



California ISO

**FERC Order No. 831 –  
Import Bidding and Market Parameters  
Draft Final Proposal**

April 23, 2020

Prepared by:  
Brittany Dean  
Danielle Tavel

## Table of Contents

1	Executive Summary .....	3
2	Background .....	5
3	Stakeholder Comments and Changes from the Revised Straw Proposal .....	6
4	Proposal.....	11
4.1	Power Balance Constraint Relaxation Pricing and Constraint Penalty Prices ...	11
4.2	Screening import and virtual bids greater than \$1,000/MWh.....	18
4.2.1	Application to Resource Adequacy Imports.....	19
4.2.2	Maximum Import Bid Price Calculation.....	21
5	Energy Imbalance Market Governing Body Advisory Role.....	25
6	Stakeholder engagement.....	26
7	Appendix A - Market constraint relaxation penalty parameters values.....	27

## 1 Executive Summary

This initiative explores modifications related to the CAISO's compliance filing with Federal Energy Regulatory Commission (FERC) Order No. 831. In its compliance filing, the CAISO revised its tariff to raise the energy bid cap from \$1,000/MWh to \$2,000/MWh. It also revised its tariff to require suppliers within the CAISO balancing authority area that submit energy bids above \$1,000/MWh to base bids on verifiable actual or expected costs.<sup>1</sup> This initiative addresses modifications to two topics related to the changes the CAISO proposed to comply with Order No. 831:<sup>2</sup>

- The “penalty prices” at which the CAISO markets will relax market constraints under the increased energy bid cap in order to comply with FERC Order No. 831. The CAISO market uses these penalty prices or market constraint relaxation price parameters, to relax constraints in the market and set prices if needed to reach a solution. This includes the power balance constraint that requires supply to equal demand, which sets the system marginal energy cost under such conditions.
- A price-screening methodology for import bids greater than \$1,000/MWh.

FERC Order No. 831 requires RTOs/ISOs to verify costs underlying cost-based bids above \$1,000/MWh before a bid is used in the market. The order additionally provides for after-the-fact make-whole payments to the extent an RTO/ISO cannot verify a resource's costs before the market runs. The order did not require verification of import or virtual bids above \$1,000/MWh. However, the Commission indicated that it would consider proposals by RTOs/ISOs to verify or otherwise review the costs of imports or exports and/or develop additional mitigation provisions for import and export transactions above \$1,000/MWh.<sup>3</sup>

Similarly, Order No. 831 did not specify how the RTO/ISO should set its market constraint relaxation prices (also referred to as penalty prices) to be consistent with the increased bid cap. However, it stated an RTO/ISO may file, pursuant to section 205 of the Federal Power Act, to propose modifications to shortage prices or other market elements that require revision in light of the offer cap.<sup>4</sup> The CAISO intends to present its proposal to FERC in a separate filing, under section 205 of the Federal Power Act, consistent with FERC's direction.

---

<sup>1</sup> FERC Order No. 831 available at <https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-2.pdf>.

<sup>2</sup> Note that this document addresses these topics in different order than the revised straw proposal.

<sup>3</sup> FERC Order No. 831 at p. 197 available at <https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-2.pdf>.

<sup>4</sup> FERC Order No. 831 at p. 213 available at <https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-2.pdf>.

**FERC Order No. 831 - Import Bidding and Market Parameters**  
***Draft Final Proposal***

In the CAISO's proposed tariff changes to comply with FERC Order No. 831<sup>5</sup>, it did not propose to cost-verify non-resource specific import bids and proposed to allow suppliers to submit such import bids up to \$2,000/MWh.<sup>6</sup> The CAISO also proposed to set the market constraint relaxation penalty prices relative to the new \$2,000/MWh bid cap in all market intervals. Subsequently, the CAISO initiated this policy initiative to explore alternative approaches to these topics. In January 2020, the CAISO notified FERC that it would extend implementation of its compliance with Order No. 831 to fall 2021 to allow more time for policy development and implementation resulting from this policy initiative.

In this draft final proposal, the CAISO proposes to set the power balance constraint penalty price used by the market to \$2,000/MWh, and scale related price parameters accordingly, only during periods when verified energy costs are greater than \$1,000/MWh. It will use the higher priced parameters only when (1) there is a submitted and cost-verified energy bid from a resource-specific resource<sup>7</sup> higher than \$1,000/MWh, or (2) a CAISO-calculated "maximum import bid price," used to screen the costs of imports, is greater than \$1,000/MWh.

In the event the market is using the penalty prices scaled relative to a \$2,000/MWh power balance constraint penalty price and the market must relax the power balance constraint, the CAISO proposes that the market sets energy prices at the price of the highest-priced cleared economic bid rather than the \$2,000/MWh power balance constraint penalty price.

Regarding the second topic this policy initiative addresses, this document presents a methodology to price screen non-resource specific import bids greater than \$1,000/MWh. This methodology differs somewhat from the CAISO's proposed approach for cost-verifying energy bids for resource-specific resources (which include CAISO generating units, EIM participating resources, and resource-specific import bids). Rather than verifying actual or expected operating costs, as the CAISO will do for resource-specific resources, the CAISO proposes to calculate a "maximum import bid price" that it will use to screen non-resource specific import bids. The CAISO will calculate this maximum import bid price based on published bilateral energy price indices. The CAISO market will only accept import bids priced higher than \$1,000/MWh in periods when the CAISO-calculated maximum import bid price is also greater than \$1,000/MWh.

The import bid price screening will apply differently to non-resource specific import bids providing resource adequacy capacity than it will to those not providing resource

---

<sup>5</sup> Submitted in September 2019

<sup>6</sup> As part of the CAISO compliance to Order No. 831, the CAISO has already proposed to verify import bids from resource specific system resources' costs similarly to the cost-verification for internal resources' energy bids. See CAISO Order No. 831 Compliance Filing, transmittal letter at pp. 10-11.

<sup>7</sup> A resource-specific system resource is the term used in the CAISO tariff, is a resource with specific generation design characteristics registered in Master File and modeled as either as a generating unit or a system resource.

adequacy capacity. The CAISO market will reduce resource adequacy non-resource specific import bids priced higher than \$1,000/MWh to the greater of the CAISO-calculated maximum import bid price or \$1,000/MWh.

The CAISO market will not reduce the price of non-resource adequacy non-resource specific import bids higher than \$1,000/MWh. However, the CAISO will only accept these bids when the maximum import bid price is greater than \$1,000/MWh or there is a cost-verified resource-specific bid greater than \$1,000/MWh. When either of these conditions exist, the market will accept non-resource adequacy non-resource specific import bids up to \$2,000/MWh.

Similarly, the CAISO market will only accept virtual bids greater than \$1,000/MWh in the event the maximum import bid price is greater than \$1,000/MWh or there is a cost-verified resource-specific bid greater than \$1,000/MWh. This rule is necessary because under this proposal, the CAISO market cannot accept import bids or virtual bids greater than \$1,000/MWh because the market's power balance constraint penalty price will only be set at \$2,000/MWh when the CAISO-calculated maximum import bid price is greater than \$1,000/MWh. The market will not clear bids greater than \$1,000/MWh when the power balance constraint penalty price is set at \$1,000/MWh.

## **2 Background**

In 2016, the Federal Energy Regulatory Commission (FERC) issued FERC Order No. 831 that required Independent System Operators and Regional Transmission Organizations (ISOs/RTOs) to revise their tariffs to raise the energy bid cap from \$1,000/MWh to \$2,000/MWh, and generally required suppliers that submit bids above \$1,000/MWh to base those bids on verifiable costs. These rule changes in Order No. 831 created a structure where internal supply offers above \$1,000/MWh are effectively automatically mitigated to an amount equal to a supplier's expected or actual costs.

Order No. 831 required that ISOs verify the costs underlying these cost-based offers above \$1,000/MWh before an offer could be used to calculate energy prices. If an ISO could not verify the costs underlying the offer before the market clearing process begins then that offer may not be used to calculate energy prices. However, the supplier may be eligible for an after-the-fact make-whole payment if the resource is dispatched and the resource's costs can be verified after-the-fact. Suppliers will also be eligible for make-whole payments if the ISO dispatches a resource and its verified cost-based incremental energy bid exceeds \$2,000/MWh. The order did not require verification of import or virtual bids above \$1,000/MWh. However, the Commission indicated that it would consider proposals by RTOs/ISOs to verify or otherwise review the costs of

imports or exports and/or develop additional mitigation provisions for import and export transactions above \$1,000/MWh.<sup>8</sup>

Similarly, Order No. 831 did not specify how the RTO/ISO should set its penalty prices but indicated an RTO/ISO may file, pursuant to section 205 of the Federal Power Act, to propose modifications to shortage prices or other market elements that require revision in light of the offer cap.<sup>9</sup>

The CAISO submitted its proposed tariff changes to comply with FERC Order No. 831 in September 2019 and proposed that they go into effect in fall 2020. In its proposed tariff changes,<sup>10</sup> the CAISO did not submit a separate filing requesting authority to cost-verify or price screen import bids above \$1,000/MWh. However, the CAISO decided to further address this topic in this initiative because of the CAISO balancing authority area's increasing dependence on imports.

In addition, a number of stakeholders objected to the CAISO's proposal in the compliance filing to continue to set the power balance constraint penalty price at the hard energy bid cap, which under Order No. 831 increases from \$1,000/MWh to \$2,000/MWh. This would result in market prices being set to \$2,000/MWh if the market has to relax the power balance constraint. Consequently, this initiative also addresses this topic.

