**Working Document for Preparing Supplement Order No. 831-Related Redline**

**In this document, light gray shading indicates proposed tariff revisions contained in the second CCDEBE tariff amendment, which the CAISO filed on July 9, 2020 in Docket No. ER20-2360-000**

**Yellow shading in this document indicates proposed tariff revisions contained in the filing to comply with Order No. 831, which the CAISO filed on September 5, 2019 in Docket No. ER19-2757-000**

**6.5.2.3.7 Constraint Relaxation Threshold**

Annually, the CAISO will post on its OASIS the Constraint Relaxation Thresholds for all the Balancing Authority Areas participating in the CAISO Market.

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### 27.1.2 Ancillary Service Prices

**27.1.2.1 Ancillary Service Marginal Prices – Sufficient Supply**

As provided in Section 8.3, Ancillary Services are procured and awarded through the IFM and the FMM, and the CAISO also accepts and awards HASP Block Intertie Schedules for Ancillary Services in HASP. Ancillary Services awarded through HASP are made financially binding in the FMM. The IFM calculates hourly Day-Ahead Ancillary Service Awards and establishes Ancillary Service Marginal Prices (ASMPs) for the accepted Regulation Up, Regulation Down, Spinning Reserve and Non-Spinning Reserve Bids. The IFM co-optimizes Energy and Ancillary Services subject to resource, network and regional constraints. In the HASP, the CAISO accepts and awards Ancillary Services from HASP Block Intertie Schedules for the next Trading Hour as described in Section 34.2. The CAISO calculates the price for the settlement of Ancillary Services accepted and awarded in HASP based on the FMM ASMP as described herein and further described in Section 34.4. The FMM process that is performed every fifteen (15) minutes establishes fifteen (15) minute Ancillary Service Schedules, Awards, and prices for the upcoming quarter of the given Trading Hour. ASMPs are determined by first calculating Shadow Prices of Ancillary Services for each Ancillary Service type and the applicable Ancillary Services Regions. The Ancillary Services Shadow Prices are produced as a result of the co-optimization of Energy and Ancillary Services through the IFM and the Real-Time Market, subject to resource, network, and requirement constraints. The Ancillary Services Shadow Prices represent the marginal cost of the relevant binding regional constraints at the optimal solution, or the reduction of the combined Energy and Ancillary Service procurement cost associated with a marginal relaxation of that constraint. If the constraint for an Ancillary Services Region is not binding, the corresponding Ancillary Services Shadow Price in the Ancillary Services Region is zero (0). During periods in which supply is sufficient, the ASMP for a particular Ancillary Service type and Ancillary Services Region is then the sum of the Ancillary Services Shadow Prices for the specific type of Ancillary Service and all the other types of Ancillary Services for which the subject Ancillary Service can substitute, as described in Section 8.2.3.5, for the given Ancillary Service Region and all the other Ancillary Service Regions that include that given Ancillary Service Region. During periods in which supply is insufficient, the ASMP for a particular Ancillary Service type and Ancillary Services Region will reflect the Scarcity Reserve Demand Curve Values set forth in Section 27.1.2.3.

**27.1.2.2 Opportunity Cost in ASMP**

The Ancillary Services Shadow Price, which, as described above, is a result of the Energy and Ancillary Service co-optimization, includes the foregone opportunity cost of the marginal resource, if any, for not providing Energy or other types of Ancillary Services the marginal resource is capable of providing in the relevant market. The ASMPs determined by the IFM or FMM optimization process for each resource whose Ancillary Service Bid is accepted will be no lower than the sum of (i) the Ancillary Service capacity Bid price submitted for that resource, and (ii) the foregone opportunity cost of Energy in the IFM or FMM for that resource. The foregone opportunity cost of Energy for this purpose is measured as the positive difference between the IFM or FMM LMP at the resource’s Pricing Node and the resource’s Energy Bid price. If the resource’s Energy Bid price is higher than the LMP, the opportunity cost measured for this calculation is $0. If a resource has submitted an Ancillary Service Bid but no Energy Bid and is under an obligation to offer Energy in the Day-Ahead Market (e.g. a non-hydro Resource Adequacy Resource), its Default Energy Bid will be used, and its opportunity cost will be calculated accordingly. If a resource has submitted an Ancillary Service Bid but no Energy Bid and is not under an obligation to offer Energy in the Day-Ahead Market, its Energy opportunity cost measured for this calculation is $0 since it cannot be dispatched for Energy. For Self-Scheduled Hourly Block Bids for Ancillary Services awarded in the Real-Time Market, the opportunity cost measured for this purpose is $0 because, as provided in Section 34.2.3, the CAISO cannot Schedule Energy in the Real-Time Market from the Energy Bid under the same Resource ID as the submitted Ancillary Service Bid.

