



California Independent
System Operator Corporation

July 26, 2021

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

**Re: California Independent System Operator Corporation
Docket No. ER21-1790-___**

**Compliance Filing – Market Enhancements for Summer 2021, Load, Export
and Wheeling Through Priorities**

Dear Secretary Bose:

The California Independent System Operator Corporation (“CAISO”) submits this filing in compliance with the Federal Energy Regulatory Commission’s (“Commission”) Order Accepting Tariff Revisions, Subject to Compliance Filing issued on June 25, 2021 in the captioned docket.¹ The CAISO requests that the Commission accept the proposed tariff revisions, effective July 30, 2021, as compliant with the June 25 Order.²

I. Background

On April 28, 2021, the CAISO submitted a tariff amendment in this proceeding to modify load, export, and wheeling through priorities in the day-ahead and real-time market optimization processes and implement other market rules. Because the CAISO intended the wheeling through related tariff provisions to be interim only, the CAISO submitted tariff records removing the new wheeling through tariff provisions from the CAISO tariff effective June 1, 2022.

In the June 25 Order, the Commission accepted the proposed tariff revisions. However, the Commission found that penalty pricing parameters that determine the

¹ *California Indep. Sys. Operator Corp.* 175 FERC ¶ 61,245 (2021) (“June 25 Order”). Capitalized terms not otherwise defined herein have the meaning set forth in the CAISO tariff, and references to specific sections, articles, and appendices are references to sections, articles, and appendices in the CAISO tariff.

² The CAISO expects to implement the tariff revisions for the revised scheduling priorities on July 30, 2021.

revised relative scheduling priorities of transactions in the CAISO market optimization software must be specified in the tariff. The Commission concluded such penalty prices significantly affect the conditions of transmission service on the CAISO grid. Accordingly, the Commission directed the CAISO to submit a compliance filing within 30 days of the June 25 Order that “incorporates the penalty pricing parameters associated with the revised scheduling priorities into the relevant sections of the CAISO tariff.” The Commission stated that it would review the filed penalty pricing parameters under section 205 of the Federal Power Act to ensure they are just and reasonable and not unduly discriminatory or preferential.

This filing contains tariff sheets reflecting the penalty pricing parameters associated with the revised scheduling priorities, as directed by the Commission.

II. Compliance With June 25 Order

The CAISO manages schedules on its grid through the day-ahead and real-time markets and applies scheduling priorities defined in its tariff to adjust self-schedules (*i.e.*, price taker bids) in its markets.³ The CAISO markets honor these self-schedules if there is sufficient generation and transmission capacity to support them. If there is insufficient supply or binding transmission constraints, the CAISO markets will adjust self-schedules to clear the market. The market software determines the priority order in which the various self-schedules are adjusted using market parameters known as “penalty prices.” These penalty prices are set to specific values to determine the conditions under which the market may relax a constraint or adjust a self-schedule.⁴

The CAISO is revising the following tariff sections to incorporate the applicable penalty prices, referred to herein as scheduling parameters, in compliance with the Commission’s order: sections 31.4, 34.12.1, and 34.12.2. Also, the CAISO is revising tariff sections 27.4.3.2 and 27.4.3.3 to reference tariff sections 31.4 and 34.12.⁵ In that regard, different scheduling parameters apply depending on whether the conditions specified in tariff section 27.4.3.2 or tariff section 27.4.3.3 are triggered. The applicability of those tariff provisions depends on whether the CAISO has accepted a bid that exceeds the soft energy bid cap.⁶ Below are the revised scheduling priorities in the day-ahead and real-time market optimization processes approved in the June 25 Order and the associated scheduling run penalty prices the CAISO will apply to each priority level:

³ The scheduling priorities in the day-ahead market are set forth in CAISO tariff section 31.4, and the scheduling priorities for the real-time market are set forth in CAISO tariff section 34.12.

⁴ See existing tariff section 27.4.3 *et seq.*; see *also* business practice manual for market operations, section 6.6.5.

⁵ The CAISO also changes an erroneous reference in tariff section 27.4.3.1. The reference should be to section 34.12 not section 34.10.

⁶ Section 27.4.3.2 pertains to parameters related to the soft energy bid cap. Section 27.4.3.3 pertains to parameters related to the hard energy bid cap.

Tariff Section 31.4: CAISO Market Adjustments To Non-Priced Quantities In The IFM

Scheduling Run Priority	Scheduling Run Parameters Under Soft Energy Bid Cap (27.4.3.2)	Scheduling Run Parameters Under Hard Energy Bid Cap (27.4.3.3)
Reliability Must Run (RMR) Generation pre-dispatch reduction	-\$6000	-\$12000
Day-Ahead TOR Self-Schedules reduction (balanced demand and supply reduction)	\$5,900 (demand)/ - \$5,900 (supply)	\$11800 (demand)/ -\$11800 (supply)
Day-Ahead ETC and Converted Rights Self-Schedules reduction; different ETC priority levels will be observed based upon global ETC priorities provided to the CAISO by the Responsible PTOs	\$5100 to \$5900 (demand)/ -\$5100 to -\$5900 (supply)	\$10200 to \$11800 (demand)/ -\$10200 to -\$11800 (supply)
Internal Transmission Constraint relaxation for the IFM pursuant to Section 27.4.3.1	\$5000	\$10000
The export Self-Schedule of a Priority Wheeling Through; Self-Schedules of CAISO Demand reduction subject to Section 31.3.1.3; exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; and Self-Schedules of exports at Scheduling Points explicitly sourced by non-Resource Adequacy Capacity	\$1800	\$3600
Self-Schedules of exports at Scheduling Points not explicitly sourced by non-Resource Adequacy Capacity, except those exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports as set forth in Section 31.4(d), and the export Self-Schedule of a non-Priority Wheeling Through	\$1050	\$2100
Day-Ahead Regulatory Must-Run Generation and Regulatory Must-Take Generation reduction	-\$1350	-\$2700
Other Self-Schedules of Supply reduction, and the import Self-Schedule of a Priority Wheeling Through	-\$1100	-\$2200
The import Self-Schedule of a non-Priority Wheeling Through	\$0	\$0