In January 2020, the CAISO notified FERC that it would likely extend implementation of its Order No. 831 compliance requirements to fall 2021 to allow more time for policy development and implementation resulting from this policy initiative.<sup>11</sup>

### **3 Stakeholder Comments and Changes from the Revised Straw Proposal**

The CAISO appreciates the written stakeholder comments received in response to this initiative's revised straw proposal and the subsequent stakeholder call. The following summarizes these comments and the changes resulting from them.

#### **Power Balance Constraint Relaxation Pricing Comments and Changes**

The revised straw proposal described two potential options for establishing market constraint relaxation penalty prices under the FERC Order No. 831 tariff changes. The first option was to retain the CAISO's current policy and scale the penalty prices relative

---

<sup>8</sup> FERC Order No. 831 at p. 197 available at <https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-2.pdf>.

<sup>9</sup> FERC Order No. 831 at p. 213 available at <https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-2.pdf>.

<sup>10</sup> Developed in the CAISO's Commitment Cost and Default Energy Bid Enhancements (CCDEBE) stakeholder initiative available at <http://www.caiso.com/StakeholderProcesses/Commitment-costs-and-default-energy-bid-enhancements>.

<sup>11</sup> See CAISO Motion for Leave to Answer and Supplemental Answer of the California Independent System Operator Corporation to Comments and Limited Protest, FERC Docket No. ER19-2757, at page 3-5 (January 31, 2020) (available at: <http://www.caiso.com/Documents/Jan31-2020-SuppAnswer-to-Comments-Order831Compliance-ER19-2757.pdf>)

to the power balance constraint relaxation penalty price set at hard energy bid cap, which under Order No. 831 increases to \$2000/MWh. The market would use these revised penalty prices all of the time. The second option was to scale the penalty prices relative to the \$2,000/MWh power balance constraint relaxation penalty price only when there are cost-verified energy bids greater than \$1,000/MWh submitted in the CAISO market. This second option included a variation that sets energy prices at the price of the highest-priced cleared economic bid, in the event energy bids are greater than \$1,000/MWh and the market must relax the power balance constraint.

In response to these two potential options, a number of market participants supported the second option to scale the penalty prices relative to the \$2,000/MWh power balance constraint relaxation penalty price only when there are cost-verified energy bids greater than \$1,000/MWh submitted in the CAISO market. They made the point that the bid cap remains at \$1,000/MWh and only increases above that in the rare instance that costs would be greater than \$1,000/MWh. Consequently, they believe the power balance constraint penalty price should remain at \$1,000/MWh unless there are actually energy bids greater than \$1,000/MWh in the market. Consistent with this, they also believe energy prices should be set by the price of the highest-priced cleared economic bid in the event energy bids are greater than \$1,000/MWh and the market must relax the power balance constraint.

EIM entities also made the point that not all of their available supply is offered to the CAISO market because the EIM is voluntary. They stated that because of this the market having to relax the power balance constraint for a balancing authority area in the EIM may not indicate true scarcity and a \$2,000/MWh power balance constraint relaxation penalty price would be inappropriate.

The CAISO Department of Market Monitoring (DMM) maintained that raising the power balance constraint penalty price to \$2,000/MWh is inappropriate for a number of reasons. They stated that it would have a significant financial impact in the EIM since prices for EIM balancing authority areas are more often set by power balance constraint relaxation than for the CAISO balancing authority area. DMM also maintained that a \$2,000/MWh penalty price does not increase incentives for suppliers to bid their actual costs because the existing market structure already provides this incentive. DMM expressed concern that if the penalty price is \$2,000/MWh all the time, then during non-competitive conditions when no true scarcity exists, suppliers could be encouraged to withhold physical supply. They stated that a \$2,000/MWh penalty price does not incentivize suppliers to deliver energy scheduled in the day-ahead market, and recommended the CAISO address any non-delivery issues with resource adequacy imports through different measures. Finally, they maintained that raising the penalty price to \$2,000/MWh in all intervals is not necessary to raise the hard energy bid cap,

especially when the instance of a cost-verified bid above \$1,000/MWh is anticipated to occur very rarely.

During the December 6, 2019 Market Surveillance Committee (MSC) meeting, MSC members stated that setting the power balance constraint relaxation penalty price to \$2,000/MWh would provide an improved scarcity price signal. They noted that this signal would provide incentive for flexible resources to respond to dispatch instructions to meet operational needs and it will help ensure that importers have actual generation capacity to back day-ahead market import bids.

Based on consideration of all these comments, the CAISO in this draft final proposal is proposing to scale the market constraint penalty prices relative to a \$2,000/MWh power balance constraint penalty price only in certain circumstances. It will do this when (1) there is a submitted and cost-verified energy bid from a resource-specific resource<sup>12</sup> higher than \$1,000/MWh, or (2) a CAISO-calculated “maximum import bid price,” used to screen the costs of imports, is greater than \$1,000/MWh.

In the event the market is using the penalty prices scaled relative to a \$2,000/MWh power balance constraint penalty price and the market must relax the power balance constraint, the CAISO proposes that the market sets energy prices at the price of the highest-priced cleared economic bid rather than the \$2,000/MWh power balance constraint penalty price.

The CAISO selected this alternative because it is reasonable to assume that costs will not justify energy bids greater than \$1,000/MWh the vast majority of the time. Thus, it is reasonable that unless there are actually costs greater than \$1,000/MWh, the power balance constraint relaxation penalty price will remain at \$1,000/MWh.

Finally, multiple stakeholders recommend the CAISO focus its efforts on enhancing its approach to reflect accurate scarcity pricing conditions in the market. They propose the CAISO adopt graduated penalty pricing steps based on the amount of infeasibility that lead to a \$1,000/MWh power balance constraint penalty price.

The CAISO acknowledges the concerns stakeholders have regarding scarcity pricing and is addressing these as part of the *Flexible Ramping Product (FRP) Refinements* initiative.<sup>13</sup> Within the FRP refinements initiative, the CAISO is proposing to make the flexible ramping product nodal-based, which will increase the utilization and deployment of this product. This will ensure the power balance constraint is not triggered prior to the flexible ramping product constraints being fully relaxed, because it will ensure the resources awarded flexible ramping product are accessible. When the flexible ramping product requirements are relaxed, the demand curve price gradually increases the

---

<sup>12</sup> A resource-specific system resource is the term used in the CAISO tariff, is a resource with specific generation design characteristics registered in Master File and modeled as either as a generating unit or a system resource.

<sup>13</sup> Information on the CAISO’s Flexible Ramping Product Refinements initiative is available at <http://www.caiso.com/StakeholderProcesses/Flexible-ramping-product-refinements>.



energy price above the marginal energy offer. As the requirement relaxation increases, the energy price increases to higher levels prior to relaxing the power balance constraint. The power balance constraint penalty price is only triggered after the full flexible ramping product requirement cannot be met.

### **Import Bid Cost Verification Requirements Comments and Changes**

In this initiative's revised straw proposal, the CAISO proposed to price-screen all import bids greater than \$1,000/MWh using a CAISO-calculated "maximum import bid price" based on published electrical price indices. The CAISO proposed to not attempt to verify the actual costs behind an import. The revised straw proposal also proposed two alternatives for applying the maximum import bid price to non-resource specific import bids greater than \$1,000/MWh, either rejecting such import bids above the maximum import bid price or reducing them to the greater of the maximum import bid price or \$1,000/MWh. Finally, the revised straw proposal posed if the option to reduce submitted import bid prices were selected, whether or not to provide for after-the fact cost recovery make whole payments for import bids that had their price reduced and the supplier could demonstrate actual costs greater than the price paid.

Stakeholders generally supported the CAISO's intent to screen import bid prices greater than \$1,000/MWh. However, stakeholders differed on the type of imports that should be subject to price screening. Some stakeholders maintained that "voluntary" non-resource adequacy import supply should not be subject to price screening. They stated it is not practical to develop a methodology that would accurately determine import's actual costs. This is because the CAISO market does not link import bids to specific generators for which the CAISO would have information to estimate costs. In addition, the costs include opportunity costs that are very subjective to determine.

A number of stakeholders stated that reducing submitted import bid prices would entail too much risk that a bid could be reduced to below actual costs. They maintained that there would have to be provisions for after-the-fact cost recovery make whole payments if this option were to be adopted. They maintained that not providing for make whole payments would discourage non-resource adequacy imports from be offered to the CAISO market. However, stakeholders did not propose a viable methodology in their comments that the CAISO could use to determine import's costs.

Based on this, it does not appear to be practical for the CAISO to determine the costs of imports and provide make-whole payments after-the-fact.

The CAISO agrees with stakeholders that provisions to reduce non-resource adequacy import bids to a maximum import bid price could discourage these imports from bidding into the CAISO market. Non-resource adequacy imports do not have the same requirement to offer to the market that resource adequacy imports do. Because of this, importers may not offer to the CAISO market if they were faced with the risk of having

their bid reduced below actual costs with no provisions for after-the-market cost recovery.

Consequently, in this draft final proposal, the CAISO proposes to only reduce resource adequacy import bids greater than \$1,000/MWh to the CAISO-calculated maximum import bid price. The CAISO also proposes to not provide for after-the-fact cost recovery for import bids. This proposal will not reduce resource adequacy import supply because resource adequacy resources are required to offer these imports to the CAISO market. Nevertheless, this may impose the risk of resource adequacy import bids being reduced to a price below the supplier's costs. However, suppliers could conceivably take this risk into account when entering into bilateral resource adequacy contracts.