**27.1.2.3 Ancillary Services Pricing – Insufficient Supply**

The CAISO will develop Scarcity Reserve Demand Curves as further described in an applicable Business Practice Manual that will apply to both the Day-Ahead Market and the Real-Time Market during periods in which supply is insufficient to meet the minimum procurement requirements for Regulation Down, Non-Spinning Reserve, Spinning Reserve and Regulation Up as required by Section 8.3. During the first three (3) years in which the CAISO’s Scarcity Reserve Demand Curves are effective, the CAISO shall conduct an annual review of the performance of the Scarcity Reserve Demand Curves and assess whether changes are necessary, with the exception that the ISO will not conduct this assessment in any year in which the Scarcity Reserve Demand Curves are not triggered. Thereafter, the CAISO shall review the performance of the Scarcity Reserve Demand Curves and assess whether changes are necessary every three (3) years or more frequently, if the CAISO determines more frequent reviews are appropriate. When supply is insufficient to meet any of the minimum procurement requirements for Regulation Down, Non-Spinning Reserve, Spinning Reserve and Regulation Up, the Scarcity Reserve Demand Curve Values for the affected Ancillary Services, as set forth in this Section 27.1.2.3 and as reflected in the in the Scarcity Demand Curve Value table below, shall apply to determine the Shadow Prices of the affected Ancillary Services. ASMPs for an Ancillary Service type will not sum these Shadow Prices across Ancillary Service Regions, if there is insufficient supply for the Ancillary Service type in both the Expanded System Region and an Ancillary Service Sub-Region.

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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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5. 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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5. 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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5.

**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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5. 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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5. 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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5.

**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 inan Ancillary Service Sub-Region shall be ten (10) percent of the Soft Energy Bid Capfor the Hard Energy Bid Cap, as applicable as specified in the tables in Section 27.1.2.3.5.

**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 Soft Energy Bid Cap or the Hard Energy Bid Cap, as applicable as specified in Section 27.1.2.3.5.

**27.1.2.3.5 Scarcity Demand Curve Value Tables**

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| **Scarcity Demand Curve Value ($/MWh) When Energy Pricing Parameters based on Soft Energy Bid Cap as Specified In Section 27.4.3.2** |
|  |  |
|  | **Percent of Soft Energy Bid Cap** |  |
| **Reserve** | **Expanded System Region** | **System Region and Sub-Region** | **Expanded System Region** | **System Region and Sub-Region** |
| Regulation Up |  20% |  20% | $200 | $200 |
| Spinning |  10% |  10% | $100 | $100 |
| Non-Spinning Shortage > 210 MW |  70%  |  70% | $700 | $700 |
| Non-Spinning Shortage > 70 &  210 MW | 60%  | 60%  | $600 | $600 |
| Non-Spinning Shortage   70 MW | 50% |  50% | $500  | $500 |
| **Upward Sum** | **100%** | **100%** | **$1000** | **$1000** |
| Regulation Down Shortage > 84 MW | 70%  | 70%  | $700 | $700 |
| Regulation Down Shortage > 32 &  84 MW | 60% | 60%  | $600 | $600 |
| Regulation Down Shortage  32 MW | 50% | 50% | $500 | $500 |

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| **Scarcity Demand Curve Value ($/MWh) When Energy Pricing Parameters based on Hard Energy Bid Cap as Specified In Section 27.4.3.3** |
|  |  |
|  | **Percent of Hard Energy Bid Cap** |  |
| **Reserve** | **Expanded System Region** | **System Region and Sub-Region** | **Expanded System Region** | **System Region and Sub-Region** |
| Regulation Up |  20% |  20% | $400 | $400 |
| Spinning |  10% |  10% | $200 | $200 |
| Non-Spinning Shortage > 210 MW |  70%  |  70% | $1,400 | $1,400 |
| Non-Spinning Shortage > 70 &  210 MW | 60%  | 60%  | $1,200 | $1,200 |
| Non-Spinning Shortage   70 MW | 50% |  50% | $1,000 | $1,000 |
| **Upward Sum** | **100%** | **100%** | **$2,000** | **$2,000** |
| Regulation Down Shortage > 84 MW | 70%  | 70%  | $1,400 | $1,400 |
| Regulation Down Shortage > 32 &  84 MW | 60% | 60%  | $1,200 | $1,200 |
| Regulation Down Shortage  32 MW | 50% | 50% | $1,000 | $1,000 |

**27.1.2.4 Opportunity Cost in LMPs for Energy**

In the event that there is insufficient supply to meet an Ancillary Services procurement requirement in a particular Ancillary Service Region or Sub-Region, the Ancillary Services Shadow Prices will rise automatically to the Scarcity Reserve Demand Curve Values in that Ancillary Service Region or Sub-Region. LMPs for Energy will reflect the forgone opportunity cost of the marginal resource, if any, for not providing the scarce Ancillary Services consistent with the CAISO’s co-optimization design.

