



March 23, 2022

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. ER22-____-000**

**Tariff Amendment to Enhance Reliability Demand Response
Resource Bidding in the Real-Time Markets**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) submits this tariff amendment to enhance Reliability Demand Response Resource (“RDRR”) bidding in the CAISO’s real-time markets.¹ RDRRs are demand response resources that curtail load if a transmission or system emergency occurs. The CAISO only enables RDRRs for dispatch through market optimization when the reliability coordinator has declared an emergency where the CAISO has exhausted, or imminently will exhaust, economic resources, including imports. To help ensure the CAISO only dispatches RDRRs among the last resources, RDRRs currently must submit bids no less than 95 percent of the soft energy bid cap of \$1,000/MWh. However, when certain market conditions are satisfied, other resources can bid up to the hard energy bid cap of \$2,000/MWh. Left alone, it is likely—if not certain—RDRRs will be priced well below conventional economic resources, which could cause price suppression if dispatched in an emergency. The CAISO thus proposes to raise the RDRR real-time bid floor to 95 percent of the hard energy bid cap in the real-time market for hours when the CAISO accepts energy bids priced up to \$2,000/MWh. This will ensure RDRRs maintain the high strike price fundamental to their design, the CAISO does not dispatch RDRRs too early once enabled,

¹ The CAISO submits this filing pursuant to section 205 of the Federal Power Act (FPA), 16 U.S.C. § 824d, and Part 35 of the Commission’s Regulations, 18 C.F.R. Part 35. Capitalized terms not otherwise defined herein have the meanings set forth in Appendix A to the CAISO tariff, and references herein to specific tariff sections are references to sections of the CAISO tariff unless otherwise specified.

and that RDRRs do not suppress real-time prices in the early hours of an emergency.

The CAISO respectfully requests the Commission issue an order by May 23, 2022, accepting the proposed tariff revisions to be effective on or after June 1, 2022 but no later than July 1, 2022.² This will provide sufficient advance notice and time for market participants and the CAISO to prepare for implementing these changes. Consistent with Commission precedent recognizing the actual implementation date of some market rule changes depend on variables that cannot be fully predicted in advance and additional time may be needed to implement some market rule changes, the CAISO further requests authorization to inform the Commission of the actual effective date of the tariff changes through a subsequent filing within five business days following their implementation.³

I. Background

A. RDRR History

Resources may provide load curtailment in CAISO's markets through two demand response models: the proxy demand resource ("PDR") model or the RDRR model.⁴ A PDR is an economically dispatched demand response resource, but the CAISO only enables an RDRR for dispatch when the CAISO's system experiences a significant transmission or system emergency.⁵ The CAISO's RDRR model originated from a 2010 settlement agreement ("Settlement") filed with and approved by the California Public Utilities Commission ("CPUC") on reliability demand response issues.⁶ The CAISO,

² The CAISO plans on implementing the proposed enhancements on June 1, 2022, but desires flexibility regarding the implementation date if there is some delay.

³ See *Cal. Indep. Sys. Operator Corp.*, 172 FERC ¶ 61,263 at PP 1, 39 (2020). The CAISO has included an effective date of 12/31/9998 as part of the tariff records submitted in this filing. The CAISO will notify the Commission of the actual effective date of these tariff records within five business days of implementation in an eTariff submittal using Type of Filing code 150 – Report.

⁴ The instant filing does not affect PDRs, which will continue to bid and be dispatched like conventional, economic resources.

⁵ Section 34.7(13) of the CAISO tariff. CAISO Operating Procedure 4420 requires the CAISO to be in a level two NERC Energy Emergency Alert ("EEA 2") to enable RDRRs for dispatch, available at <https://www.aiso.com/Documents/4420.pdf>. Reliability Coordinators declare an EEA 2 when load management procedures are in effect and the balancing authority is no longer able to provide its expected energy requirements, available at <https://www.aiso.com/Documents/RC0410.pdf>.