Although this proposal allows non-resource adequacy import bids to set prices, there are two factors to mitigate the risk that they will inflate CAISO market prices. First, by design the market should be able to use only resource adequacy resources to meet CAISO balancing authority area demand. Second, the CAISO will only accept non-resource adequacy bids when the maximum import bid price is greater than \$1,000/MWh or there is a cost-verified resource-specific bid greater than \$1,000/MWh. When either of these conditions exist, the market will accept non-resource adequacy non-resource specific import bids up to \$2,000/MWh.

Stakeholders also suggested modifications to the proposed maximum import bid price calculation that the CAISO adopted in this draft final proposal. Rather than shaping the price over the day using the amount of system load in each hour, the CAISO now proposes to shape the price in each hour based on the average system marginal energy cost in that hour in the same month of the prior year. The CAISO removed the gas price floor and long-term opportunity costs components from the calculation based on stakeholder points that these factors will be accounted for in the bilateral electrical prices in the rare events when costs are greater than \$1,000/MWh.

Some stakeholders suggested a multiplier greater than 110 percent is needed so that it also accounts for California greenhouse gas regulation compliance costs and transmission. The CAISO does not believe a larger multiplier is needed to account for these costs. California greenhouse gas regulation compliance costs would only amount to a very small percentage of costs above \$1,000/MWh. Transmission costs are presumably already reflected in published electrical hub price indices because the sale of energy at a trading hub should reflect the cost of transmission to the hub.

## 4 Proposal

This section describes the CAISO's proposal for setting market prices when the market must relax the power balance constraint, as well as associated rules for setting market constraint relaxation price parameters in the context of the \$2,000/MWh hard energy bid cap. It also describes the CAISO's proposal for price screening import bids priced greater than \$1,000/MWh.

The CAISO proposes to set the power balance constraint penalty price used by the market to \$2,000/MWh, and scale related price parameters accordingly, only during periods when energy costs are greater than \$1,000/MWh.

In the event the market is using a \$2,000/MWh power balance constraint penalty price and the market must relax the power balance constraint, the CAISO proposes the market sets energy prices at the price of the highest-priced cleared economic bid.

The CAISO proposes to price screen import bids greater than \$1,000/MWh to determine the bids used by the CAISO market. The CAISO proposes to calculate a "maximum import bid price" that it will use to screen import bids, calculated based on published bilateral energy price indices.

The CAISO market will only accept import bids priced greater than \$1,000/MWh in periods in which the CAISO-calculated maximum import bid price or a cost-verified energy bid for a resource-specific resource is also greater than \$1,000/MWh. In this event, the market will reduce resource adequacy import bids above \$1,000/MWh to the CAISO-calculated maximum import bid price. In this event, the market will accept non-resource adequacy import bids and virtual bids up to \$2,000/MWh.<sup>14</sup>

### 4.1 Power Balance Constraint Relaxation Pricing and Constraint Penalty Prices

The CAISO tariff specifies the relevant scheduling and pricing parameters that apply when the CAISO market must relax a constraint to reach a feasible solution.<sup>15</sup>

The power balance constraint ensures that the sum of generation and imports equals the sum of demand, including exports and transmission losses.<sup>16</sup> The shadow price of the power balance constraint establishes the system marginal energy cost, which the

---

<sup>14</sup> Likewise, the CAISO will only accept physical demand and export bids above \$1,000/MWh when one of these conditions is met.

<sup>15</sup> See Section 27.4.3 of the CAISO tariff available at <http://www.caiso.com/Documents/Section27-CAISOMarkets-Processes-asof-Aug12-2019.pdf>.

<sup>16</sup> See Appendix C Part B of the CASIO tariff available at <http://www.caiso.com/Documents/AppendixC-LocationalMarginalPrice-asof-Aug1-2019.pdf#search=power%20balance%20constraint>.

market uses to determine locational marginal prices.<sup>17</sup> Today, this constraint is set to the maximum energy bid price (the “hard” bid cap) of \$1,000/MWh. This allows for bids to clear up to the hard bid cap.

The tariff also specifies the scheduling and pricing parameters for relaxing transmission constraints,<sup>18</sup> the pricing parameters when there is insufficient supply to meet demand (power balance constraint),<sup>19</sup> and for protecting existing contracts and transmission ownership rights.<sup>20</sup> These parameters, included in Appendix A, are established based on the existing \$1,000/MWh maximum bid price market participants can submit to the CAISO markets. The Market Operations business practice manual (BPM) documents the full set of scheduling and pricing parameters used in the various markets that are calibrated based on the values set in the CAISO tariff.<sup>21</sup>

The additional pricing parameters outlined in the BPM and included in Appendix A, are associated with constraints in the optimization and govern the conditions under which constraints may be relaxed and the setting of market prices when any constraints are relaxed. Importantly, the magnitude of the penalty price values in the tables for each market reflect the hierarchical priority order in which the associated constraint may be relaxed in that market by the market software<sup>22</sup>.

The power balance constraint needs to be at least as high as the highest submitted energy bid price. Otherwise, the optimization will relax the constraint rather than clear bids priced above its value.

The CAISO market utilizes both a scheduling and pricing run to produce awards (dispatches) and prices. In the scheduling run, the market optimizes all submitted bids and clears awards based on the most economic solution. In the event a solution cannot be achieved, the market will adjust non-priced parameters (*i.e.*, uneconomic adjustments) or relax constraints to attain a solution. The awards and resulting prices of this solution are passed to the pricing run in which, the information of the potential uneconomic adjustments and/or constraint relaxation is retained because after solving the scheduling run, the amounts of the adjustments and relaxations are known. These instances are modeled in the pricing run with slack variables with a small range beyond the solution of the scheduling run in order to have room in the optimization of the pricing

---

<sup>18</sup> See Sections 27.4.3.1 and 27.4.3.2 of the CAISO tariff available at <http://www.caiso.com/Documents/Section27-CAISOMarkets-Processes-asof-Aug12-2019.pdf>.

<sup>19</sup> See Sections 27.4.3.3 and 27.4.3.4 of the CAISO tariff available at <http://www.caiso.com/Documents/Section27-CAISOMarkets-Processes-asof-Aug12-2019.pdf>.

<sup>20</sup> See Section 27.4.3.5 of the CAISO tariff available at <http://www.caiso.com/Documents/Section27-CAISOMarkets-Processes-asof-Aug12-2019.pdf>.

<sup>21</sup> Additional information is available in the Business Practice Manual for Market Operations available at [https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/BPM\\_for\\_Market%20Operations\\_V63\\_redline.pdf](https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/BPM_for_Market%20Operations_V63_redline.pdf)

<sup>22</sup> Additional information is available in the Business Practice Manual for Market Operations available at [https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/BPM\\_for\\_Market%20Operations\\_V63\\_redline.pdf](https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/BPM_for_Market%20Operations_V63_redline.pdf)

run to find a solution and produce binding prices. In the event uneconomic adjustments are made or constraints are relaxed, the relevant penalty prices are applied.

In this draft final proposal, the CAISO proposes that the power balance constraint penalty price remain at \$1,000/MWh under routine conditions and all other market constraint penalty prices will remain scaled relative to \$1,000/MWh. The CAISO proposes to set the power balance constraint penalty price to \$2,000/MWh, and scale the rest of the market constraint penalty prices relative to \$2,000/MWh, only under specific conditions. Consequently, this assumes that under normal market conditions the scarcity price signal sent by the power balance constraint relaxation price should be based on the \$1,000/MWh bid cap.

Specifically, under this proposal, the CAISO market would utilize two sets of pricing parameters<sup>23</sup>:

1. Pricing parameters will be scaled relative to a \$1,000/MWh power balance constraint relaxation penalty price when both of the following conditions exist:
  - i. There is not a cost-verified energy bid from a resource-specific resource<sup>24</sup> greater than \$1,000/MWh,
  - ii. The CAISO-calculated maximum import bid price is not greater than \$1,000/MWh.
2. Pricing parameters will be scaled relative to a \$2,000/MWh power balance constraint relaxation penalty price when either of the following conditions exist:
  - i. There is a submitted and cost-verified energy bid from a resource-specific resource greater than \$1,000/MWh.
  - ii. The CAISO-calculated maximum import bid price is greater than \$1,000/MWh.

Further, the CAISO proposes that the market would set energy prices in the pricing run using the highest-priced cleared economic bid when the power balance constraint relaxation penalty price is set to \$2,000/MWh. This is similar to the “price discovery mechanism” in the EIM that is used during the start-up of new EIM participating balancing authority areas and in the EIM’s “available balance capacity” pricing feature.<sup>25</sup>

The CAISO real-time market includes individual power balance constraints for each EIM balancing authority area and an overall power balance constraint for the market. The CAISO will set the all these power balance constraints at \$2,000/MWh, and scale the

---

<sup>23</sup> The two sets of market constraint pricing parameters are outlined in Appendix A.

<sup>24</sup> See Footnote 7.

<sup>25</sup> Sections 11.1.8 and 11.3.4 in the BPM for the Energy Imbalance Market describes the transition period pricing for EIM entities and the EIM available balancing capacity feature respectively. This information is available at <https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=EnergyImbalanceMarket>.

other market constraints accordingly, when the conditions are met to set the power balance constraint to \$2,000/MWh.

Additionally, it is important to note that if the conditions are met to set the power balance constraint to \$2,000/MWh (i.e. there is a cost-verified energy bid from a resource-specific resource greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh) for any hour in the day-ahead market the \$2,000/MWh penalty price will be used for all hours of the day. In the real-time market, if the power balance constraint penalty price is set to \$2,000/MWh in one market interval, the real-time market will use the \$2,000/MWh penalty price for the remainder of the day. This approach is necessary so the market functions consistently across all intervals in its horizon.