CAISO Tariff Section 34.12.1: Increasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for increasing Supply as reflected from higher to lower priority are as follows:

Scheduling Run Priority	Scheduling Parameters Under Soft Energy Bid Cap (27.4.3.2)	Scheduling Parameters Under Hard Energy Bid Cap (27.4.3.3)
CAISO Forecast of CAISO Demand; the export Self-Schedule of a Priority Wheeling Through; exports explicitly identified in a Resource Adequacy Plan backed by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; or Self-Schedules for exports at Scheduling Points in the RTM backed by Generation from non-Resource Adequacy Capacity or from non-RUC Capacity	\$1450	\$2900
RUC Schedules that are Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity, or the RUC Schedules that are the export Self-Schedules of non-Priority Wheeling Throughs	\$1250	\$2500
Real-Time Market Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity or non-RUC capacity, or the Real-Time Market Self-Schedules that are the export Self-Schedules of a non-Priority Wheeling Through	\$1150	\$2300
Contingency Only Operating Reserve if activated by Operator to provide Energy (as indicated by the Contingency Flag and the Contingency condition)	\$1000	\$2000

CAISO Tariff Section 34.12.2: Decreasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for decreasing Supply as reflected from higher to lower priority are as follows:

Scheduling Run Priority	Scheduling Parameters Under Soft Energy Bid Cap	Scheduling Parameters Under Hard Energy Bid Cap
Non-Participating Load increase	Not Applicable ⁷	Not Applicable
Reliability Must Run (RMR) Schedule (Day-Ahead manual pre-dispatch or Manual RMR Dispatches or Dispatches that are flagged as RMR Dispatches following the MPM, for Legacy RMR Units and Exceptional Dispatch for RMR Resources process)	-\$6000	-\$12000
Transmission Ownership Right (TOR) Self-Schedule	-\$5900	-\$11800
Existing Rights (ETC) Self-Schedule	-\$5100 to -\$5900	-\$10200 to -\$11800
Regulatory Must-Run and Regulatory Must-Take (RMT) Self-Schedule	-\$1400	-\$2800
Participating Load increase	Not Applicable ⁸	Not Applicable
Day-Ahead Supply Schedule [Parameter in scheduling run]	-\$1200	-\$2400
Self-Schedule Hourly Block	-\$1100	-\$2200
Import Self-Schedule of a non-Priority Wheeling Through	\$0	\$0

The penalty prices maintain the relative scheduling priorities of each category of non-priced transactions as specified in the tariff. Of particular note, consistent with the CAISO’s tariff amendment filing and the June 25 Order accepting that filing, the scheduling parameters for CAISO load and Priority Wheeling Through transactions in the day-ahead and real-time markets will be equal, and they both will have a higher scheduling priority than non-Priority Wheeling Through transactions.

⁷ The CAISO does not manage these with penalty prices.

⁸ The CAISO protects these resources at this priority level. However, the CAISO does not manage this priority with penalty prices. These resources are either “on” or “off” – they are not partially curtailable. The CAISO will further review the listed scheduling priorities it has identified the penalty parameters as “not applicable” and assess whether it needs to make a subsequent Section 205 filing to update them.

The CAISO also includes a new tariff section 31.4.1 that provides a process for making temporary changes to the scheduling parameter values specified in sections 31.4, 34.12.1, and 34.12.2 (referred to hereinafter as the “Parameter Change Provision”). The June 25 Order does not expressly address this matter. Simultaneously herewith, the CAISO is submitting a motion for clarification, or in the alternative, request for rehearing, of the June 25 Order seeking clarification that the Commission did not intend to preclude the CAISO from temporarily changing a specific scheduling run parameter when necessary.

As the CAISO discusses in its motion for clarification, the Commission can accept a compliance filing that contains changes that are consistent with the findings in the underlying order, even if the Commission did not expressly direct the exact changes. The Parameter Change Procedure is consistent with the finding in the June 25 Order that the penalty pricing parameter values must be included in the tariff. If the CAISO cannot include the Parameter Change Procedure in the tariff, the CAISO will lose its existing authority to change the penalty pricing parameter values on an expedited basis in emergency circumstances. Nothing in the June 25 Order suggests the Commission intended that result. Also as discussed in the motion for clarification, the Commission will accept a compliance filing that includes changes not expressly required by the underlying order if those changes closely and plainly relate to the compliance requirement, share a common factual nexus with the compliance filing, and do not undo or contravene the compliance requirements. The Parameter Change Procedure constitutes such a change. Accordingly, the Commission should accept the Parameter Change Procedure as just and reasonable and compliant with the June 25 Order.

Three other independent system operators (ISOs) and regional transmission organizations (RTOs) have tariff provisions permitting them to make temporary changes to the transmission constraint penalty factor values specified in their tariffs.⁹ Further, in Order No. 844, where the Commission required each ISO and RTO to include in its tariff its transmission constraint penalty factor values, the Commission also permitted them to include any procedures for temporarily changing such values with “notice of the change to market participants.”¹⁰ Order No. 844 required that if “any procedures for temporarily changing transmission constraint penalty factor values must provide for notice of the change to market participants as soon as practicable.”¹¹

The parameter change provisions the Commission has approved for other ISOs

⁹ MISO Tariff, Schedule 28A, § 3.3; NYISO Market Administration and Control Area Services Tariff, § 17.1.4; PJM Interconnection LLC Open Access Transmission Tariff, Attachment K –Appendix, § 5.6.3.