⁶ *Order Instituting Rulemaking Regarding Policies and Protocols for Demand Response, Load Impact Estimates, Cost-Effectiveness Methodologies, Megawatt Goas and Alignment with California Independent System Operator Market Design Protocols* (January 25, 2007),

California investor-owned utilities, ratepayer advocates, large customers, and demand response providers were all parties to the Settlement. The Settlement required investor-owned utilities to transition their CPUC-approved retail emergency-triggered demand response programs into a CAISO reliability demand response product.⁷ The Settlement specified that RDRRs would not be “price responsive,” but “triggered only in response to abnormal and adverse operating conditions, such as imminent operating reserve violations or transmission constraint violations (*i.e.*, emergencies).” It further specified that RDRRs have a high “strike price” that is “well above the running cost of conventional supply-side resources.”

Consistent with the CPUC settlement, the CAISO launched a stakeholder initiative to develop the RDRR model. To help ensure RDRRs would only be used in a true system emergency when the CAISO has exhausted economic resources,⁸ the CAISO required RDRR scheduling coordinators to submit real-time bids at or above 95 percent of the energy bid cap, which was \$1,000/MWh at the time.⁹ On May 20, 2011, the CAISO filed its initial tariff amendment with the Commission to implement the RDRR model. Because the Commission had recently issued Order No. 745, it rejected the CAISO’s RDRR proposal,¹⁰ and the CAISO submitted a compliance filing for the RDRR product and Order No. 745¹¹ on March 14, 2012.¹² The Commission issued an order on July 18, 2013 accepting in part and denying in part the CAISO’s compliance filing, and directed the CAISO to submit a further compliance filing.¹³ On August 19, 2013, the

Rulemaking 07-01-041.

⁷ *Decision Adopting Settlement Agreement on Phase 3 Issues Pertaining to Emergency Triggered Demand Response Programs*, June 25, 2010, available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/119815.pdf.

⁸ CAISO Operating Procedure 4420 requires the CAISO to be in a level two NERC Energy Emergency Alert (“EEA 2”) to enable RDRRs for dispatch, available at <https://www.caiso.com/Documents/4420.pdf>. Reliability Coordinator declare EEA 2 when load management procedures are in effect and the balancing authority is no longer able to provide its expected energy requirements, available at <https://www.caiso.com/Documents/RC0410.pdf>.

⁹ See Section 30.6.2.1.2.1 of the CAISO tariff.

¹⁰ *Cal. Indep. Sys. Operator Corp.*, 138 FERC ¶ 61,117 (2012).

¹¹ *Demand Response Compensation in Organized Wholesale Energy Markets*, FERC Order No. 745, 134 FERC ¶ 61,187 (2011).

¹² See *Cal. Indep. Sys. Operator Corp.*, RDRR Compliance filing, Docket Nos. ER11-3616 and ER11-4100 (March 14, 2012).

¹³ *Cal. Indep. Sys. Operator Corp.*, 144 FERC ¶ 61,047 (2013), P 62 fn. 47 (July 2013 Order).

CAISO submitted a subsequent filing in compliance with the July 2013 Order,¹⁴ which the Commission accepted.¹⁵ The Commission found the RDRR model:

will provide access to wholesale energy markets for customers with reliability demand response resources, or their aggregators, and will be another tool for CAISO to address emergency and near-emergency situations. CAISO's RDRR proposal allows demand response resources that would otherwise not be able to participate in the CAISO market due to restrictions arising from their use in emergency-triggered local demand response programs.¹⁶

The CAISO has used RDRRs very rarely since their inception. In 2021, for example, the CAISO did not enable RDRRs. Although the reliability coordinator declared a level two NERC Energy Emergency Alert on July 29, 2021, CAISO operators mitigated the emergency using other resources. However, during the August 2020 heat events, the CAISO observed that RDRR dispatch likely contributed to real-time price suppression because the real-time market optimization failed to capture RDRRs' resource-specific characteristics.¹⁷ The CAISO only considered RDRRs in its five-minute real-time dispatch process, which did not accurately reflect the constraints RDRRs have as large load resources that extend beyond the time horizon of the five-minute dispatch process. Many RDRRs are incapable of responding to five-minute dispatches without more notice or may be incapable of moving dynamically within an hour. Because of this, the CAISO resorted to manually dispatching RDRRs in an emergency, which resulted in the market optimization seeing a drop in demand leading to price suppression. To remedy this issue, in the Spring of 2021 the CAISO proposed including RDRR resources in its real-time pre-dispatch process and extending its hourly and fifteen-minute bidding options to RDRRs. The Commission approved the proposal, finding:

Providing RDRRs more flexibility with these enhanced bidding and dispatch options will help ensure that RDRRs can better reflect the characteristics of their resources in the CAISO markets. By including RDRRs in the market optimization and pricing them

¹⁴ See *Cal. Indep. Sys. Operator Corp.*, Transmittal Letter to RDRR subsequent Compliance Filing, Docket Nos. ER11-3616 and ER13-2192 (August 19, 2013) (August 19, 2013 Compliance Filing).

¹⁵ The language was initially added to section 34.5 in the CAISO's August 19, 2013 compliance filing, and later moved to section 34.7 in the CAISO's Order No. 764 compliance filing (*Integration of Variable Energy Resources*, FERC Order No. 764, 136 FERC ¶ 61,246 (2012)), *Cal. Indep. Sys. Operator Corp.*, 146 FERC ¶ 61,205 (2014).

¹⁶ *Cal. Indep. Sys. Operator Corp.*, 144 FERC ¶ 61,047 at P 38 (2013).

¹⁷ *Cal. Indep. Sys. Operator Corp.*, 175 FERC ¶ 61,160 at P 29 (2021).

accordingly, this revision, along with others in this filing, should help avoid manual dispatch of these resources and promote more accurate price signals when system conditions are tight.¹⁸

B. Order No. 831

In 2016, the Commission issued Order No. 831 to require the CAISO and other Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs) to increase their energy market bid caps from \$1,000/MWh to \$2,000/MWh.¹⁹ Order No. 831 also required suppliers to base energy bids above \$1,000/MWh on verifiable actual or expected costs to be eligible to set market prices. Order No. 831 did not require verification of import bids or virtual bids above \$1,000/MWh.

The Commission accepted the CAISO's tariff revisions to comply with Order No. 831 (Order No. 831 Compliance Filing)²⁰ and related tariff revisions to implement commitment cost and default energy bid enhancements (CCDEBE Tariff Amendment).²¹ The Commission also accepted the CAISO's tariff revisions for allowing import bids, export bids, demand bids, and virtual bids above the soft energy bid cap of \$1,000/MWh.²² Unlike other ISOs/RTOs, the CAISO often depends on import bids to meet demand. As such, the CAISO allows non-resource adequacy import bids, export bids, demand bids, and virtual bids priced above the soft energy bid cap when the CAISO has cost-verified a bid

¹⁸ *Id.* at P 35.

¹⁹ Order No. 831 directed ISOs and RTOs to implement requirements as to (1) offer cap structure, (2) a verification process for cost-based offers for energy above minimum load, (3) resource neutrality, and (4) virtual transactions and external transactions (*i.e.*, imports).

²⁰ The CAISO submitted the Order No. 831 Compliance Filing in Docket No. ER19-2757-000. On September 21, 2020, the Commission issued an order accepting those tariff revisions subject to the CAISO submitting a further compliance filing within 30 days to clarify one of the tariff revisions. *Cal. Indep. Sys. Operator Corp.*, 172 FERC ¶ 61,262 at P 1 (Order No. 831 Compliance Order), *notice of denial of reh'g by operation of law*, 173 FERC ¶ 62,095 (2020). The CAISO timely submitted the further compliance filing, which the Commission accepted by letter order on December 11, 2020.

²¹ The CAISO submitted the CCDEBE Tariff Amendment in Docket No. ER20-2360. On September 21, 2020, the Commission issued an order accepting those tariff revisions subject to the CAISO submitting a compliance filing within 30 days to clarify one of the tariff revisions. *Cal. Indep. Sys. Operator Corp.*, 172 FERC ¶ 61,263 at P 1 (CCDEBE Order), *notice of denial of reh'g by operation of law*, 173 FERC ¶ 62,096 (2020). The CAISO timely submitted the compliance filing, which the Commission accepted by letter order on December 28, 2020. The CCDEBE Tariff Amendment was preceded by an earlier CAISO tariff amendment submitted in Docket No. ER19-2727 that included similar (but not identical) tariff revisions, which the Commission rejected in relevant part without prejudice. See CCDEBE Order at PP 8-9 (citing *Cal. Indep. Sys. Operator Corp.*, 170 FERC ¶ 61,015 (2020)).