The examples below illustrate the CAISO's overall proposed approach for establishing penalty prices and setting prices when the market relaxes the power balance constraint.

### **Example A:**

Assume the following inputs in the day-ahead market:

- Highest-priced submitted bid from a resource-specific resource = \$900/MWh
- Highest-priced submitted import bid<sup>26</sup> = \$900/MWh
- Highest-priced submitted virtual supply bid<sup>27</sup> = \$800/MWh
- CAISO-calculated maximum import bid price = \$200/MWh

Given the conditions listed above, in the scheduling and pricing runs, the power balance constraint penalty price would be set to \$1,000/MWh to determine the dispatch and prices. Note that import bids (and virtual bids) are allowed above the CAISO-calculated maximum import bid price up to \$1,000/MWh.

Assume the market must relax the power balance constraint. Energy prices would be set based on the \$1,000/MWh power balance constraint penalty price.

---

<sup>26</sup> Import bids refers to a system resource bid at a CAISO intertie.

<sup>27</sup> Virtual supply bids refers to virtual bids at nodes in CAISO balancing authority area in the day-ahead market.

**Example B:**

Assume the following inputs in the day-ahead market:

- Highest-priced submitted bid from a resource-specific resource = \$1,200/MWh
- Highest-priced submitted import bid = \$900/MWh
- Highest-priced submitted virtual supply bid = \$800/MWh
- CAISO-calculated maximum import bid price = \$700/MWh

Given the conditions listed above, in the scheduling and pricing runs, the power balance constraint penalty price would be set to \$2,000/MWh to determine the dispatch because there is a submitted and cost-verified energy bid from a resource-specific resource greater than \$1,000/MWh.

Assume the market must relax the power balance constraint and the highest-priced cleared economic bid is \$1,200/MWh. Energy prices in the pricing run would be set based on the \$1,200/MWh highest-priced cleared economic bid.

**Example C:**

Assume the following inputs in the day-ahead market:

- Highest-priced submitted bid from a resource-specific resource = \$900/MWh
- Highest-priced submitted import bid = \$1,000/MWh
- Highest-priced submitted virtual supply bid = \$1,800/MWh
- CAISO-calculated maximum import bid price = \$1,100/MWh

Given the conditions listed above, in the scheduling and pricing runs, the power balance constraint penalty price would be set to \$2,000/MWh to determine the dispatch because the CAISO-calculated maximum import bid price is at least \$1,000/MWh.

Assume the market must relax the power balance constraint and the highest-priced cleared economic bid is the virtual supply bid of \$1,800/MWh. This virtual supply bid is accepted because the CAISO-calculated maximum import bid price

is greater than \$1,000/MWh. Further, this virtual supply bid is unlike submitted import bids and is not limited by the CAISO-calculated maximum import bid price of \$1,100/MWh. Consequently, energy prices in the pricing run would be set based on the \$1,800/MWh highest-priced cleared economic bid.

**Example D:**

Assume the following inputs in the real-time market:

- Highest-priced submitted bid from a resource-specific resource = \$900/MWh
- Highest-priced submitted resource adequacy import bid = \$1,200/MWh
- CAISO-calculated maximum import bid price = \$1,100/MWh

Given the conditions listed above, in the scheduling and pricing runs, the power balance constraint penalty price would be set to \$2,000/MWh to determine the dispatch because the CAISO-calculated maximum import bid price is \$1,100/MWh, which is greater than \$1,000/MWh. The market reduces the submitted \$1,200/MWh resource adequacy import bid to the \$1,100/MWh maximum import bid price.

Assume the market must relax the power balance constraint and the \$1,100/MWh import bid is the highest-priced cleared economic. Energy prices produced by the pricing run would be based on the \$1,100/MWh bid set by the import bid, including in EIM balancing authority areas.

**Example E:**

Assume the following inputs in the real-time market:

- Highest-priced submitted bid from a resource-specific resource within an EIM balancing authority area = \$1,200/MWh
  - This EIM balancing authority area is import constrained.
- Highest-priced submitted import bid = \$800/MWh
- CAISO-calculated maximum import bid price = \$900/MWh



Given the conditions listed above, in the scheduling and pricing runs, the power balance constraint penalty price would be set to \$2,000/MWh to determine the dispatch because there is a submitted and cost-verified energy bid from a resource-specific resource greater than \$1,000/MWh. This applies to all the individual balancing authority area power balance constraints in the EIM and the overall market power balance constraint.

Assume the market must relax the power balance constraint in the import constrained EIM balancing authority area. The highest-priced cleared economic bid within the balancing authority area is the \$1,200/MWh bid. Energy prices in the pricing run for this EIM balancing authority area would be set based on this \$1,200/MWh bid. Since the market outside of this import constrained EIM balancing authority area can reach a feasible solution, the overall system's power balance constraint does not need to be relaxed in this example, and prices outside the constrained balancing authority are produced using its normal process.

As described above, this pricing based on the last cleared economic bid rather than the power balance constraint penalty price when the market relaxes the power balance constraint is based on the "available balancing capacity" feature currently implemented in the EIM. It was originally intended to allow the market to recognize additional resources outside the market EIM participants use to meet their balancing authority responsibilities.<sup>28</sup> It includes bids for these resources in the market's bid stack when the market must relax the power balance constraint for an EIM balancing authority area. This allows the marginal economic bid to set the energy price within the balancing authority area and not the power balance constraint penalty price.

In the event the market must relax the power balance constraint, the available balancing capacity feature uses the capacity from the out-of-market available balancing capacity at penalty prices from \$1,050/MWh to \$1,200/MWh. This ensures that all available bids submitted up to the bid cap of \$1,000/MWh are scheduled prior to releasing available balancing capacity into the bid stack. The pricing run then produces prices incorporating bids from the available balancing capacity resources.

Under the approach described in this draft final proposal the available balancing capacity will be released between \$2,100/MWh and \$2,400/MWh in the scheduling run when the \$2,000/MWh set of pricing parameters is used in the market. This will ensure the priority level of available balancing capacity is maintained in the bid stack in the scheduling run.

---

<sup>28</sup> Additional information on the available balancing capacity feature is available in the Energy Imbalance Market Transition period Draft Final Proposal [http://www.cao.com/Documents/DraftFinalProposal\\_EIMTransitionPeriod.pdf](http://www.cao.com/Documents/DraftFinalProposal_EIMTransitionPeriod.pdf).

## 4.2 Screening import and virtual bids greater than \$1,000/MWh

This section describes the CAISO's proposal to price-screen import bids greater than \$1,000/MWh.

The CAISO proposes that its market will only accept import bids priced higher than \$1,000/MWh in periods in which a CAISO-calculated "maximum import bid" price is also greater than \$1,000/MWh or when the CAISO has cost-verified a resource-specific resource bid greater than \$1,000/MWh. Similarly, the CAISO market will only accept virtual bids greater than \$1,000/MWh under these conditions.

This import bid price screening will apply differently to imports providing resource adequacy capacity than it will to imports not providing resource adequacy capacity. The CAISO market will reduce resource adequacy import bids priced higher than \$1,000/MWh and higher than the CAISO-calculated maximum import bid price to the CAISO-calculated maximum import price. When it does this, it will not reduce a bid to a price below \$1,000.

The CAISO market will not reduce the price of non-resource adequacy import bids higher than \$1,000/MWh. However, the CAISO will only accept these bids when the maximum import bid price is greater than \$1,000/MWh or there is a cost-verified resource-specific bid greater than \$1,000/MWh. When either of these conditions exist, the market will accept non-resource adequacy import bids up to \$2,000/MWh.

Because the CAISO also proposes to calibrate its penalty prices based on the availability of a cost-verified bid and the price of the maximum import bid price, the CAISO market can only accept import bids or virtual bids greater than \$1,000/MWh when the market's power balance constraint penalty price is set at \$2,000/MWh. Under the approach presented in this draft final proposal, this is only when the CAISO-calculated maximum import bid price is greater than \$1,000/MWh or when the CAISO has cost-verified a resource-specific resource bid greater than \$1,000/MWh. The market will not clear bids greater than \$1,000/MWh when the power balance constraint penalty price is set at \$1,000/MWh, *i.e.*, when it has not cost-verified a supply bid greater than \$1,000/MWh.

The import bid price screening approach differs somewhat from the CAISO's approach for cost-verifying energy bids for resource-specific resources.<sup>29</sup> For bids for resource-specific resources (internal or external) greater than \$1,000/MWh, the CAISO will verify each resource's actual or expected costs by on the supplier's contemporaneously available information. In contrast, the CAISO-calculated maximum import bid price

---

<sup>29</sup> These include supply resources within the CAISO balancing authority area and resources outside the CAISO modeled as resource-specific system resources. The cost-verification approach for resource-specific resources was developed in the *Commitment Cost and Default Energy Bid Enhancements* policy initiative.

represents prevailing energy prices based on published bilateral energy prices indices. It is not representative of the source of a particular import's actual operating costs, although it may represent opportunity costs. The CAISO will not require suppliers to submit import bids based on actual or expected costs.

#### ***4.2.1 Application to Resource Adequacy Imports***

As described above, the CAISO proposes to reduce the price of only resource adequacy import bids greater than \$1,000/MWh to the CAISO-calculated maximum import bid price, or \$1,000/MWh, whichever is higher. It also proposes to not provide for after-the-fact cost recovery for import bids for which it reduced the price.