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### 27.4.3 CAISO Markets Scheduling and Pricing Parameters

**27.4.3.1 Generally**

The SCUC and SCED optimization software for the CAISO Markets utilize a set of configurable scheduling and pricing parameters to enable the software to reach a feasible solution and set appropriate prices in instances where Effective Economic Bids are not sufficient to allow a feasible solution. The scheduling parameters specify the criteria for the software to adjust Non-priced Quantities when such adjustment is necessary to reach a feasible solution. The scheduling parameters are configured so that the SCUC and SCED software will utilize Effective Economic Bids as far as possible to reach a feasible solution, and will skip Ineffective Economic Bids and perform adjustments to Non-priced Quantities pursuant to the scheduling priorities for Self-Schedules specified in Sections 31.4 and 34.10. The scheduling parameters utilized for relaxation of enforced internal and Intertie Transmission Constraints are specified in Section 27.4.3.2.1 and 27.4.3.3.1 The pricing parameters specify the criteria for establishing market prices in instances where one or more Non-priced Quantities are adjusted by the Market Clearing software. The pricing parameters are specified in Sections 27.4.3.2.2, 27.4.3.2.3, 27.4.3.2.4, 27.4.3.3.2, 27.4.3.3.3, and 27.4.3.3.4. The complete set of scheduling and pricing parameters used in all CAISO Markets is maintained in the Business Practice Manuals.

**27.4.3.2 Parameters Related to Soft Energy Bid Cap**

For CAISO Market Intervals for which the conditions specified Section 27.4.3.3 do not apply, the CAISO will apply the parameters specified in Section 27.4.3.2.1 through 27.4.3.2.4 and the Ancillary Services Scarcity Prices in Section 27.1.2.3.5.

**27.4.3.2.1 Scheduling Parameters for Transmission Constraint Relaxation**

In the IFM, the enforced internal and Intertie Transmission Constraint scheduling parameter is set to $5,000 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 $1,500 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 $5,000 per MWh or less for the IFM (or $1,500 per MWh or less for the RTM), the Market Clearing software will utilize such re-dispatch, but if the cost exceeds $5,000 per MWh in the IFM (or $1,500 per MWh for the RTM) the market software will relax the Transmission Constraint. The corresponding scheduling parameter in RUC is set to $1,250 per MWh.

**27.4.3.2.2 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 Soft Energy Bid 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.

**27.4.3.2.3 Insufficient Supply to Meet Self-Schedule 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 Soft Energy Bid Cap price.

**27.4.3.2.4 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 Soft Energy Bid Cap for price-setting purposes.

**27.4.3.3 Parameters Related to Hard Energy Bid Cap**

If the CAISO has accepted a Bid with an Energy Bid Price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Price exceeds the Soft Energy Bid Cap for any Trading Hour of the Day-Ahead Market, the scheduling parameters in this section and the Scarcity Demand Curve Values in Section 27.1.2.3.5 related to the Hard Energy Bid Cap will apply for all Trading Hours of the Day-Ahead Market and Real-Time Market for the same Trading Day. If the CAISO has not accepted a Bid with an Energy Bid Price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12 or the Maximum Import Price exceeds the Soft Energy Bid Cap, for the Day-Ahead Market, but has accepted a Bid with an Energy Bid Price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12 or the Maximum Import Price exceeds the Soft Energy Bid Cap for the Real-Time Market for the same Trading Day, the scheduling parameters in Section 27.4.3.3.1 through 27.4.3.3.4 will only apply to all CAISO Market Intervals of a Real-Time Market Process for that Trading day for which the CAISO has accepted a Bid with an Energy Bid Price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12 or the Maximum Import Price exceeds the Soft Energy Bid Cap. In addition, the parameters will apply to all market intervals of a RTM time horizon for which these conditions apply in at least one intervals the applicable horizon.

**27.4.3.3.1 Scheduling Parameters for Transmission Constraint Relaxation**

In the IFM, the enforced internal and Intertie Transmission Constraint scheduling parameter is set to $10,000 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 $3,000 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 $10,000 per MWh or less for the IFM (or $3,000 per MWh or less for the RTM), the Market Clearing software will utilize such re-dispatch, but if the cost exceeds $10,000 per MWh in the IFM (or $3,000 per MWh for the RTM) the market software will relax the Transmission Constraint. The corresponding scheduling parameter in RUC is set to $1,250 per MWh.