²² *Cal. Indep. Sys. Operator Corp.*, 175 FERC ¶ 61,076 (2021).

or has calculated a maximum import price that exceeds the soft energy bid cap. This ensures the CAISO incentivizes imports when there is insufficient supply to meet demand.

As required by Order No. 831, demand response resources like RDRRs are subject to cost verification if they seek to bid above the soft energy bid cap of \$1,000/MWh.²³ Similar to all other resources, the CAISO allows RDRRs to submit “reference level change requests” to trigger verification of any bids submitted above \$1,000/MWh. For conventional supply resources, an approved reference level change request would adjust the resource’s default energy bid and resource-specific bid cap. However, as the CAISO explained in its Order No. 831 compliance filing, the CAISO does not currently calculate default energy bids for demand response resources because they are not subject to local market power mitigation. Therefore, the CAISO cannot verify the resource’s costs through the automated reference level change request process. Additionally, demand response resources like RDRRs do not have easily verifiable costs the CAISO can review to determine whether an adjustment is appropriate. The CAISO uses a combination of public gas price indices for gas-fired resources,²⁴ but there is no RDRR equivalent. RDRRs must submit manual reference level change requests for offers that exceed \$1,000/MWh. Similar to all other resources, RDRR scheduling coordinators must submit their reference level change request by 8:00 a.m. of the business day on which the CAISO market runs.²⁵ If the CAISO cannot verify their costs before clearing the CAISO market, the resources can request after-the-fact recovery. The Commission approved this construct as compliant with Order No. 831, which contemplated that the verification process for demand response resources differs from the verification of generation resources.

C. RDRR Real-time Challenges

Soon after the CAISO implemented its Order No. 831-related enhancements, it became apparent the rules for allowing RDRRs to bid above the soft energy bid cap were impractical. Left alone, it would be likely—if not certain—RDRRs would be priced well below conventional economic resources and they could suppress prices if dispatched in an emergency. Although RDRR scheduling coordinators have a mechanism to request the ability to bid above the soft energy bid cap, RDRRs are not true cost-based resources, and thus lack data to submit for the CAISO to review for approval. The CAISO essentially

²³ See Section 30.11.2.3 *et seq.* of the CAISO tariff.

²⁴ See Sections 30.11.1.2 and Section 39.7.1.

²⁵ *I.e.*, for day-ahead bids the scheduling coordinator must submit the request before 8 a.m. of that day’s day-ahead market, and for real-time bids the scheduling coordinator must submit the request before 8 a.m. of that day’s real-time market.

compensates RDRRs to be the first loads shed when the CAISO has exhausted supply and would otherwise direct distribution companies to shed loads that have neither elected to be turned off in an emergency nor receive compensation for being turned off. RDRRs' place in the bid stack is not a reflection of their marginal costs, but the intent that the CAISO only dispatches them when it has exhausted other resources.²⁶ Although RDRRs are demand response resources because they provide load curtailment, RDRRs better resemble emergency purchases, which the Commission held were outside the scope of Order No. 831 because "such transactions are administratively priced rather than based on short-run marginal cost."²⁷

Additionally, the timing for RDRR scheduling coordinators is problematic. Demand peaks in the late afternoon in California, so emergencies and RDRR dispatches generally occur in the late afternoon as well. But by their nature, system and transmission emergencies are unforeseen. The result is that before 8:00 a.m., RDRR scheduling coordinators do not know what conditions will be in the afternoon. This is also true for conventional resource scheduling coordinators, but conventional resource scheduling coordinators know there is a substantial likelihood the CAISO will dispatch their resources. But even in tight conditions, the CAISO may not enable RDRRs, let alone dispatch them. If RDRR scheduling coordinators sought to ensure their bids were always at or near the top of the bid stack to maintain their "high strike price," they would have to submit reference level change requests every day during peak conditions.