As described in Section 3, the CAISO agrees with stakeholders that provisions to reduce non resource adequacy import bids to a maximum import bid price without cost recovery would discourage imports from bidding into the CAISO market. The CAISO does not believe there is a practical methodology for it to objectively determine import costs, which would be needed to provide importers with a make-whole payment.

However, reducing resource adequacy imports to the maximum import bid price will not reduce import supply. Resource adequacy resources are required to submit bids under the must-offer requirements as they apply to imports to the CAISO market. Although this may impose a risk that a resource adequacy import bid may be reduced to a price below a supplier's cost, suppliers can factor this risk into their bilateral resource adequacy contracting price.

This proposed approach will allow non-resource adequacy import bids (and virtual bids) in the market above the CAISO-calculated maximum import bid price and up to \$2,000/MWh during certain periods. However, two factors will mitigate the risk that this will result in excessive market prices. First, the market will not allow any energy bids greater than \$1,000/MWh unless the CAISO-calculated maximum import bid price or a cost-verified resource-specific bid is greater than \$1,000/MWh. Second, the market should be able to meet CAISO balancing authority area demand using only bids from resource adequacy resources. All resource adequacy bids are subject to either cost-verification rules or the maximum import bid price. This means bids priced higher than the highest-priced bid for a resource adequacy resource are unlikely to clear the market and set CAISO market prices.<sup>30</sup> The day-ahead market has the additional protection that energy supply clears against economic demand bids. Thus, demand can protect itself against unreasonably high prices through specifying a maximum price at which it wants to schedule demand.

---

<sup>30</sup> The CAISO's market clears supply bids in price merit order.

As discussed above, the CAISO's approach for price-screening import bids differs based on whether the import bid is from a resource adequacy resource. In the *System Market Power Mitigation* initiative the CAISO proposes to treat both resource adequacy and non-resource adequacy imports the same - all import bids would not be subject to system-level market power mitigation. The respective approach the CAISO has proposed in the two initiatives is different because the two initiatives have different objectives.

The objective of CAISO's FERC Order No. 831 policy initiative is to ensure all supply needed to meet the ISO's load responsibility (resource adequacy resources) that provide bids priced above \$1,000/MWh represent verified costs. As discussed in FERC's Order No. 831, market power concerns are heightened when a resource's energy bid is greater than \$1,000/MWh. Although the Commission did not require verification of import bids as it did for bids internal resource bids greater than \$1,000/MWh, it recognized similar concerns could exist and each ISO/RTO could request measures necessary to address such issues.

In the CAISO's case, the CAISO has determined that its reliance on import energy makes it appropriate to also verify import bids represent actual costs. In contrast to mitigation the CAISO performs for local market power mitigation for all bids, including those below \$1000/MWh, Order No. 831 recognizes that bids above \$1,000/MWh must be cost verified irrespective of whether the ISO/RTO has evaluated whether or not there exists the ability to exercise market power. In the case of bids above \$1,000/MWh, there is a presumption that such bids exceed what would typically be actual costs and therefore there is a need to validate those bids. In particular, the CAISO relies on resource adequacy requirements to ensure there is enough capacity to serve its load. Therefore, it relies on the resource adequacy import bids differently than it does non-resource adequacy.

That said, as discussed above, the CAISO is proposing that it would not also not allow an import bid above \$1,000/MWh from a non-resource adequacy import if it has not found the maximum import price exceeds \$1,000/MWh or it cost verified a resource-specific system resource above \$1,000/MWh.

In contrast, in the system market power initiative, the CAISO is proposing rules to test whether there is a need to mitigate energy bids because of the potential that suppliers, through concentration of supply, may be able to exercise market power at the balancing authority area level. Based on its approach for testing whether there exists such circumstances, the CAISO has determined that import bids, whether resource adequacy or not, would not be subject to mitigation because imports are most likely not pivotal supply. Therefore, there would be no basis for mitigating import resources, similar to the CAISO's proposal to not mitigate internal resources that are not pivotal.

### **4.2.2 Maximum Import Bid Price Calculation**

As described above, the CAISO-calculated maximum import bid price would be used to screen import and virtual supply bids and is intended to represent prevailing energy prices. The CAISO proposes to calculate the maximum import bid price based on published electrical price indices at representative bilateral trading hubs. The proposed methodology converts these multi-hour block prices into hourly prices to reflect that hourly prices change throughout the day while the published indices represent prices for blocks of energy for multiple hours. This reflects that CAISO prices vary by hour.

The CAISO will calculate separate maximum import bid prices for the day-ahead and real-time markets. The CAISO will also calculate the maximum import bid price separately for the north and south interties. The calculation will convert daily multi-hour block electrical prices from the published indices into hourly prices by multiplying them by the ratio of the historical average SMEC in that hour to the historical average SMEC over the day. The resulting price will be multiplied by 110 percent.

The CAISO would perform this calculation each day and use the resulting maximum import bid prices in the respective CAISO markets. The CAISO would perform this calculation separately for on and off-peak periods.

The CAISO proposes to calculate this maximum import bid price each hour for its north and south interties as follows:

$$\text{Maximum import bid price} = \text{Electric Hub Price} \times 1.1$$

The maximum import bid price approximates the prevailing bilateral price of electricity as an hourly price. The electric hub price is the published bilateral electrical transaction price at the respective trading hub.

The 110 percent multiplier is to account for differences in prices between published price indices and individual transactions. The published electrical price indices are based on the weight average price of all electric transactions. Therefore, a supplier's opportunity costs for individual sales outside of the CAISO may be higher than the corresponding published electrical indices.

The following subsections further describe these components of the maximum import bid price calculation.

**Electric Hub Price Component**

As described above, the electric hub price component of the proposed maximum import bid price equation estimates the current prevailing hourly bilateral electricity price for interties at the north and south of the CAISO, respectively. It does this by converting daily published index prices into hourly prices.

The calculation must convert daily prices into hourly prices because electrical price indices are daily prices multi-hour block prices while CAISO prices are hourly prices in the day-ahead market. The electrical price indices are published as separate peak and off-peak hour prices for each day. The peak price represents the price for a 16-hour block of energy. Whereas, the CAISO market clears sets prices hourly in the day-ahead market and sets prices every 15-minutes in the real-time market.

The electric hub price component of the proposed maximum import bid price equation calculates an hourly electric hub price based on daily prices by adjusting the prices based on historical CAISO day-ahead SMEC in each hour. It will increase the hourly maximum import bid price relative to the daily hub price in the hours with that the SMEC is typically greater than the average SMEC over the day and will decrease the price in hours that the SMEC is typically less than the average SMEC over the day. The calculation would multiply the daily index price by the ratio of the previous year’s monthly average SMEC per hour to the monthly average SMEC. The monthly average SMEC is calculated separately for on and off-peak hours.

The electric hub price component of the maximum import bid price equation will be calculated hourly as follows:

**Electric Hub Price:**

$$[1 + (\text{CAISO Monthly Average SMEC per hour} - \text{CAISO Monthly Average SMEC}) / \text{CAISO Monthly Average SMEC}] \times \text{Index Price}$$

Where, Index Price is determined by intertie region:

Intertie Region Location	Index Price
North	Mid-Columbia Trading Hub Price
South	Palo Verde Trading Hub Price

**FERC Order No. 831 - Import Bidding and Market Parameters**  
***Draft Final Proposal***

The CAISO proposes to use the historical SMEC in each hour rather than the load forecast to shape the prices as it previously proposed. Historical SMEC is more appropriate because it is a more direct indicator of expected hourly price variation than the load forecast.

The CAISO now proposes to shape the price in each hour based on the ratio of the average system marginal energy cost in that hour to the average system marginal energy cost in all hours of the month. It would do this using the SMECs from the same month of the prior year. The CAISO proposes to use a monthly SMEC average based on the previous year in the proposed shaping factor because the monthly average is the easiest to handle in the CAISO systems. Additionally, using the monthly average is simple for the CAISO's internal processes. The monthly average also has the additional benefit of being calculated in advance for market participants to potentially use in forecasting maximum import bid prices.

The average SMEC of an hour is determined by the averaging all of the same hours in for the same month from the previous year. For example, for Hour-Ending 10 on March 9, 2020, the CAISO would use the average of all Hour-Ending 10 SMEC prices from March 2019 in the hourly shaping factor calculation. This concept is illustrated below for Hour-Ending 10. For simplicity, not every day includes a SMEC price. However in practice, every day in March would have a corresponding SMEC price. The below average monthly price includes SMEC prices from March 1-31.