**27.4.3.3.2 Pricing Parameters for Transmission Constraint Relaxation**

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.

**27.4.3.3.3 Insufficient Supply to Meet Self-Schedule 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

Hard Energy Bid Cap price.

**27.4.3.3.4 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, for price-setting purposes the software utilizes a pricing parameter set to the –

(a) highest-priced cleared Economic Bid if the infeasibility detected in the scheduling run does not exceed the Constraint Relaxation Threshold; or

(b) Hard Energy Bid Cap price if the infeasibility detected in the scheduling run exceeds the Constraint Relaxation Threshold.

**27.4.3.4 Protection of TOR, ETC and Converted Rights Self-Schedules in the IFM**

In accordance with the submitted and accepted TRTC Instructions, valid Day-Ahead TOR Self-Schedules, Day-Ahead ETC Self-Schedules and Day-Ahead Converted Rights Self-Schedules shall not be adjusted in the IFM in response to an insufficiency of Effective Economic Bids. The scheduling parameters associated with the TOR, ETC, or Converted Rights Self-Schedules will be set to values higher than the scheduling parameter associated with relaxation of an enforced internal and Intertie Transmission Constraint as specified in Section 27.4.3.2, so that when there is a congested Transmission Constraint that would otherwise subject a Supply or Demand resource submitted in a valid and balanced ETC, TOR or Converted Rights Self-Schedule to adjustment in the IFM, the IFM software will relax the Transmission Constraint rather than curtail the TOR or ETC Self-Schedule. This priority will be adhered to by the operation of the IFM Market Clearing software, and if necessary, by adjustment of Schedules after the IFM has been executed and the results have been reviewed by the CAISO operators.

**27.4.3.5 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 Nomogram itself. The CAISO will set this threshold at two percent (2%).

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**30.4.4.6 Maximum Default Minimum Load Bid**

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

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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 Start-Up Bids and Minimum Load Bids. Resource-Specific System Resources are subject to the Proxy Cost methodology or the Registered Cost methodology for Default Start-Up Bids and Default Minimum Load Bids 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. Bids for System Resources that exceed the Soft Energy Bid Cap are subject to the rules in Sections 30.7.12, as applicable.

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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 a Default Minimum Load Bid 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 percent (95%) of the applicable Soft Energy Bid Cap.

(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 percent (95%) of the applicable Soft Energy Bid Cap.

(b) Shall be dispatched as a discrete (non-marginal) resource if it is dispatched by the CAISO.

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**30.7.12 Validation of Bids in Excess of Soft Energy Bid Cap, Hard Energy Bid Cap, or Minimum Load Cost Hard Cap**

**30.7.12.1 Generally**

Except as otherwise stated in this Section 30.7.12, the validation rules in this Section 30.7.12 apply to all Energy Bids and Minimum Load Bids submitted by Scheduling Coordinators. The provisions of Sections 30.7.12.1 through 30.7.12.4 do not apply to Virtual Bids and Energy Bids submitted for Non-Resource-Specific System Resources; the provisions of Section 30.7.12.5 apply to Virtual Bids and Energy Bids submitted for Non-Resource-Specific System Resources. The CAISO will allow Bids for Non-Resource-Specific System Resources that exceed the Soft-Energy Bid Cap subject to the Bid price screens described in Section 30.7.12.5.2. The CAISO will allow Virtual Bids prices that exceed the Soft Energy Bid Cap subject to the rules specified in Section 30.7.12.5.3. The CAISO will reject Virtual Bid prices and Bids for Non-Resource-Specific System Resources that exceed the Hard Energy Bid Cap.

**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 a Reference Level Change Request pursuant to Section 30.11.

**30.7.12.3 Energy Bids that Exceed the Hard Energy Bid Cap and Minimum Load Bids that Exceed the Minimum Load Cost Hard 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, except for Energy Bids for Non-Resource Specific System Resources and Virtual Bids, or Minimum Load Bid price submitted above the Energy Bid price or the Minimum Load Bid price the CAISO uses in the CAISO Market Processes, the Scheduling Coordinators may be eligible for after-market cost recovery pursuant to Section 30.12. Energy Bids for Non-Resource Specific System Resources and Virtual Bids are not eligible for after-market cost recovery pursuant to Section 30.12.

**30.7.12.5 Virtual Bids and Bids for Non-Resource-Specific System Resources**

**30.7.12.5.1 Bids for Non-Resource-Specific System Resources that are Resource Adequacy Resources.**

The CAISO will accept Bids for Non-Resource-Specific System Resources that are Resource Adequacy Resources with a price that exceeds the Soft Energy Bid Cap up to the Maximum Import Bid Price and will reduce Bid prices for such resources that exceed the Maximum Import Bid Price to the greater of the Soft-Energy Bid Cap, the Maximum Import Bid Price, or the highest-priced Energy Bid from a resource-specific resource that the CAISO has accepted for the applicable Trading Hour pursuant to Section 30.7.12.2.