¹⁰ *Uplift Cost Allocation and Transparency in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 844, 163 FERC ¶61,041 at PP 121-22 (2018).

¹¹ *Id.* at P 121.

and RTOs informed the CAISO's development of its Parameter Change Procedure. The proposed Parameter Change Procedure will allow the CAISO to modify the scheduling run parameters when necessary to ensure feasible market solutions or avoid future operational or reliability problems the resolution of which would require recurring operator intervention outside of normal market scheduling procedures. The CAISO may temporarily modify the scheduling run parameter for a period up to 90 days, provided the CAISO must file a tariff amendment with the Commission within 30 days of the modification.¹² If circumstances reasonably allow, the CAISO will consult with the Commission and Department of Market Monitoring (DMM) before implementing any such modification. In all circumstances, the CAISO must consult with DMM and the Commission as soon as reasonably possible after implementing a temporary modification. Further, under the Parameter Change Procedure, the CAISO must notify market participants of any temporary modification and explain the reasons for the change.

Under the June 25 Order, the new tariff provisions setting forth the scheduling priorities for Priority and non-Priority Wheeling Through transactions will expire effective June 1, 2022. Accordingly, the scheduling parameters for these transactions will need to expire effective June 1, 2022. Prior to April 1, 2022, the CAISO will make a tariff amendment filing under section 205 of the Federal Power Act to implement the scheduling parameters that will apply effective June 1, 2022.

¹² The NYISO tariff allows a modification to be effective for 90 days and requires the NYISO to make a tariff amendment filing within 45 days. NYISO Market Administration and Control Area Services Tariff, § 17.1.4.

III. **Materials Provided in this Compliance Filing**

In addition to this transmittal letter, this compliance filing includes:

Attachment A	Clean CAISO tariff sheets reflecting the tariff revisions described above
Attachment B	Red-line CAISO tariff sheets reflecting the tariff revisions described above

IV. **Conclusion**

The CAISO requests that the Commission accept this compliance filing effective July 30, 2021.

Respectfully submitted,

By: /s/ Anthony Ivancovich

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Dated: July 26, 2021

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, CA, this 26th day of July, 2021.

/s/ *Jacqueline Meredith*

Jacqueline Meredith

Attachment A – Clean Tariff

Compliance Filing – Load, Exports, Wheeling Through

California Independent System Operator Corporation

July 26, 2021

27.4.3 CAISO Markets Scheduling and Pricing Parameters

27.4.3.1 Generally

The SCUC and SCED optimization software for the CAISO Markets utilize a set of configurable scheduling and pricing parameters to enable the software to reach a feasible solution and set appropriate prices in instances where Effective Economic Bids are not sufficient to allow a feasible solution. The scheduling parameters specify the criteria for the software to adjust Non-priced Quantities when such adjustment is necessary to reach a feasible solution. The scheduling parameters are configured so that the SCUC and SCED software will utilize Effective Economic Bids as far as possible to reach a feasible solution, and will skip Ineffective Economic Bids and perform adjustments to Non-priced Quantities pursuant to the scheduling priorities for Self-Schedules specified in Sections 31.4 and 34.12. The scheduling parameters utilized for relaxation of enforced internal and Intertie Transmission Constraints are specified in Section 27.4.3.2.1 and 27.4.3.3.1. The pricing parameters specify the criteria for establishing market prices in instances where one or more Non-priced Quantities are adjusted by the Market Clearing software. The pricing parameters are specified in Sections 27.4.3.2.2, 27.4.3.2.3, 27.4.3.2.4, 27.4.3.3.2, 27.4.3.3.3, and 27.4.3.3.4. The complete set of scheduling and pricing parameters used in all CAISO Markets is maintained in the Business Practice Manuals.

27.4.3.2 Parameters Related to Soft Energy Bid Cap

For CAISO Market intervals for which the conditions specified in Section 27.4.3.3 do not apply, the CAISO will apply the parameters specified in Sections 27.4.3.2.1 through 27.4.3.2.4, 31.4, 34.12, and the Ancillary Services Scarcity Prices in Section 27.1.2.3.5.

27.4.3.2.1 Scheduling Parameters for Transmission Constraint Relaxation

In the IFM, the enforced internal and Intertie Transmission Constraint scheduling parameter is set to \$5,000 per MWh for the purpose of determining when the SCUC and SCED software in the IFM will relax an enforced Transmission Constraint rather than adjust Supply or Demand bids or Non-priced Quantities as specified in Sections 31.3.1.3, 31.4 and 34.12 to relieve Congestion on the constrained facility. This scheduling parameter is set to \$1,500 per MWh for the RTM. The effect of this scheduling parameter value is that if the optimization can re-dispatch resources to relieve Congestion on a Transmission Constraint at a cost of \$5,000 per MWh or less for the IFM (or \$1,500 per MWh or less for the RTM), the Market Clearing software will utilize such re-dispatch, but if the cost exceeds \$5,000 per MWh in the IFM (or \$1,500 per MWh for the RTM) the market software will relax the Transmission Constraint. The corresponding scheduling parameter in RUC is set to \$1,250 per MWh.