<b>March Date</b>	<b>SMEC Price</b>
1	\$41.68
2	\$52.79
3 ... 8	
9	\$15.41
10...22	
23	\$8.00
24..31	
<i>Average Monthly Price*</i>	\$26.76

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

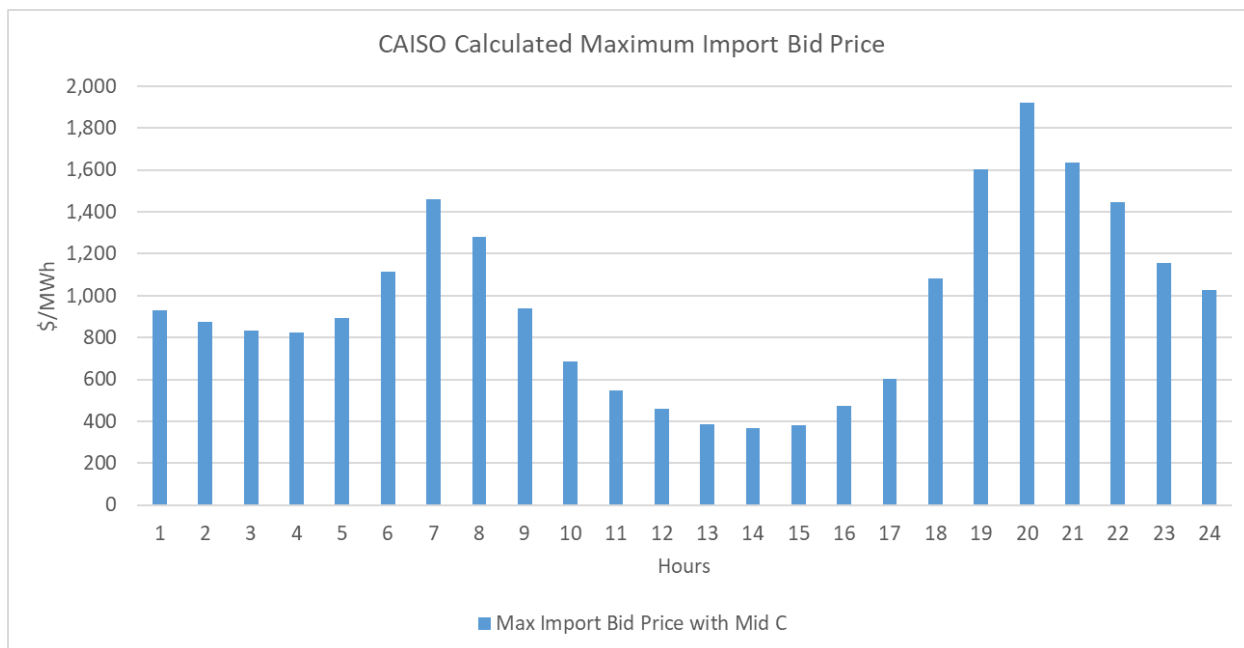
The monthly SMEC average is calculated by determining the on and off peak price averages for the exact month from the previous year. For example, if the CAISO was determining the hourly shaping factor for a day in March 2020, it must first determine the peak and off-peak average SMEC prices for March 2019. For instance, for Hour-Ending 10 on March 9, 2020, the CAISO would use the average on-peak SMEC from March 2019 in the hourly shaping calculation as shown in **Example F** below:

Hourly Shaping Factor =

$$1 + \left[ \frac{(\text{Avg SMEC of HR 10 in March 2019}) - (\text{Avg SMEC of ON peak hrs in March 2019})}{\text{Avg SMEC of ON peak hrs in March 2019}} \right]$$

**Example F** illustrates how bilateral prices are adjusted by the hourly shaping factor.

**Example F:**



**Example F** depicts the proposed calculated energy price at the Mid-Columbia bilateral energy hub for the abnormally high priced bilateral prices that occurred in March 2019. The Mid-Columbia on-peak price is \$891/MWh and off-peak price is \$832/MWh. These prices are used in the corresponding hours. For example, on-peak pricing will be used in hours ending 0700-2200. The CAISO will shape the Mid-Columbia prices by the previous year’s monthly average SMEC in that hour relative to the previous year’s



monthly average SMEC for all on-peak hours. This creates hourly shaping prices based on the hourly shaping of the SMEC in the same month from the previous year. For example, the maximum import bid price in Hour Ending 4 is \$825/MWh. While in Hour Ending 20, the maximum import bid price is \$1,920/MWh.

Based on stakeholder suggestions, the CAISO revised the maximum import bid price calculation by removing the gas and long-term opportunity cost components. In the event electrical prices are greater than \$1,000/MWh, then prices likely reflect gas resource's costs because they would be on the margin. Consequently, the gas component would be redundant in the maximum import bid price. The long-term opportunity cost component that was included intended to approximate an import supplier's opportunity of future sales. However, when current prices are greater than \$1,000/MWh there likely is no higher long-term opportunity cost.

## **5 Energy Imbalance Market Governing Body Advisory Role**

As described above this initiative considers two topics:

1. Methodology to establish market constraint relaxation penalty prices under a \$2,000/MWh hard energy bid cap.
2. Price screening methodology for import bids greater than \$1,000/MWh.

These two topics would be severable for decisional purposes, because even if potential changes to address one of the topics was not approved, the CAISO would nevertheless file amendments to implement potential changes to address the other topic. The CAISO believes the EIM Governing Body should have an advisory role in the approval of the proposed changes.

The rules that govern decisional classification were amended in 2019 when the Board adopted changes to the Charter for EIM Governance and the Guidance Document. An initiative proposing to change rules of the real-time market now falls within the primary authority of the EIM Governing Body either if the proposed new rule is EIM-specific in the sense that it applies uniquely or differently in the balancing authority areas of EIM Entities, as opposed to a generally applicable rule, or for proposed market rules that are generally applicable, if "an issue that is specific to the EIM balancing authority areas is the primary driver for the proposed change."

The initiative does not satisfy the first test, because the market rules to address the two topics described above would not be EIM-specific. The screening of import bids would be specific to the CAISO balancing authority area. The market constraint relaxation penalty prices and proposed price mechanism when the power balance constraint must be relaxed is applicable to the entire CAISO market footprint, including othering

balancing authority areas participating in the EIM. Moreover, primary driver for addressing these topics is not specific to the EIM balancing authority areas. Although EIM participants asked the CAISO to address the second topic, non-EIM market participants also requested it, and the effects of any change to the market constraint penalty prices would be similar in the CAISO balancing authority area and EIM balancing authority areas. Accordingly, this initiative would fall entirely within the advisory role of the EIM Governing Body.

In response to the Revised Straw Proposal, some EIM Entities stated in their comments that they objected to this proposed classification. Their objections were focused exclusively on the first topic – i.e., the price of the penalty prices used by the market and market pricing when the power balance constraint is relaxed. Their comments explained that they objected strongly to one of the options offered in the Revised Straw Proposal in which the penalty price would be scaled to \$2,000/MWh. Their comments argued that the CAISO should instead develop a different methodology for establishing market prices that gradually increase based on the amount of infeasibility to \$1,000/MWh. The CAISO believes that this proposal in conjunction with the *Flexible Ramping Product Refinements* initiative addresses these concerns.<sup>31</sup>

Stakeholders are encouraged to submit a response to the EIM classification of this initiative as described above in their written comments, particularly if they have concerns or questions.

## **6 Stakeholder engagement**

The schedule for stakeholder engagement is provided below. The CAISO will present its proposal to the Energy Imbalance Market Governing Body at their June 30, 2020 meeting and to the Board of Governors' at their July 22-23, 2020 meeting.

<b>Date</b>	<b>Event</b>
4/23/2020	Publish Draft Final Proposal
4/29/2020	Stakeholder conference call on draft final proposal
5/20/2020	Stakeholder comments due
April - May 2020	Development of draft Business Requirement Specifications and Tariff language
June 2020	Energy Imbalance Market Governing Body meeting
July 2020	Board of Governors meeting
Fall 2021	Expected implementation, concurrent with FERC 831 compliance implementation

Stakeholders should attend the stakeholder conference call on April 29, 2020 and provide written comments to [initiativecomments@caiso.com](mailto:initiativecomments@caiso.com) by May 20, 2020.

<sup>31</sup> Information on the CAISO's Flexible Ramping Product Refinements initiative is available at <http://www.caiso.com/StakeholderProcesses/Flexible-ramping-product-refinements>.

## 7 Appendix A - Market constraint relaxation penalty parameters values

This section provides the specific value settings for the set of CAISO market parameters that are used for adjusting non-priced quantities in the market optimizations.

The parameter values are all of market parameters that are based on the hard energy bid cap specific in the CAISO tariff and in the Business Practice Manual (BPM) for Market Operations. This section includes two tables based on market process: the Integrated Forward Market (IFM) and the Real Time Market (RTM).

The magnitude of the penalty factor values in the following tables for each market reflect the hierarchical priority order in which the associated constraint may be relaxed in that market by the market software. These tables are organized by penalty price, scheduling run value, and pricing run value. Based on the proposal described in Section 4.1, there are two columns dedicated to each scheduling run and pricing run values depending on if the pricing parameters are scaled relative to a \$1,000/MWh or \$2,000/MWh power balance constraint relaxation penalty price. Since the price floor of -\$150/MWh is not being adjusted, all existing negative pricing parameter values will remain the same as today even when the power balance constraint relaxation penalty price is set to \$2,000/MWh.

All of the following parameter values will be specified in the BPM for Market Operations<sup>32</sup> and the CAISO Tariff Sections 27 and 30.<sup>33</sup>

---

<sup>32</sup>These parameter values will be specified in Section 6.6.5 of the Business Practice Manual for Market Operations available at [https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market Operations](https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Operations)

<sup>33</sup> See Sections 27 and 30 of the CAISO tariff available at <http://www.caiso.com/Documents/Section27-CAISOMarkets-Processes-asof-Aug12-2019.pdf> and at <http://www.caiso.com/Documents/Section30-Bid-Self-ScheduleSubmission-CAISOMarkets-asof-Nov13-2019.pdf> respectively.