**30.7.12.5.2 Virtual Bids and Bids for Non-Resource-Specific System Resources that are not Resource Adequacy Resources**

The CAISO will accept Virtual Bids and Bids for Non-Resource-Specific System Resources that are not Resource Adequacy Resources that exceed the Soft Energy Bid for CAISO Market Intervals for which the conditions specified in Section 27.4.3.3 to apply scheduling parameters and Scarcity Demand Curve Values related to the Hard Energy Bid Cap are met. The CAISO will not accept Virtual Bids or Bids for Non-Resource Specific System Resources that are not Resource Adequacy Resources that exceed the Hard Energy Bid Cap.

**30.7.12.5.3 Maximum Import Bid Price**

The CAISO calculates the Maximum Import Bid Price as the index-based Energy price component multiplied by 110 percent, for the Day-Ahead Market and Real-time Market, separately. The index-based Energy price component is calculated based on the maximum of the published bilateral electric prices for the Mid-Columbia or Palo Verde locations, converted to an hourly value using the System Marginal Energy Cost component of the Locational Marginal Price for the CAISO Balancing Authority Area. The CAISO calculates the Maximum Import Bid Price separately for the applicable on-peak and off-peak hours. The CAISO will shape the index-based Energy price component calculated for each Trading Hour based on the ratio of the Day-Ahead Market System Marginal Energy Cost to the average System Marginal Energy Cost of a previous representative Trading Day, as further defined in the Business Practice Manual.

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**30.11 Adjustments to Reference Levels Prior to CAISO Market Processes**

The CAISO will adjust Reference Levels prior to executing the applicable CAISO Market Processes as described in this Section 30.11.

**30.11.1 Reasonableness Thresholds**

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

**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 calculate Reasonableness Thresholds for evaluating Reference Level Change Requests for Bids from resources, other than Hydro Default Energy Bids and Virtual Bids. 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. The Reasonableness Threshold for Default Energy Bid or Default Minimum Load Bid adjustments shall not exceed the Hard Energy Bid Cap or Minimum Load Cost Hard Cap, respectively.

**30.11.1.2 Calculations**

**30.11.1.2.1 Natural Gas-Fired Resources**

For natural gas-fired resources, the CAISO will calculate the Reasonableness Threshold to equal the Proxy Cost-based Default Start-Up Bid, the 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 39.7.1.1.1.3, unless the CAISO has updated the natural gas commodity price used to calculate the Reasonableness Threshold pursuant to Section 30.11.1.3, in which case the CAISO will use one hundred ten percent (110%); or (ii) one hundred ten percent (110%) for all other days. Provided, however, that the CAISO will set the Reasonableness Threshold for a specific resource to its Reference Level when it accepts a manual Reference Level Change Request as provided in Section 30.11.5.

**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, the 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 the 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 Level Change Requests applicable for each commodity gas region, to determine whether the same-day gas prices are ten percent (10%) greater than the gas price index the CAISO previously used to calculate the Reasonableness Thresholds.

(a) If the CAISO determines that the representative same-day gas prices are ten percent (10%) greater than the gas price index the CAISO previously used to calculate the Reasonableness Thresholds, the CAISO will:

(i) 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); and

(ii) automatically recalculate all Hydro Default Energy Bids in the applicable fuel regions.

(b) 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-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 Default Start-Up Bids, Default Minimum Load Bids, and Default Energy Bids, as applicable. Scheduling Coordinators may not submit Reference Level Change Requests for Bids by Non-Resource-Specific System Resources. Resources under the Registered Cost methodology are not eligible for Reference Level Change Requests for Default Minimum Load Bids or Default Start-Up Bids. Scheduling Coordinators may not submit Reference Level Change Requests to recover costs associated with gas company imbalance penalties.

**30.11.2.2 Requirements**

All Reference Level Change Requests must be based on the Scheduling Coordinator’s reasonable expectation that its daily actual fuel costs 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 costs or fuel-equivalent costs supported by Documentation of Contemporaneously Available Information.

**30.11.2.3 Energy Bids Above the Soft Energy Bid Cap**

A Scheduling Coordinator whose Default Energy Bid does not exceed the Soft Energy Bid Cap and that 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 Thresholds the CAISO calculates for each resource as specified in Section 30.11.1. The Scheduling Coordinator shall not submit a Reference Level Change Request for the purpose of inflating its Default Energy Bids or Default Commitment Cost Bids beyond what these values would be if calculated based on its actual or expected costs, without applying the Default Energy Bid Multiplier or Commitment Cost Multiplier. Scheduling Coordinators shall not submit an automated Reference Level Change Request that is supported by the same Documentation of Contemporaneously Available Information submitted with a manual Reference Level Change Request that the CAISO previously denied. The CAISO shall not accept automated Reference Level Change Requests for Hydro Default Energy Bids.

