

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**Commitment Costs and Default
Energy Bid Enhancements –
Draft Tariff Language**

authority, issued pursuant to Section 35, Subpart H of the Federal Energy Regulatory Commission's Rules of Practice and Procedure (18 C.F.R §§ 35.36 to 35.42) on the condition that the resource participate in the CAISO Market at or below its Default Energy Bid.

1. Bids for and Settlement of Energy

- 1.1. The Scheduling Coordinator may submit Energy Bids in the Day-Ahead and Real-Time Markets for the resources of Market Participants subject to Part B of this Appendix by submitting either a Self-Schedule or an Economic Bid at or below the resource's Default Energy Bid.
- 1.2. Prior to the Market Close of the applicable CAISO Market, the CAISO will validate the Bids submitted by such Scheduling Coordinator based on the Resource ID. If the Scheduling Coordinator submits a Bid that is not at or below their Default Energy Bid, the CAISO will reject the Bid.
- 1.3. Prior to the execution of the applicable CAISO Market run, the CAISO will replace all the resource's Economic Bid segments with the resources Default Energy Bid.
- 1.4. After the execution of the CAISO Market run, for intervals in which the resource is dispatched or committed by the CAISO, including any Exceptional Dispatches, the CAISO will pay the higher of its Default Energy Bid or the applicable Locational Marginal Price.

2. Default Energy Bid

- 2.1. The Scheduling Coordinator may select any of the Default Energy Bids options available pursuant to Section 39.7 provided the resource otherwise qualifies for the requirements specified therein.
- 3.2. The Scheduling Coordinator may submit and the CAISO will process a Reference Level Change Request to change a Scheduling Coordinator's Default Energy Bid pursuant to the rules specified in Section 30.11.

3. Default Commitment Costs

- 3.1. The Scheduling Coordinator responsible for the Default Commitment Costs for the resources of Market Participants subject to Part B of this Appendix may be eligible to select any of the options available under Section 30.4 of the CAISO Tariff for their Default Commitment Costs.
- 3.2. The Scheduling Coordinator may submit and the CAISO will process a Reference Level Change Request to change a Scheduling Coordinator's Default Minimum Load Bid or Default Start-Up Bid pursuant to the rules specified in Section 30.11.