Compounding this issue, before 8 a.m. of the trading day, RDRR scheduling coordinators may have no visibility into whether other resources will trigger conditions that set aside the CAISO's soft energy bid cap for other resources.²⁸ First, the CAISO may approve reference level change requests above the soft energy bid cap for conventional CAISO resources for that day's real-time market.²⁹ These resources could then outbid RDRRs in the real-time market, and the RDRR scheduling coordinators will lose their opportunity to submit change requests themselves for that day. Second, when the CAISO has (1) accepted an energy bid that exceeds the soft energy bid cap, or (2) the maximum import bid price exceeds the soft energy bid cap, scheduling coordinators may submit export bids, virtual bids, and energy bids for "non-resource-specific system resources" that exceed the soft energy bid cap.³⁰ Non-

²⁶ Or will do so imminently.

²⁷ Order No. 831 at P 198.

²⁸ In other words, RDRR scheduling coordinators may not know until after market close that the CAISO may accept bids above the soft energy bid cap in that day's real-time market.

²⁹ *E.g.*, gas-fired resources, hydroelectric resources, energy storage, etc.

³⁰ Sections 30.5.8.1 and 30.5.8.2 of the CAISO tariff. The CAISO enumerates many examples of bid cap adjustments and their impact on scheduling coordinators in Attachment P to

resource-specific system resources refers to import bids not identified by a specific resource and outside of the CAISO balancing authority area.³¹ When the conditions occur, the CAISO does not constrain import resources' bidding through cost verification because doing so could discourage imports that can supplement resource adequacy imports during tight supply conditions.³² The Commission agreed with this approach, finding that "reducing bid values for import bids for non-resource adequacy resources to the Maximum Import Bid Price, the soft energy bid cap, or the highest verified bid could potentially discourage imports that can supplement energy imports during very tight supply conditions and may make it less likely that those resources recover their costs."³³

Because the CAISO will enable scheduling coordinators to submit energy and import bids above the soft energy bid cap *after* scheduling coordinators for RDRRs could even seek authorization to do the same, RDRRs would likely be outbid—possibly substantially—in the emergency conditions when the CAISO would enable them. Although RDRRs would still be eligible for bid cost recovery after the market closes,³⁴ the CAISO optimization may dispatch the RDRRs well before these other economic resources with higher bids. Worse, if the RDRRs are the marginal resources, they may suppress real-time prices in the early hours of an emergency when the CAISO needs to signal scarcity and incentivize imports later in the day. These results would be highly problematic in an emergency, and they contravene RDRRs' intent and design.

II. Proposed Revisions

A. Synchronizing RDRRs with Cap Changes

To maintain RDRRs' strike price above conventional resources and ensure the CAISO only dispatches RDRRs when it has exhausted or imminently will exhaust all other resources, the CAISO proposes that RDRRs' real-time energy bids must be at least 95 percent of the hard energy bid cap

the CAISO's Business Practice Manual for Market Instruments, *available at* <https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>.

³¹ By contrast, resource-specific system resources are external resources that generally are treated like internal resources.

³² *Cal. Indep. Sys. Operator Corp.*, 175 FERC ¶ 61,076 at P 10 (2021). The CAISO requires cost verification from resource adequacy imports, but these are subject to a must offer obligation. Additionally, prohibiting virtual bids up to \$2,000/MWh while allowing import and export bids up to \$2,000/MWh would cause market inefficiencies because virtual bids would not be able to compete with imports and exports.

³³ *Id.* at P 44.

³⁴ If the scheduling coordinator submitted a reference level change adjustment request and the CAISO did not approve it. See Section 30.12 of the CAISO tariff.

(\$1,900/MWh) when other resources can bid up to the hard cap of \$2,000/MWh.³⁵ The CAISO believes this proposal is consistent with RDRRs' original design and the CPUC settlement and retail tariffs for those end users. Without enabling RDRRs to bid close to the hard energy bid cap, the CAISO optimization may dispatch RDRRs before economic, non-emergency resources. Additionally, RDRRs with lower bids may suppress real-time prices during system emergencies, thereby interfering with the economic signal the CAISO would otherwise send to supply. The CAISO's proposed solution avoids both issues.