**30.11.3.2 Requirements**

Scheduling Coordinators must calculate the Reference Levels amounts included in their Reference Level Change Requests using the same methodology used to calculate the Proxy Cost-based Default Start-Up Bid, (without applying the Commitment Cost Multiplier), the Proxy Cost-based Default Minimum Load Bid (without applying the Commitment Cost Multiplier), and the Variable Cost-based Default Energy Bid (without applying the Default Energy Bid Multiplier).

**30.11.3.3 Contemporaneously Available Supporting Documentation**

Although 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 to provide the CAISO with Documentation of Contemporaneously Available Information pursuant to Section 30.11.3.4.

**30.11.3.4 Evaluation of Automated Reference Level Change Requests**

If the Reference Level change submitted by the Scheduling Coordinator for a resource in the automated Reference Level Change Request is equal to or less than the applicable Reasonableness Threshold for the resource, the CAISO will approve the Revised Default Commitment Cost Bid and Revised Default Energy Bid. If the Reference Level change submitted by the Scheduling Coordinator for a resource in the automated Reference Level Change Request process exceeds the applicable Reasonableness Threshold for the resource, the CAISO will approve the revised Reference Level to equal the resource’s Reasonableness Threshold.

**30.11.3.5 CAISO Audit of Automated Reference Level Change Requests**

(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 Scheduling Coordinator to provide the CAISO with its cost calculations and Documentation of Contemporaneously Available Information. In response to a CAISO audit request for information related to the audit, the Scheduling Coordinator must respond with the requested information within five (5) Business Days of the CAISO’s 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 of receipt of the Scheduling Coordinator’s cost calculations and Documentation of Contemporaneously Available Information.

(b) In the event the CAISO determines the submitted information does not support the Reference Level Change Request, the Scheduling Coordinator may request CAISO ADR Procedures as specified in Section 13 of the CAISO Tariff within five (5) Business Days of the CAISO’s response. If the Scheduling Coordinator requests CAISO ADR Procedures, the Scheduling Coordinator will not be permitted to submit automated Reference Level Change Requests for the affected resource as specified in Section 30.11.3.4(c) while the CAISO ADR Procedures are pending. If the CAISO ADR Procedures confirm that the Documentation of Contemporaneously Available Information did not support the Scheduling Coordinator’s automated Reference Level Change Request, the Scheduling Coordinator will be prohibited from submitting automated Reference Level Change Requests until the time period specified in Section 30.11.3.4(c) has elapsed.

(c) **Consequence for Failure to Comply with CAISO Requirements**. If the CAISO determines that the Documentation of Contemporaneously Available 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, for a resource as calculated in Section 30.11.2.2 were higher than those the CAISO used to determine the resource’s Reference Levels:

(1) The CAISO shall prohibit the Scheduling Coordinator from making any automated Reference Level Change Requests for the affected resource for sixty (60) days from the time the CAISO informs the Scheduling Coordinator that it did not submit Documentation of Contemporaneously Available Information that supports the Scheduling Coordinator’s automated Reference Level Change Request.

(2) Any subsequent determination that the Scheduling Coordinator did not submit Documentation of Contemporaneously Available Information that supports its automated Reference Level Change Request will result in the CAISO prohibiting the Scheduling Coordinator from making any automated Reference Level Change Requests for the affected resource for one hundred eighty (180) days from the time the CAISO informs the Scheduling Coordinator of the subsequent failure to submit Documentation of Contemporaneously Available Information that supports its automated Reference Level Change Request.

**30.11.4 Manual Reference Level Change Requests**

**30.11.4.1 Applicability**

Scheduling Coordinators may request a manual Reference Level Change Request when the Scheduling Coordinator’s actual or expected fuel costs or fuel-equivalent costs exceed the fuel or fuel-equivalent costs the CAISO used to calculate a resource’s Reference Level by the greater of ten percent (10%) or $0.50/MMBTU, as applicable. 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-fired resources; and

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

**30.11.4.2 Requirements**

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. Scheduling Coordinators must submit in their manual Reference Level Change Requests their actual or expected fuel costs that they request the CAISO to validate and to be used to calculate their resource’s Reference Levels. For gas-fired resources, the Scheduling Coordinator must submit the gas fuel cost only and not include the gas transportation cost. Upon submission of a manual Reference Level Change Request, the Scheduling Coordinator must submit Documentation of Contemporaneously Available Information that shows that its resource’s actual or expected fuel costs or fuel-equivalent costs exceed the fuel or fuel-equivalent costs used to calculate the resource’s Reference Level.