27.4.3.2.2 Pricing Parameters for Transmission Constraint Relaxation

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

27.4.3.2.3 Insufficient Supply to Meet Self-Schedule Demand in IFM

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

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

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

27.4.3.3 Parameters Related to Hard Energy Bid Cap

- (a) **Integrated Forward Market and Real-Time Market.** The scheduling and pricing parameters in Sections 27.4.3.3.1 through 27.4.3.3.4, 31.4, and 34.12 will apply for all Trading Hours of the IFM and Real-Time Market for the same Trading Day if the CAISO has accepted a Bid with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Bid Price exceeds the Soft Energy Bid Cap for any Trading Hour of the IFM.
- (b) **Real-Time Market Only.** If the CAISO has not accepted a Bid with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Bid Price does not exceed the Soft Energy Bid Cap for any Trading Hour of the IFM for the same Trading Day, the parameters in Sections 27.4.3.3.1 through 27.4.3.3.4, 31.4, and 34.12 will apply
 - (i) in any Trading Hour of the Real-Time Market for which the CAISO has accepted a Bid with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Bid Price exceeds the Soft Energy Bid Cap; and
 - (ii) for all intervals of the applicable Real-Time Market run for which these conditions apply in at least one interval of the applicable market run.

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31.4 CAISO Market Adjustments to Non-Priced Quantities in the IFM

All Self-Schedules are respected by SCUC to the maximum extent possible and are protected from curtailment in the Congestion Management process to the extent that there are Effective Economic Bids that can relieve Congestion. If all Effective Economic Bids in the IFM are exhausted, resource Self-Schedules between the resource's Minimum Load as defined in the Master File, or if applicable, as modified pursuant to Section 9.3.3, and the first Energy level of the first Energy Bid point will be subject to adjustments by the CAISO Market optimization based on the scheduling priorities listed below. This functionality of the optimization software is implemented through the setting of scheduling parameters as described in Section 27.4.3 and specified in Section 27.4.3.1 and the Business Practice Manuals. Through this process, imports and exports may be reduced to zero, Demand Bids may be reduced to zero, Price Taker Demand (LAP load) may be reduced, and Generation may be reduced to a lower operating limit (or Regulation Limit) (or to a lower Regulation Limit plus any qualified Regulation Down award or Self-Provided Ancillary Services, if applicable). Any Self-Schedules below the Minimum Load level are treated as fixed Self-Schedules and are not subject to these adjustments for Congestion Management. The provisions of this section shall apply only to the extent they do not conflict with any MSS Agreement. In accordance with Section 27.4.3.5, the resources submitted in valid TOR, ETC or Converted Rights Self-Schedules shall not be adjusted in the IFM in response to an insufficiency of Effective Economic Bids. Thus the adjustment sequence for the IFM from highest priority (last to be adjusted) to lowest priority (first to be adjusted), is as follows:

Scheduling Run Priority	Scheduling Run Parameters Under Soft Energy Bid Cap (27.4.3.2)	Scheduling Run Parameters Under Hard Energy Bid Cap (27.4.3.3)
Reliability Must Run (RMR) Generation pre-dispatch reduction	-\$6000	-\$12000
Day-Ahead TOR Self-Schedules reduction (balanced demand and supply reduction)	\$5,900 (demand)/ - \$5,900 (supply)	\$11800 (demand)/ -\$11800 (supply)
Day-Ahead ETC and Converted Rights Self-Schedules reduction; different ETC priority levels will be observed based upon global ETC priorities provided to the CAISO by the Responsible PTOs	\$5100 to \$5900 (demand)/ -\$5100 to -\$5900 (supply)	\$10200 to \$11800 (demand)/ -\$10200 to -\$11800 (supply)
Internal Transmission Constraint relaxation for the IFM pursuant to Section 27.4.3.1	\$5000	\$10000
The export Self-Schedule of a Priority Wheeling Through; Self-Schedules of CAISO Demand reduction subject to Section 31.3.1.3; exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; and Self-Schedules of exports at Scheduling Points explicitly sourced by non-Resource Adequacy Capacity	\$1800	\$3600
Self-Schedules of exports at Scheduling Points not explicitly sourced by non-Resource Adequacy Capacity, except those exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports as set forth in Section 31.4(d), and the export Self-Schedule of a non-Priority Wheeling Through	\$1050	\$2100
Day-Ahead Regulatory Must-Run Generation and Regulatory Must-Take Generation reduction	-\$1350	-\$2700
Other Self-Schedules of Supply reduction, and the import Self-Schedule of a Priority Wheeling Through	-\$1100	-\$2200
The import Self-Schedule of a non-Priority Wheeling Through	\$0	\$0

31.4.1 Temporary Changes to Scheduling Run Parameter Values

If the CAISO determines it is necessary to modify the scheduling run parameter values in sections 31.4, 34.12.1, or 34.12.2 to ensure the market clearing solution is feasible or avoid operational or reliability problems the resolution of which would otherwise require recurring operator intervention outside normal scheduling and market procedures, it may temporarily modify the value for a period up to ninety days, provided however CAISO will file such change with FERC under Section 205 of the Federal Power Act within thirty days of such modification. If circumstances reasonably allow, CAISO will consult with FERC and the CAISO's Market Monitoring Unit before implementing such modification. In all circumstances, the CAISO will (i) consult with those entities as soon as reasonably possible after implementing a temporary

modification, and (ii) notify Market Participants of any temporary modification and explain the reasons for the change.