Although RDRR owners and scheduling coordinators supported the CAISO's proposed solution, they were concerned about the tight schedule such a requirement would impose on scheduling coordinators for submitting real-time bids. If RDRR scheduling coordinators were not carefully watching for bid cap adjustments at the close of each morning's real-time market, they would not realize their sub-\$1,000 bids would be rejected and must be resubmitted with sufficient time before the real-time interval.³⁶ Without a new bid, the CAISO would reject the old bid, and the RDRR would be left out of that interval. To address this issue, the CAISO proposes to adjust submitted RDRR bids automatically where the scheduling coordinator has not already manually adjusted the RDRR bid after a bid cap change.³⁷ The CAISO will base the automatic adjustment on the percentage of the RDRR bid floor originally submitted by the Scheduling Coordinator.³⁸ For example, if the scheduling coordinator originally submitted an RDRR bid of \$970/MWh when the soft energy bid cap was effective, and the scheduling coordinator did not revise the bid after the CAISO allowed bidding to the hard cap, the CAISO's software would adjust the RDRR's bid for that real-time interval to \$1,940/MWh, maintaining the scheduling coordinator's bid at 97 percent of the RDRR bid floor.³⁹ This

³⁵ Proposed Sections 30.6.2.1.2.1 and 30.6.2.1.2.2 of the CAISO tariff. The CAISO does *not* propose to change the hard energy bid cap or its application to RDRRs.

³⁶ The CAISO enumerates many examples of bid cap adjustments and their impact on scheduling coordinators in Attachment P to the CAISO's Business Practice Manual for Market Instruments, *available at* <https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>. The CAISO's bidding platform, SIBR, automatically communicates cap adjustments to all scheduling coordinators.

³⁷ Proposed Sections 30.6.2.1.2.1 and 30.6.2.1.2.2 of the CAISO tariff.

³⁸ This proposal also maintains the bid percentage with the applicable soft or hard cap.

³⁹ Scheduling coordinators for many RDRRs, such as utilities, may submit bids for RDRRs at different values so those loads are curtailed together (e.g., a group of RDRRs at \$955/MWh, another group at \$960/MWh). They also could submit bids for the loads they want curtailed first, and higher bids for loads they want curtailed last (all else being equal). Keeping the bid percentage equal to the applicable RDRR bid floor—rather than resetting them all to the new floor—preserves these intents.

automatic adjustment will occur after the market close for that real-time hour, and only when the RDRR's scheduling coordinator does not submit a new bid or opt-out of that real-time interval.⁴⁰

This proposal supports the intent for real-time market RDRR energy bids to be dispatched after economic resources, including imports, during system emergencies. The CAISO's proposal also allows scheduling coordinators to modify bids themselves, but helps ensure the CAISO will not lose RDRRs due to quickly-changing bidding floors and caps in the real-time market. The CAISO's enhancements also avoid the risk that dispatching RDRRs could suppress real-time prices during system emergencies when the CAISO should signal the need for more capacity.

The CAISO's proposal is consistent with Order No. 831. RDRR scheduling coordinators still can submit manual reference level adjustment requests if they can demonstrate their costs exceed the soft energy bid cap, as the Commission already approved.⁴¹ The CAISO has preserved the existing bidding structure for RDRRs when the \$1,000/MWh soft energy bid cap is in place. However, the CAISO's proposal also recognizes that RDRRs are emergency resources and are available for dispatch when the reliability coordinator issues a level two energy emergency alert, meaning that economic resources have been or imminently will be exhausted. Without the instant enhancements, economic resources could significantly outbid—and therefore be dispatched after—RDRRs. Order No. 831 and the Commission's orders on the CAISO's filings recognized the need to allow emergency resources to submit bids up to the hard energy bid cap without constraint in tight conditions because doing otherwise could discourage capacity exactly when it is most needed. To the extent the CAISO's proposed revisions diverge from the Order No. 831, the CAISO believes they represent needed, just, and reasonable improvements to existing CAISO tariff provisions. The tariff revisions are extensions of, and otherwise support independent entity variations for a unique CAISO model with strong ties to retail tariffs.