**30.11.4.3 Evaluation of Manual Reference Level Change Requests**

The CAISO will evaluate requested fuel costs submitted in the 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 fuel cost submitted in the manual Reference Level Change Request is accepted, the CAISO will recalculate the Reference Level using the accepted actual or expected fuel costs (without applying the Commitment Cost Multiplier or the Default Energy Bid Multiplier). The CAISO will apply the Revised Default Commitment Cost Bid and Revised Default Energy Bid for use in the CAISO Market Processes and for Settlement purposes as specified in Section 30.11.5. If the CAISO does not accept the submitted actual or expected fuel costs, 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 Default Commitment Cost Bids and Revised Default Energy Bid will apply to the applicable Trading Day of the Day-Ahead Market. For the Real-Time Market, the Revised Default Commitment Cost Bids and Revised Default Energy Bid 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 CAISO will not update the applicable Reasonableness Threshold when it accepts an automated Reference Level Change Request. The CAISO will update a resource’s applicable Reasonableness Threshold to equal the resource’s Reference Level when it accepts a manual Reference Level Change Request. 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.

**30.11.6 Hydro Default Energy Bids**

In the event a Scheduling Coordinator that controls both a hydro resource and a natural gas-fired resource in the same gas fuel region submits a manual Reference Level Change Request for both the hydro resource’s Hydro Default Energy Bid and the natural gas-fired resource’s Reference Level, and the CAISO accepts the manual 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 hydro 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 30.11.1.

**30.12 After-CAISO Market Process Cost Recovery**

**30.12.1 Applicability**

Scheduling Coordinators may request an 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 exceeds the Hard Energy Bid Cap or the Minimum Load Cost Hard Cap, respectively.

Scheduling Coordinators may not request additional uplift payments under this section to cover costs associated with gas company imbalance penalties.

**30.12.2 Notice**

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 its costs pursuant to Section 30.12.5.

**30.12.3 Supporting Documentation**

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

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**31.3.1 Market Clearing and Price Determination**

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**31.3.1.3 Reduction of Self-Scheduled LAP Demand**

In the IFM, to the extent the market software cannot resolve a non-competitive Transmission Constraint utilizing Effective Economic Bids such that self-scheduled Load at the LAP level would otherwise be reduced to relieve the Transmission Constraint, the CAISO Market software will adjust Non-Priced Quantities in accordance with the process and criteria described in Section 27.4.3. For this purpose the priority sequence, starting with the first type of Non-Priced Quantity to be adjusted, will be:

(a) Schedule the Energy from Self-Provided Ancillary Service Bids from capacity that is obligated to offer an Energy Bid under a must-offer obligation such as from an RMR Resource or a Resource Adequacy Resource. Consistent with Section 8.6.2, the CAISO Market software could also utilize the Energy from Self-Provided Ancillary Service Bids from capacity that is not under a must-offer obligation such as from an RMR Resource or a Resource Adequacy Resource, to the extent the Scheduling Coordinator has submitted an Energy Bid for such capacity. The associated Energy Bid prices will be those resulting from the MPM process.

(b) Relax the constraint consistent with Section 27.4.3.1, and establish prices consistent with Section 27.4.3.2. No constraints, including Transmission Constraints, on Interties with adjacent Balancing Authority Areas will be relaxed in this procedure.

**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, 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 an 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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**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 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 Soft Energy Bid Cap as the Energy Bids for such reserves and will set prices accordingly. For CAISO Market Intervals for which the conditions and parameters specified in Section 27.4.3.3 to apply, the RTED will Dispatch such Contingency Only reserves using the Hard Energy Bid Cap 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.

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**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.

**39.6.1.1 Energy Bid and Minimum Load Cost Caps**

**39.6.1.1.1 Soft Energy Bid Caps**

All Energy Bids, except for Virtual 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.

**39.6.1.1.2 Hard Energy Bid Cap**

All Energy Bids are subject to the Hard Energy Bid 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.

**39.6.1.1.3 Minimum Load Cost Hard Cap**

All Minimum Load Bids must not exceed the Minimum Load Cost Hard Cap. Scheduling Coordinators may submit Minimum Load Bid prices in excess of the Minimum Load Cost Hard Cap, which the CAISO will cost-verify pursuant to the rules specified in Section 30.11.

**39.6.1.2 Maximum RUC Availability Bid Prices**

The maximum RUC Availability Bid price shall be $250/MW/h.

**39.6.1.3 Maximum Ancillary Services Bid Prices**

The maximum level for Ancillary Services Bid prices shall be $250/MWh.