**Integrated Forward Market (IFM) Parameter Values**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
BPM for Market Operations Section 6.6.5	Power balance constraint <i>(Market energy balance)</i>	6,500	1,000	13,000	2,000	Market energy balance is the requirement that total supply equal the sum of total demand plus losses for the entire system. In the IFM energy balance reflects the clearing of bid-in supply and demand; in the MPM component of the DAM it reflects the scheduling of bid-in supply against the ISO demand forecast.
BPM for Market Operations Section 6.6.5 and Tariff Section 27.4.3.1	Transmission constraints: Intertie scheduling	5,000	1,000	10,000	2,000	Intertie scheduling constraints limit the total amount of energy and ancillary service capacity that can be scheduled at each scheduling point.
BPM for Market Operations Section 6.6.5	Legacy Reliability Must-Run (LRMR) pre-dispatch curtailment (supply)	-6000	-150	-6,000	-150	The ISO considers transmission constraints when determining LRMR scheduling requirements. After the ISO has determined the LRMR scheduling requirements, the market optimization ensures that the

<sup>34</sup> Penalty values in the scheduling run are negatively valued for supply reduction and positively valued for demand reduction.

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						designated capacity is scheduled in the market.
BPM for Market Operations Section 6.6.5	Pseudo-tie layoff energy	-4,000	-150	-4,000	-150	Pseudo-tie layoff energy is scheduled under contractual arrangements with the balancing authority in whose area a pseudo-tie generator is located.
BPM for Market Operations Section 6.6.5 and Tariff Section 27.4.3.1	Transmission constraints: branch, corridor, nomogram (base case and contingency analysis)	5,000	1,000	10,000	2,000	In the scheduling run, the market optimization enforces transmission constraints up to a point where the cost of enforcement (the "shadow price" of the constraint) reaches the parameter value, at which point the constraint is relaxed.
BPM for Market Operations Section 6.6.5	Transmission Ownership Right (TOR) self schedule	5,900, -5,900	1,000, -150	11,800, -5,900	2,000,-150	A TOR Self-Schedule will be honored in the market scheduling in preference to enforcing transmission constraints.
BPM for Market Operations Section 6.6.5	Existing Transmission Contract (ETC) self schedule	5,100 to 5,900, -5,100 to -5,900	1,000, -150	10,200 to 11,800, -5,100 to -5,900	2,000,-150	An ETC Self-Schedule will be honored in the market scheduling in preference to enforcing transmission constraints. The typical value is set at \$5,500/MWh, but different values from \$5,100/MWh to

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						\$5,900/MWh are possible if the instructions to the ISO establish differential priorities among ETC rights. For some ETC rights the ISO may use values below the stated scheduling run range if that is required for consistency with the instructions provided to the ISO by the PTO.
BPM for Market Operations Section 6.6.5	Converted Right (CVR) self schedule	5,500, -5,500	1,000, -150	11,000, -5,500	2,000, -150	A CVR Self-Schedule is assigned the same priority as the typical value for ETC Self-Schedules.
BPM for Market Operations Section 6.6.5	Ancillary Service Region Regulation-up and Regulation-down Minimum Requirements	2,500	250	5,000	500	In the event of bid insufficiency, AS minimum requirements will be met in preference to serving generic Self-Scheduled demand, but not at the cost of overloading transmission into AS regions.
BPM for Market Operations Section 6.6.5	Ancillary Service Region Spin Minimum Requirements	2,250	250	4,500	500	Spinning reserve minimum requirement is enforced with priority lower than regulation up minimum requirement in scheduling run.
BPM for Market	Ancillary Service	2,000	250	4,000	500	Non-spin reserve minimum

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
Operations Section 6.6.5	Region Non-Spin Minimum Requirements					requirement is enforced with priority lower than spin minimum requirement in scheduling run.
BPM for Market Operations Section 6.6.5	Ancillary Service Region Maximum Limit on Upward Services	1,500	250	3,000	500	In the event of multiple AS regional requirements having bid insufficiency, it is undesirable to have multiple constraints produce AS prices equaling multiples of the AS bid cap. An alternative way to enforce sub-regional AS requirements is to enforce a maximum AS requirement on other AS regions, thereby reducing the AS prices in the other regions without causing excessive AS prices in the sub-region with bid insufficiency.
BPM for Market Operations Section 6.6.5	Self-scheduled CAISO demand and self-scheduled exports using identified non-RA supply resource	1,800	1,000	3,600	2,000	Pursuant to section 31.4, the uneconomic bid price for self-scheduled demand in the scheduling run exceeds the uneconomic bid price for self-scheduled supply and self-scheduled exports not using identified non-RA supply resources.

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
BPM for Market Operations Section 6.6.5	Self-scheduled exports not using identified non-RA supply resource	1,150	1,000	2,300	2,000	The scheduling parameter for self-scheduled exports not using identified non-RA capacity is set below the parameter for generic self-schedules for demand.
BPM for Market Operations Section 6.6.5	Regulatory Must-Run and Must Take supply curtailment	-1,350	-150	-1,350	-150	Regulatory must-run and must-take supply receive priority over generic self-schedules for supply resources.
BPM for Market Operations Section 6.6.5	Price-taker supply bids	-400	-150	-400	-150	Generic self-schedules for supply receive higher priority than Economic Bids at the bid floor.
BPM for Market Operations Section 6.6.5	Conditionally qualified Regulation Up or Down self-provision	-405	NA	-405	NA	Conversion of AS self-schedules to Energy pursuant to section 31.3.1.3 received higher priority to maintaining the availability of regulation, over spinning and non-spinning reserve.
BPM for Market Operations Section 6.6.5	Conditionally qualified Spin self-provision	-400	NA	-400	NA	Conversion of AS self-schedules to Energy pursuant to section 31.3.1.3 receives higher priority to maintaining the availability of spinning reserve, over non-spinning reserve.
BPM for Market	Conditionally qualified Non-	-395	NA	-395	NA	This penalty price for conversion of self-



**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
Operations Section 6.6.5	Spin self-provision					provided non-spinning reserves balances the maintenance of AS self-schedules with ensuring that the conversion to energy occurs before transmission constraints are relaxed.
BPM for Market Operations Section 6.6.5	Conditionally unqualified Reg Up or Down self-provision	-195	NA	-195	NA	In instances where AS self-provision is not qualified pursuant to the MRTU tariff, the capacity can still be considered as an AS bid, along with regular AS bids. The price used for considering unqualified AS self-provision is lower than the AS bid cap, to allow it to be considered as an Economic Bid.
BPM for Market Operations Section 6.6.5	Conditionally unqualified Spin self-provision	-170	NA	-170	NA	Same as above.
BPM for Market Operations Section 6.6.5	Conditionally unqualified Non-Spin self-provision	-155	NA	-155	NA	Same as above.
Tariff Section 27.1.2.3.1	Regulation Down Pricing – Insufficient Supply	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Price set as a percentage of the hard energy bid cap depending on the amount the CAISO

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>34</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						market is short of supply needed to meet the Regulation Down requirement.
Tariff Section 27.1.2.3.2	Non-Spinning Reserve Pricing – Insufficient Supply	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Price set as a percentage of the hard energy bid cap depending on the amount the CAISO market is short of supply needed to meet the Non-Spinning Reserve requirement.
Tariff Section 27.1.2.3.3	Spinning Reserve Pricing – Insufficient Supply	100	100	200	200	Price set as 10 percent of the hard energy bid cap.
Tariff Section 27.1.2.3.4	Regulation Up Pricing – Insufficient Supply	200	200	400	400	Price set as 20 percent of the hard energy bid cap.
Tariff Section 27.4.3.3	Insufficient Supply to Meet Self-Schedule Demand in IFM	NA	1000	NA	2000	Pricing run parameter set at hard energy bid cap.
Tariff Section 27.4.3.5	Protection of TOR, ETC and Converted Rights Self-Schedules in the IFM	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Penalty prices must be set higher than values specified in section 27.4.3.1.

**Real Time Market Parameters**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
BPM for Market Operations Section 6.6.5	Energy balance/Load curtailment and Self-Scheduled exports utilizing non-RA capacity	1,450	1,000	2,900	2,000	Scheduling run penalty price is set high to achieve high priority in serving forecast load and exports that utilize non-RA capacity. Energy bid cap as pricing run parameter reflects energy supply shortage.
BPM for Market Operations Section 6.6.5 and Tariff Section 27.4.3.1	Transmission constraints: Intertie scheduling	1,500	1,000	3,000	2,000	The highest among all constraints in scheduling run, penalty price reflects its priority over load serving. Energy bid cap as pricing run parameter reflects energy supply shortage.
BPM for Market Operations Section 6.6.5	Legacy Reliability Must-Run (LRMR) pre-dispatch curtailment	-6,000	-150	-6,000	-150	LRMR scheduling requirement is protected with higher priority over

<sup>35</sup> Penalty values in the scheduling run are negatively valued for supply reduction and positively valued for demand reduction.