B. Tariff Clarifications

The CAISO also proposes to include some tariff revisions that clarify current RDRR policy. First, Section 30.6.2.1.2 of the CAISO tariff states, "A Reliability Demand Response Resource that is subject to either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option shall have

⁴⁰ Although it is not a CAISO requirement to be an RDRR, to the CAISO's knowledge currently all RDRRs are resource adequacy resources subject to a must-offer obligation.

⁴¹ See Section I.B, above. The CAISO's proposed revisions do not affect the day-ahead markets.

a Default Minimum Load Bids of zero (0) dollars registered in the Master File.”⁴² RDRRs’ default minimum load bids are in SIBR, not the Master File. The CAISO believes it is unnecessary to specify in the tariff where the \$0 default minimum load bid lives in the CAISO systems, and it is more appropriate to include this type of implementation detail in the business practice manuals. As such, the CAISO proposes to strike “registered in the Master File” from Section 30.6.2.1.2.

Section 30.7.1 of the CAISO tariff provides, “The CAISO shall provide information regarding submitted Bids including, but not be limited to, the following: (i) notification of acceptance; (ii) notification of validation; (iii) notification of rejection; (iv) notification of status; (v) notification of submission error(s); and (vi) default modification or generation of Bids, as further provided below, if any, on behalf of Scheduling Coordinators.” Although this provision expressly states its list is not exhaustive, the CAISO proposes to add “including” in the sixth clause to clarify that that clause is not exclusive to the default energy bid modification described later in the tariff. Thus: “default modification or generation of Bids, including, as further provided below, if any, on behalf of Scheduling Coordinators.” This addition will clarify the CAISO can notify scheduling coordinators of any other relevant default energy bid modifications.⁴³

Finally, the CAISO proposes to clarify that an RDRR bid above the soft energy bid cap cannot serve as the trigger to enable other resources—imports, virtual supply, all other RDRRs, *et al.*—to bid above the soft energy bid cap automatically⁴⁴ in the real-time market.⁴⁵ The CAISO rarely enables RDRRs for dispatch. They are an emergency resource with an administrative bid floor used to ensure the CAISO only dispatches them in a real-time system emergency when it has exhausted economic resources. It would contravene Order No. 831 and CAISO policy that an RDRR bid above the soft energy bid cap could enable bidding for other resources.⁴⁶ Even if the CAISO received a cost-verified RDRR

⁴² A resource would have a default minimum load bid in the Master File if it used the Registered Cost option, but RDRRs do not use this option. In any case, software details are more appropriate for the business practice manuals. The rest of the provision is the actual condition of service.

⁴³ Again, this is not a change in policy or practice; just a tariff clarification.

⁴⁴ *I.e.*, without a pre-market request or the triggers specified in Section 30.5.8.

⁴⁵ Proposed Section 30.5.8.2.

⁴⁶ Order No. 831 at P 198. It would also be problematic for the market optimization. For example, the CAISO could accept a cost-verified bid above the soft energy bid cap for a real-time market interval. The optimization would then enable RDRRs, imports, *et al.* to bid above the soft energy bid cap without justification. RDRRs, in fact, would be required to bid at least \$1900/MWh. But if the original verified bid above the soft energy bid cap is later withdrawn, the optimization will revert the bidding options below the soft energy bid cap (because there is no longer a cost-verified bid above the soft cap). However, if an RDRR had submitted a bid at \$1900 after the floor was automatically raised and before the verified bid was withdrawn, the

bid above the soft energy bid, which is improbable, the odds the CAISO would enable the RDRR for dispatch or actually dispatch the RDRR are even more remote. It is inappropriate for a single RDRR's bid to enable all other RDRRs, imports, virtual supply, and others to bid above the soft energy bid cap without cost justification. The CAISO's proposed tariff clarification will make this policy transparent.