31.5 Residual Unit Commitment

The CAISO shall perform the RUC process after the IFM. In the event that the IFM did not commit sufficient resources to meet the CAISO Forecast of CAISO Demand and account for other factors such as Demand Forecast error, as described in the Business Practice Manuals, the RUC shall commit additional resources and identify additional RUC Capacity to ensure sufficient on-line resources to meet Demand for each hour of the next Trading Day. RUC Capacity is selected by a SCUC optimization that uses the same Base Market Model used in the IFM adjusted as described in Section 27.5.1 and 27.5.6 to help ensure the deliverability of Energy from the RUC Capacity. In the case of Multi-Stage Generating Resources, the RUC will optimize Transition Costs in addition to the Start-Up and Minimum Load Costs. If a Scheduling Coordinator submits a Self-Schedule or a Submission to Self-Provide Ancillary Services for a given MSG Configuration in a given Trading Hour, the RUC will consider the Start-Up Cost, Minimum Load Cost, and Transition Cost associated with any Economic Bids for other MSG Configurations as incremental costs between the other MSG Configurations and the self-scheduled MSG Configuration. In such cases, incremental costs are the additional costs incurred to transition or operate in an MSG Configuration in addition to the costs associated with the self-scheduled MSG Configuration.

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34.12 CAISO Market Adjustment to Non-Priced Quantities in the RTM

All Self-Schedules are respected by the SCED and SCUC to the maximum extent possible and are protected from curtailment in the Congestion Management process to the extent that there are effective Economic Bids that can relieve Congestion. If all Effective Economic Bids for the RTM are exhausted, all Self-Schedules between the Minimum Load and the lowest Energy level of the first Energy Bid point will be subject to uneconomic adjustments based on assigned scheduling priorities. This functionality of the optimization software is implemented through the setting of scheduling parameters as described in Section 27.4.3 and specified in Section 27.4.3.1 and the BPMs. Through this process, imports and exports may be reduced to zero, Demand may be reduced to zero, and Generation may be reduced to a lower operating limit (or Regulation Limit) (or to a lower Regulation Limit plus any qualified Regulation Down Award or Self-Provided Ancillary Services, if applicable). Any Self-Schedules below the Minimum Load level are treated as fixed Self-Schedules and are not subject to uneconomic adjustments for Congestion Management but may be subject to decommitment via an Exceptional Dispatch if necessary as a last resort to relieve Congestion that could not otherwise be managed.

34.12.1 Increasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for increasing Supply as reflected from higher to lower priority are as follows:

Scheduling Run Priority	Scheduling Parameters Under Soft Energy Bid Cap (27.4.3.2)	Scheduling Parameters Under Hard Energy Bid Cap (27.4.3.3)
CAISO Forecast of CAISO Demand; the export Self-Schedule of a Priority Wheeling Through; exports explicitly	\$1450	\$2900

identified in a Resource Adequacy Plan backed by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; or Self-Schedules for exports at Scheduling Points in the RTM backed by Generation from non-Resource Adequacy Capacity or from non-RUC Capacity		
RUC Schedules that are Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity, or the RUC Schedules that are the export Self-Schedules of non-Priority Wheeling Throughs	\$1250	\$2500
Real-Time Market Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity or non-RUC capacity, or the Real-Time Market Self-Schedules that are the export Self-Schedules of a non-Priority Wheeling Through	\$1150	\$2300
Contingency Only Operating Reserve if activated by Operator to provide Energy (as indicated by the Contingency Flag and the Contingency condition)	\$1000	\$2000

34.12.2 Decreasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for decreasing Supply as reflected from higher to lower priority are as follows:

Scheduling Run Priority	<u>Scheduling Parameters Under Soft Energy Bid Cap (27.4.3.2)</u>	<u>Scheduling Parameters Under Hard Energy Bid Cap (27.4.3.3)</u>
Non-Participating Load increase	Not Applicable	Not Applicable
Reliability Must Run (RMR) Schedule (Day-Ahead manual pre-dispatch or Manual RMR Dispatches or Dispatches that are flagged as RMR Dispatches following the MPM, for Legacy RMR Units and Exceptional Dispatch for RMR Resources process)	-\$6000	-\$12000
Transmission Ownership Right (TOR) Self-Schedule	-\$5900	-\$11800

Existing Rights (ETC) Self-Schedule	-\$5100 to -\$5900	-\$10200 to -\$11800
Regulatory Must-Run and Regulatory Must-Take (RMT) Self-Schedule;	-\$1400	-\$2800
Participating Load increase	Not Applicable	Not Applicable
Day-Ahead Supply Schedule	-\$1200	-\$2400
Self-Schedule Hourly Block	-\$1100	-\$2200
Import Self-Schedule of a non-Priority Wheeling Through	\$0	\$0

These dispatch priorities as defined in the RTM optimization may be superseded by operator actions and procedures as necessary to ensure reliable operations.

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Attachment B – Marked Tariff

Compliance Filing – Load, Exports, Wheeling Through

California Independent System Operator Corporation

July 26, 2021

27.4.3 CAISO Markets Scheduling and Pricing Parameters

27.4.3.1 Generally

The SCUC and SCED optimization software for the CAISO Markets utilize a set of configurable scheduling and pricing parameters to enable the software to reach a feasible solution and set appropriate prices in instances where Effective Economic Bids are not sufficient to allow a feasible solution. The scheduling parameters specify the criteria for the software to adjust Non-priced Quantities when such adjustment is necessary to reach a feasible solution. The scheduling parameters are configured so that the SCUC and SCED software will utilize Effective Economic Bids as far as possible to reach a feasible solution, and will skip Ineffective Economic Bids and perform adjustments to Non-priced Quantities pursuant to the scheduling priorities for Self-Schedules specified in Sections 31.4 and 34.4012. The scheduling parameters utilized for relaxation of enforced internal and Intertie Transmission Constraints are specified in Section 27.4.3.2.1 and 27.4.3.3.1. The pricing parameters specify the criteria for establishing market prices in instances where one or more Non-priced Quantities are adjusted by the Market Clearing software. The pricing parameters are specified in Sections 27.4.3.2.2, 27.4.3.2.3, 27.4.3.2.4, 27.4.3.3.2, 27.4.3.3.3, and 27.4.3.3.4. The complete set of scheduling and pricing parameters used in all CAISO Markets is maintained in the Business Practice Manuals.