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
	(supply), and Exceptional Dispatch Supply					enforcement of internal transmission constraint in scheduling run. Energy bid floor is used as the pricing run parameter for any type of energy self-schedule.
BPM for Market Operations Section 6.6.5	Pseudo-tie layoff energy	-1,500	-150	-1,500	-150	Energy bid floor is used as the pricing run parameter for any type of energy self-schedule.
BPM for Market Operations Section 6.6.5 and Tariff Section 27.4.3.1	Transmission constraints: branch, corridor, nomogram (base case and contingency analysis)	1,500	1,000	3,000	2,000	Scheduling run penalty price will enforce internal transmission constraints up to a re-dispatch cost of \$ of congestion relief in \$1,500/MWh or \$3,000/MWh. Energy bid cap as pricing run parameter consistent with the value for energy balance relaxation under a global

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						energy supply shortage.
BPM for Market Operations Section 6.6.5	Real Time TOR Supply Self Schedule	-5,900	-150	-5,900	-150	In RTM, TOR self-schedule scheduling run penalty price is much higher in magnitude than generic self-schedule but lower than transmission constraint. Energy bid floor is used as the pricing run parameter as any type of energy self-schedule.
BPM for Market Operations Section 6.6.5	Real Time ETC Supply Self Schedule	-5,100 to -5,900	-150	-5,100 to -5,900	-150	In RTM the range of penalty prices for different ETCs supply self-schedules are much higher in magnitude than generic supply self-schedules but lower than TOR. Energy bid floor is the pricing parameter for all energy supply self-schedules.
BPM for Market	Ancillary Service	1,450	250	2,900	500	Scheduling run penalty

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
Operations Section 6.6.5	Region Reg-Up and Reg-Down Minimum Requirements					price is below the one for transmission constraint. Pricing run parameter is set to the AS market bid cap to reflect AS supply shortage.
BPM for Market Operations Section 6.6.5	Ancillary Service Region Spin Minimum Requirements	1,400	250	2,800	500	Scheduling run penalty price is lower than the one for regulation-up minimum requirement. Pricing run parameter is set to the AS market bid cap to reflect AS supply shortage.
BPM for Market Operations Section 6.6.5	Ancillary Service Region Non-Spin Minimum Requirements	1,350	250	2,700	500	Scheduling run penalty price is lower than the one for spin minimum requirement. Pricing parameter is set to the AS market bid cap to reflect AS supply shortage.
BPM for Market Operations Section 6.6.5	Ancillary Service Region Maximum Limit on	1,200	250	2,400	500	Scheduling run penalty price is lower than those for minimum

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
	Upward Services					requirements to avoid otherwise system-wide shortage by allowing sub-regional relaxation of the maximum requirement. AS market bid cap as pricing run to reflect the otherwise system-wide shortage.
BPM for Market Operations Section 6.6.5	Self-scheduled exports not using identified non-RA supply resource	1,150	1,000	2,300	2,000	Scheduling run penalty price reflects relatively low priority in protection as compared to other demand categories. Energy bid cap as pricing run parameter to reflect energy supply shortage.
BPM for Market Operations Section 6.6.5	Final IFM Supply Schedule	-750	-150	-750	-150	Scheduling run penalty price is much higher in magnitude than supply generic self-schedule but lower than ETCs. Energy bid floor is the pricing parameter for

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						all energy supply self-schedules.
BPM for Market Operations Section 6.6.5	Regulatory Must-Run and Must Take supply curtailment	-1,400	-150	-1,400	-150	Scheduling run penalty price reflects the higher priority of regulatory must-run and must-take supply received over generic self-schedules for supply resources. Energy bid floor is the pricing parameter for all energy supply self-schedules.
BPM for Market Operations Section 6.6.5	Price-taker supply bids	-400	-150	-400	-150	Energy bid floor is the pricing parameter for all energy supply self-schedules.
BPM for Market Operations Section 6.6.5	Qualified Load Following self-provision Up or Down	-8,500	0	-8,500	0	Scheduling run penalty price reflects the highest priority among all categories of AS self-provision. AS bid floor is used as the pricing parameter for any type of



**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						AS self-provision.
BPM for Market Operations Section 6.6.5	Day ahead conditionally qualified Reg Up or Down Award	-7,750	0	-7,750	0	Scheduling run penalty price is higher than the penalty price for energy balance constraint to reflect higher in priority over energy. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market Operations Section 6.6.5	Day ahead conditionally qualified Spin Award	-7,700	0	-7,700	0	Scheduling run penalty price is lower than the one for Reg-up. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market Operations Section 6.6.5	Day ahead conditionally qualified Non-spin Award	-7,650	0	-7,650	0	Scheduling run penalty price is lower than the one for Spin. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market	Conditionally qualified Reg Up or Down	-405	0	-405	0	Scheduling run penalty price allows

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
Operations Section 6.6.5	Real Time self-provision (RTUC only)					the conversion of AS self-schedules to energy to prevent LMP of local area from rising so high as to trigger transmission constraint relaxation. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market Operations Section 6.6.5	Conditionally qualified Real Time Spin self-provision (RTUC only)	-400	0	-400	0	Scheduling run penalty price is below the one for regulating-up. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market Operations Section 6.6.5	Conditionally qualified Real Time Non-Spin self-provision (RTUC only)	-395	0	-395	0	Scheduling run penalty price is below the one for spin. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market Operations Section 6.6.5	Conditionally unqualified Reg Up or Down Real	-195	0	-195	0	In scheduling run, AS self-provision not qualified in

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
	Time self-provision (RTUC only)					pre-processing can still be considered as an AS bid with higher priority in the energy/AS co-optimization along with regular AS bids. AS bid floor is pricing parameter for any type of AS self-provision.
BPM for Market Operations Section 6.6.5	Conditionally unqualified Spin Real Time self-provision (RTUC only)	-170	0	-170	0	Same as above.
BPM for Market Operations Section 6.6.5	Conditionally unqualified Non-Spin Real Time self-provision (RTUC only)	-155	0	-155	0	Same as above.
BPM for Market Operations Section 6.6.5	System power balance constraint	1,100, -155	1,000, -155	2,200, -155	2,000, -155	To reflect the role regulation plays in balancing the system for undersupply conditions when economic bids are exhausted, the ISO allows the system power balance

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						constraint to relax by as much as the seasonal regulation requirement. For over-supply conditions, when economic bids are exhausted, the ISO allows the system power balance constraint to relax to about 10% of the seasonal regulation requirement. The prices are selected to allow for coordinated dispatch of bids that may exist at or near the bid cap, or at or near the bid floor.
BPM for Market Operations Section 6.6.5	Power Balance constraint for individual. EIM areas	1,100, -750	1,000, -150	2,200, -750	2,000, -150	Subject to the FERC order granting waiver of tariff sections 27.4.3.2.and 27.4.3.4, and consistent with Section 10.1.6 of the

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
						BPM for Energy Imbalance Market, which implement the price discovery mechanism overriding the pricing parameters and yielding the last economic signal under constraint relaxation. The scheduling run parameter is set to -750 for the individual EIM areas to coordinate the relaxation of the EIM power balance constraint during over-generation conditions relative to congestion on non-EIM constraints.
BPM for Market Operations Section 6.6.5	EIM Upward Available Balancing Capacity Range	1,200 through 1,050	Bid in Prices Range for EIM Participating resource and DEB for EIM	2,400 through 2,100	Bid in Prices Range for EIM Participating resource and DEB for EIM	The Penalty Price Range used for the Available Capacity Range prices to maintain

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
			Non-Participating		Non-Participating	the economic merit order reflected in the energy bid prices of the allocated energy bid portions
BPM for Market Operations Section 6.6.5	EIM Downward Available Balancing Capacity	-250 through -350	Bid in Prices Range for EIM Participating resource and DEB for EIM Non-Participating	-250 through -350	Bid in Prices Range for EIM Participating resource and DEB for EIM Non-Participating	The Penalty Price Range used for the Available Capacity Range prices to maintain the economic merit order reflected in the energy bid prices of the allocated energy bid portions
BPM for Market Operations Section 6.6.5	EIM Transfer Constraint	1,500	1,000	3,000	2,000	Penalty price and pricing parameter consistent with the transmission constraint;
BPM for Market Operations Section 6.6.5	EIM Entitlement Rate of Change Constraint (RTD Only)	1,500	0	3,000	0	Penalty price aligned with EIM transfer constraint is currently applicable to RTD 5 minute rate of change.
BPM for Market Operations Section 6.6.5	Administrative Flexible Ramp Down Price Floor	-152	-152	-152	-152	Downward Demand Curve Price Cap

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
BPM for Market Operations Section 6.6.5	Administrative Flexible Ramp Up Price Ceiling	247	247	494	494	Upward Demand Curve Price Cap
Tariff Section 27.1.2.3.1	Regulation Down Pricing – Insufficient Supply	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Price set as a percentage of the hard energy bid cap depending on the amount the CAISO market is short of supply needed to meet the Regulation Down requirement.
Tariff Section 27.1.2.3.2	Non-Spinning Reserve Pricing – Insufficient Supply	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Price set as a percentage of the hard energy bid cap depending on the amount the CAISO market is short of supply needed to meet the Non-Spinning Reserve requirement.
Tariff Section 27.1.2.3.3	Spinning Reserve Pricing – Insufficient Supply	100	100	200	200	Price set as 10 percent of the hard energy bid cap.
Tariff Section 27.1.2.3.4	Regulation Up Pricing –	200	200	400	400	Price set as 20 percent of the hard

**FERC Order No. 831 - Import Bidding and Market Parameters**  
**Draft Final Proposal**

Described in BPM for Market Operations or Tariff Section	Penalty Price Description	Scheduling Run Value <sup>35</sup> when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are below \$1,000/MWh and CAISO-calculated maximum import bid price is not greater than \$1,000/MWh (\$/MWh)	Scheduling Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Pricing Run Value when submitted and cost-verified bids are greater than \$1,000/MWh or the CAISO-calculated maximum import bid price is greater than \$1,000/MWh (\$/MWh)	Comment
	Insufficient Supply					energy bid cap.
Tariff Section 27.4.3.4	Insufficient Supply to Meet CAISO Forecast of CAISO Demand in the RTM	1,000	1,000	2,000	2,000	Pricing run parameter set at hard energy bid cap.
Tariff Section 30.6.2.1.2.1	Marginal Real-Time Dispatch Option	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Penalty prices set as a percentage of the hard energy bid set forth in Section 39.6.1.1.
Tariff Section 30.6.2.1.2.2	Discrete Real-Time Dispatch Option	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	To be calculated according detail in comment.	Penalty prices set as a percentage of the hard energy bid set forth in Section 39.6.1.1.