**39.6.1.3.1 Maximum Regulation Mileage Bid Price**

The maximum Mileage Bid price shall be $50.

**39.6.1.4 Minimum Bid Price for Energy Bids**

The minimum Energy Bid price shall be negative $150/MWh. These rules apply to all Energy Bids, including Virtual Bids.

**39.6.1.5 Minimum Bid Price for Ancillary and RUC Bids**

Ancillary Service Bids and RUC Availability Bids submitted into CAISO markets must have Bid prices not less than $0/MW/h.

**39.6.1.5.1 Minimum Regulation Mileage Bid Prices**

Regulation Mileage Bids submitted into CAISO markets must have Bid prices not less than $0.

**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 one hundred fifty percent (150%) 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 one hundred fifty percent (150%) 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 30.4.5.2, 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.

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**39.7.1 Calculation of Default Energy Bids**

Default Energy Bids shall be calculated by the CAISO, for the on-peak hours and off-peak hours for both the DAM and RTMs, pursuant to one of the methodologies described in this Section. The Scheduling Coordinator for each Generating Unit owner or Participating Load must rank order the following options of calculating the Default Energy Bid starting with its preferred method. The Scheduling Coordinator must provide the data necessary for determining the Variable Costs unless the Negotiated Rate Option precedes the Variable Cost Option in the rank order, in which case the Scheduling Coordinator must have a negotiated rate established with the Independent Entity charged with calculating the Default Energy Bid. If no rank order is specified for a Generating Unit or Participating Load, then the default rank order of (1) Variable Cost Option, (2) Negotiated Rate Option, (3) LMP Option will be applied. For the first ninety (90) days after changes to resource status and MSG Configurations as specified in Section 27.8.3, including the first ninety (90) days after the effective date of Section 27.8.3, the Default Energy Bid option for the resource is limited to the Negotiated Rate Option or the Variable Cost Option. Default Energy Bids used for purposes other than for calculating Reasonableness Thresholds will be subject to the Soft Energy Bid Cap, unless the CAISO has approved a Reference Level Change Request pursuant to Section 30.11 in support of an Energy Bid above the Soft Energy Bid Cap.

**39.7.1.1 Variable Cost Option**

For natural gas-fueled units, the Variable Cost Option will calculate the Default Energy Bid by adding incremental cost (comprised of incremental fuel cost plus a volumetric Grid Management Charge adder plus a greenhouse gas cost adder if applicable) with variable operation and maintenance cost, by multiplying the sum by the Default Energy Bid Multiplier, adding a Bid Adder if applicable for a Frequently Mitigated Unit, and adding Variable Energy Opportunity Costs, if any. For non-natural gas-fueled units, the Variable Cost Option will calculate the Default Energy Bid by summing incremental fuel or fuel-equivalent cost plus a volumetric Grid Management Charge plus a greenhouse gas cost adder if applicable, multiplying the sum by the Default Energy Bid Multiplier, adding a Bid Adder if applicable for a Frequently Mitigated Unit, and adding Variable Energy Opportunity Costs, if any. For any Default Energy Bids calculated under the Variable Cost Option that exceed $1,000 per MWh because of an approved Reference Level Change Request, any ten percent (10%) adder or Frequently Mitigated Unit adder shall not exceed $100 per MWh.

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**Appendix A**

**Master Definitions Supplement**

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**- Constraint Relaxation Threshold**

A MW threshold value used to determine when the parameters specified in Section 27.4.3.3.4 will trigger in each Balancing Authority Area participating in the CAISO Markets to account for small supply shortfalls configured based on the Balancing Authority Area’s BAL-001-2 Requirement R2, calculated by the CAISO annually. The CAISO will post the annual values for each Balancing Authority Area on the CAISO Website.

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**- 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 $2,000 per MWh.

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**- Maximum Import Energy Bid Price**

An index-based price used to screen Bids by Non-Resource Specific System resources that are Resource Adequacy Resources that exceed the Soft Energy Bid Cap.

**- Minimum Load Cost Hard Cap**

The maximum Minimum Load Cost used in the CAISO Markets. The Minimum Load Cost Hard Cap is $2,000 per MWh. The CAISO will calculate this limit by dividing a resource’s Minimum Load Cost by its Minimum Load. Where a resource’s Minimum Load is less than 1 MW, the CAISO will set its Minimum Load to 1 MW for the purpose of this calculation.

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**- Scarcity Reserve Demand Curve Values**

Fixed percentages of the Soft Energy Bid Cap or Hard Energy Bid 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.

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**- Soft Energy Bid Cap**

The maximum Energy Bid price submitted by Scheduling Coordinators for 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.

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