27.4.3.2 Parameters Related to Soft Energy Bid Cap

For CAISO Market intervals for which the conditions specified in Section 27.4.3.3 do not apply, the CAISO will apply the parameters specified in Sections 27.4.3.2.1 through 27.4.3.2.4, 31.4, 34.12,- and the Ancillary Services Scarcity Prices in Section 27.1.2.3.5.

27.4.3.2.1 Scheduling Parameters for Transmission Constraint Relaxation

In the IFM, the enforced internal and Intertie Transmission Constraint scheduling parameter is set to \$5,000 per MWh for the purpose of determining when the SCUC and SCED software in the IFM will relax an enforced Transmission Constraint rather than adjust Supply or Demand bids or Non-priced Quantities as specified in Sections 31.3.1.3, 31.4 and 34.12 to relieve Congestion on the constrained facility. This scheduling parameter is set to \$1,500 per MWh for the RTM. The effect of this scheduling parameter value is that if the optimization can re-dispatch resources to relieve Congestion on a Transmission Constraint at a cost of \$5,000 per MWh or less for the IFM (or \$1,500 per MWh or less for the RTM), the Market Clearing software will utilize such re-dispatch, but if the cost exceeds \$5,000 per MWh in the IFM (or \$1,500 per MWh for the RTM) the market software will relax the Transmission Constraint. The corresponding scheduling parameter in RUC is set to \$1,250 per MWh.

27.4.3.2.2 Pricing Parameters for Transmission Constraint Relaxation

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

27.4.3.2.3 Insufficient Supply to Meet Self-Schedule Demand in IFM

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

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

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

27.4.3.3 Parameters Related to Hard Energy Bid Cap

- (a) **Integrated Forward Market and Real-Time Market.** The scheduling and pricing parameters in Sections 27.4.3.3.1 through 27.4.3.3.4, [31.4](#), and [34.12](#) will apply for all Trading Hours of the IFM and Real-Time Market for the same Trading Day if the CAISO has accepted a Bid with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Bid Price exceeds the Soft Energy Bid Cap for any Trading Hour of the IFM.
- (b) **Real-Time Market Only.** If the CAISO has not accepted a Bid with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Bid Price does not exceed the Soft Energy Bid Cap for any Trading Hour of the IFM for the same Trading Day, the parameters in Sections 27.4.3.3.1 through 27.4.3.3.4, [31.4](#), and [34.12](#) will apply
 - (i) in any Trading Hour of the Real-Time Market for which the CAISO has accepted a Bid with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or the Maximum Import Bid Price exceeds the Soft Energy Bid Cap; and
 - (ii) for all intervals of the applicable Real-Time Market run for which these conditions apply in at least one interval of the applicable market run.

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31.4 CAISO Market Adjustments to Non-Priced Quantities in the IFM

All Self-Schedules are respected by SCUC to the maximum extent possible and are protected from curtailment in the Congestion Management process to the extent that there are Effective Economic Bids that can relieve Congestion. If all Effective Economic Bids in the IFM are exhausted, resource Self-Schedules between the resource's Minimum Load as defined in the Master File, or if applicable, as modified pursuant to Section 9.3.3, and the first Energy level of the first Energy Bid point will be subject to adjustments by the CAISO Market optimization based on the scheduling priorities listed below. This functionality of the optimization software is implemented through the setting of scheduling parameters as described in Section 27.4.3 and specified in Section 27.4.3.1 and the Business Practice Manuals. Through this process, imports and exports may be reduced to zero, Demand Bids may be reduced to zero, Price Taker Demand (LAP load) may be reduced, and Generation may be reduced to a lower operating limit (or Regulation Limit) (or to a lower Regulation Limit plus any qualified Regulation Down award or Self-Provided Ancillary Services, if applicable). Any Self-Schedules below the Minimum Load level are treated as fixed Self-Schedules and are not subject to these adjustments for Congestion Management. The provisions of this section shall apply only to the extent they do not conflict with any MSS Agreement. In accordance with Section 27.4.3.5, the resources submitted in valid TOR, ETC or Converted Rights Self-Schedules shall not be adjusted in the IFM in response to an insufficiency of Effective Economic Bids. Thus the adjustment sequence for the IFM from highest priority (last to be adjusted) to lowest priority (first to be adjusted), is as follows:

<u>Scheduling Run Priority</u>	<u>Scheduling Run Parameters Under Soft Energy Bid Cap (27.4.3.2)</u>	<u>Scheduling Run Parameters Under Hard Energy Bid Cap (27.4.3.3)</u>
<u>Reliability Must Run (RMR) Generation pre-dispatch reduction</u>	<u>-\$6000</u>	<u>-\$12000</u>
<u>Day-Ahead TOR Self-Schedules reduction (balanced demand and supply reduction)</u>	<u>\$5,900 (demand)/ - \$5,900 (supply)</u>	<u>\$11800 (demand)/ -\$11800 (supply)</u>
<u>Day-Ahead ETC and Converted Rights Self-Schedules reduction; different ETC priority levels will be observed based upon global ETC priorities provided to the CAISO by the Responsible PTOs</u>	<u>\$5100 to \$5900 (demand)/ -\$5100 to -\$5900 (supply)</u>	<u>\$10200 to \$11800 (demand)/ -\$10200 to -\$11800 (supply)</u>
<u>Internal Transmission Constraint relaxation for the IFM pursuant to Section 27.4.3.1</u>	<u>\$5000</u>	<u>\$10000</u>
<u>The export Self-Schedule of a Priority Wheeling Through; Self-Schedules of CAISO Demand reduction subject to Section 31.3.1.3; exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; and Self-Schedules of exports at Scheduling Points explicitly sourced by non-Resource Adequacy Capacity</u>	<u>\$1800</u>	<u>\$3600</u>
<u>Self-Schedules of exports at Scheduling Points not explicitly sourced by non-Resource Adequacy Capacity, except those exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports as set forth in Section 31.4(d), and the export Self-Schedule of a non-Priority Wheeling Through</u>	<u>\$1050</u>	<u>\$2100</u>
<u>Day-Ahead Regulatory Must-Run Generation and Regulatory Must-Take Generation reduction</u>	<u>-\$1350</u>	<u>-\$2700</u>
<u>Other Self-Schedules of Supply reduction, and the import Self-Schedule of a Priority Wheeling Through</u>	<u>-\$1100</u>	<u>-\$2200</u>
<u>The import Self-Schedule of a non-Priority Wheeling Through</u>	<u>\$0</u>	<u>\$0</u>

- (a) — ~~Reliability Must Run (RMR) Generation pre-dispatch reduction;~~
- (b) — ~~Day-Ahead TOR Self-Schedules reduction (balanced demand and supply reduction);~~
- (c) — ~~Day-Ahead ETC and Converted Rights Self-Schedules reduction; different ETC priority levels will be observed based upon global ETC priorities provided to the CAISO by the Responsible PTOs;~~
- (d) — ~~Internal Transmission Constraint relaxation for the IFM pursuant to Section 27.4.3.1;~~
- (e) — ~~The export Self-Schedule of a Priority Wheeling Through; Self-Schedules of CAISO Demand reduction subject to Section 31.3.1.3; exports explicitly identified in a Resource~~

~~Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; and Self Schedules of exports at Scheduling Points explicitly sourced by non Resource Adequacy Capacity;~~

- ~~(f) Self Schedules of exports at Scheduling Points not explicitly sourced by non Resource Adequacy Capacity, except those exports explicitly identified in a Resource Adequacy Plan to be served by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports as set forth in Section 31.4(d), and the export Self Schedule of a non Priority Wheeling Through;~~
- ~~(g) Day Ahead Regulatory Must Run Generation and Regulatory Must Take Generation reduction;~~
- ~~(h) Other Self Schedules of Supply reduction, and the import Self Schedule of a Priority Wheeling Through; and~~
- ~~(i) The import Self Schedule of a non Priority Wheeling Through.~~

31.4.1 Temporary Changes to Scheduling Run Parameter Values

If the CAISO determines it is necessary to modify the scheduling run parameter values in sections 31.4, 34.12.1, or 34.12.2 to ensure the market clearing solution is feasible or avoid operational or reliability problems the resolution of which would otherwise require recurring operator intervention outside normal scheduling and market procedures, it may temporarily modify the value for a period up to ninety days, provided however CAISO will file such change with FERC under Section 205 of the Federal Power Act within thirty days of such modification. If circumstances reasonably allow, CAISO will consult with FERC and the CAISO's Market Monitoring Unit before implementing such modification. In all circumstances, the CAISO will (i) consult with those entities as soon as reasonably possible after implementing a temporary modification, and (ii) notify Market Participants of any temporary modification and explain the reasons for the change.

31.5 Residual Unit Commitment

The CAISO shall perform the RUC process after the IFM. In the event that the IFM did not commit sufficient resources to meet the CAISO Forecast of CAISO Demand and account for other factors such as Demand Forecast error, as described in the Business Practice Manuals, the RUC shall commit additional resources and identify additional RUC Capacity to ensure sufficient on-line resources to meet Demand for each hour of the next Trading Day. RUC Capacity is selected by a SCUC optimization that uses the same Base Market Model used in the IFM adjusted as described in Section 27.5.1 and 27.5.6 to help ensure the deliverability of Energy from the RUC Capacity. In the case of Multi-Stage Generating Resources, the RUC will optimize Transition Costs in addition to the Start-Up and Minimum Load Costs. If a Scheduling Coordinator submits a Self-Schedule or a Submission to Self-Provide Ancillary Services for a given MSG Configuration in a given Trading Hour, the RUC will consider the Start-Up Cost, Minimum Load Cost, and Transition Cost associated with any Economic Bids for other MSG Configurations as incremental costs between the other MSG Configurations and the self-scheduled MSG Configuration. In such cases, incremental costs are the additional costs incurred to transition or operate in an MSG Configuration in addition to the costs associated with the self-scheduled MSG Configuration.

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34.12 CAISO Market Adjustment to Non-Priced Quantities in the RTM

All Self-Schedules are respected by the SCED and SCUC to the maximum extent possible and are protected from curtailment in the Congestion Management process to the extent that there are effective Economic Bids that can relieve Congestion. If all Effective Economic Bids for the RTM are exhausted, all Self-Schedules between the Minimum Load and the lowest Energy level of the first Energy Bid point will be subject to uneconomic adjustments based on assigned scheduling priorities. This functionality of the optimization software is implemented through the setting of scheduling parameters as described in Section 27.4.3 and specified in Section 27.4.3.1 and the BPMs. Through this process, imports and exports may be reduced to zero, Demand may be reduced to zero, and Generation may be reduced to a lower operating limit (or Regulation Limit) (or to a lower Regulation Limit plus any qualified Regulation Down Award or Self-Provided Ancillary Services, if applicable). Any Self-Schedules below the Minimum Load level are treated as fixed Self-Schedules and are not subject to uneconomic adjustments for Congestion Management but may be subject to decommitment via an Exceptional Dispatch if necessary as a last resort to relieve Congestion that could not otherwise be managed.

34.12.1 Increasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for increasing Supply as reflected from higher to lower priority are as follows:

<u>Scheduling Run Priority</u>	<u>Scheduling Parameters Under Soft Energy Bid Cap (27.4.3.2)</u>	<u>Scheduling Parameters Under Hard Energy Bid Cap (27.4.3.3)</u>
<u>CAISO Forecast of CAISO Demand; the export Self-Schedule of a Priority Wheeling Through; exports explicitly identified in a Resource Adequacy Plan backed by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; or Self-Schedules for exports at Scheduling Points in the RTM backed by Generation from non-Resource Adequacy Capacity or from non-RUC Capacity</u>	<u>\$1450</u>	<u>\$2900</u>
<u>RUC Schedules that are Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity, or the RUC Schedules that are the export Self-Schedules of non-Priority Wheeling Throughs</u>	<u>\$1250</u>	<u>\$2500</u>
<u>Real-Time Market Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity or non-RUC capacity, or the Real-Time Market Self-Schedules that are</u>	<u>\$1150</u>	<u>\$2300</u>

<u>the export Self-Schedules of a non-Priority Wheeling Through</u>		
<u>Contingency Only Operating Reserve if activated by Operator to provide Energy (as indicated by the Contingency Flag and the Contingency condition)</u>	<u>\$1000</u>	<u>\$2000</u>

- ~~(a) CAISO Forecast of CAISO Demand; the export Self-Schedule of a Priority Wheeling Through; exports explicitly identified in a Resource Adequacy Plan backed by Resource Adequacy Capacity explicitly identified and linked in a Supply Plan to the exports; or Self-Schedules for exports at Scheduling Points in the RTM backed by Generation from non-Resource Adequacy Capacity or from non-RUC Capacity;~~
- ~~(b) RUC Schedules that are Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity, or the RUC Schedules that are the export Self-Schedules of non-Priority Wheeling Throughs;~~
- ~~(c) Real Time Market Self-Schedules of exports at Scheduling Points not backed by Generation from non-Resource Adequacy Capacity or non-RUC capacity, or the Real Time Market Self-Schedules that are the export Self-Schedules of a non-Priority Wheeling Through; and~~
- ~~(d) Contingency Only Operating Reserve if activated by Operator to provide Energy (as indicated by the Contingency Flag and the Contingency condition).~~

34.12.2 Decreasing Supply

The scheduling priorities as defined in the RTM optimization to meet the need for decreasing Supply as reflected from higher to lower priority are as follows:

<u>Scheduling Run Priority</u>	<u>Scheduling Parameters Under Soft Energy Bid Cap (27.4.3.2)</u>	<u>Scheduling Parameters Under Hard Energy Bid Cap (27.4.3.3)</u>
<u>Non-Participating Load increase</u>	<u>Not Applicable</u>	<u>Not Applicable</u>
<u>Reliability Must Run (RMR) Schedule (Day-Ahead manual pre-dispatch or Manual RMR Dispatches or Dispatches that are flagged as RMR Dispatches following the MPM, for Legacy RMR Units and Exceptional Dispatch for RMR Resources process)</u>	<u>-\$6000</u>	<u>-\$12000</u>
<u>Transmission Ownership Right (TOR) Self-Schedule</u>	<u>-\$5900</u>	<u>-\$11800</u>
<u>Existing Rights (ETC) Self-Schedule</u>	<u>-\$5100 to -\$5900</u>	<u>-\$10200 to -\$11800</u>
<u>Regulatory Must-Run and Regulatory Must-Take (RMT) Self-Schedule;</u>	<u>-\$1400</u>	<u>-\$2800</u>
<u>Participating Load increase</u>	<u>Not Applicable</u>	<u>Not Applicable</u>
<u>Day-Ahead Supply Schedule</u>	<u>-\$1200</u>	<u>-\$2400</u>

<u>Self-Schedule Hourly Block</u>	<u>-\$1100</u>	<u>-\$2200</u>
<u>Import Self-Schedule of a non-Priority Wheeling Through</u>	<u>\$0</u>	<u>\$0</u>

- ~~(a) — Non-Participating Load increase;~~
- ~~(b) — Reliability Must Run (RMR) Schedule (Day Ahead manual pre-dispatch or Manual RMR Dispatches or Dispatches that are flagged as RMR Dispatches following the MPM, for Legacy RMR Units and Exceptional Dispatch for RMR Resources process);~~
- ~~(c) — Transmission Ownership Right (TOR) Self-Schedule;~~
- ~~(d) — Existing Rights (ETC) Self-Schedule;~~
- ~~(e) — Regulatory Must-Run and Regulatory Must-Take (RMT) Self-Schedule;~~
- ~~(f) — Participating Load increase;~~
- ~~(g) — Day Ahead Supply Schedule;~~
- ~~(h) — Self-Schedule Hourly Block; and~~
- ~~(i) — Import Self-Schedule of a non-Priority Wheeling Through.~~

These dispatch priorities as defined in the RTM optimization may be superseded by operator actions and procedures as necessary to ensure reliable operations.

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