III. Stakeholder Feedback

Stakeholders generally support the CAISO's proposal. Both utilities and demand response providers believe the CAISO's proposal is consistent with RDRR design, Order No. 831, and emergency procedures. The CAISO's Department of Market Monitoring ("DMM") also supports the CAISO's proposal, finding that "the current rules could create inefficient outcomes that could be inconsistent with the CPUC settlement if the ISO does not change its rules before this summer."⁴⁷ Separately, DMM states it "has not yet determined that any emergency demand response has a marginal or opportunity cost below \$1,900/MWh," but the CAISO should use a future initiative to evaluate the extent to which RDRRs' bids could be based on marginal costs (and between \$1,000/MWh and \$1,900/MWh). The CAISO agrees that such a review would be prudent, but it notes that RDRR design must follow the CPUC's retail tariffs. Future CAISO changes to the fundamental aspects of RDRRs will likely require CPUC involvement because they would require changes to the retail tariffs.

The CAISO's RDRR enhancements stakeholder initiative is ongoing. Phase two of the initiative focuses on (1) how the CAISO optimization distinguishes among RDRRs based on minimum load costs and (2) the CAISO's capacity cap on RDRRs using the discrete RDRR model.

IV. Effective Date

The CAISO respectfully requests the Commission issue an order by May 23, 2022, accepting the proposed tariff revisions to be effective on or after June 1, 2022 but no later than July 1, 2022.⁴⁸ This will provide sufficient advance notice and time for market participants and the CAISO to prepare for implementing these changes. Consistent with Commission precedent recognizing the actual implementation date of some market rule changes can

optimization may not revert the bidding options to the soft energy bid cap because it sees the RDRR bid above the soft energy bid cap.

⁴⁷ CAISO DMM, Memorandum to CAISO Board of Governors (March 9, 2022), *available at* <http://www.aiso.com/Documents/Department-of-Market-Monitoring-Update-Mar-2022.pdf>.

⁴⁸ The CAISO plans on implementing the proposed enhancements on June 1, 2022, but desires flexibility regarding the implementation date if there is some delay.

depend on variables that cannot be fully predicted in advance and additional time may be needed to implement some market rule changes, the CAISO further requests authorization to inform the Commission of the actual effective date of the tariff changes through a subsequent filing within five business days following the implementation.⁴⁹

V. Communications

Under Rule 203(b)(3),⁵⁰ the CAISO respectfully requests that all correspondence and other communications about this filing be served upon:

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VI. Service

The CAISO has served copies of this filing on the CPUC, the California Energy Commission, and all parties with scheduling coordinator agreements under the CAISO tariff. In addition, the CAISO has posted a copy of the filing on the CAISO website.

⁴⁹ See *Cal. Indep. Sys. Operator Corp.*, 172 FERC ¶ 61,263 at PP 1, 39 (2020). The CAISO has included an effective date of 12/31/9998 as part of the tariff records submitted in this filing. The CAISO will notify the Commission of the actual effective date of these tariff records within five business days of implementation in an eTariff submittal using Type of Filing code 150 – Report.

⁵⁰ 18 C.F.R. § 385.203(b)(3).

VIII. Contents of this filing

Besides this transmittal letter, this filing includes these attachments:

Attachment A	Clean CAISO tariff sheets
Attachment B	Redlined CAISO tariff sheets
Attachment C	Draft Final Proposal
Attachment D	Board of Governors Memo

IX. Conclusion

For the reasons set forth in this filing, the CAISO respectfully requests that the Commission issue an order accepting the tariff revisions in this filing.

Respectfully submitted,

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Attachment A – Clean Tariff
Reliability Demand Response Resource Bidding
California Independent System Operator Corporation
March 23, 2022

30.5.8.2 Real-Time Market.

Scheduling Coordinators may submit Demand Bids, Export Bids, Virtual Bids, and Bids for Non-Resource-Specific System Resources above the Soft Energy Bid Cap, not to exceed the Hard Energy Bid Cap, for any Trading Hour of the Real-Time Market in which

- (a) The conditions in Section 30.5.8.1 applied to the same Trading Hour of the Day-Ahead Market; or
- (b) (1) The CAISO has accepted a Bid for the applicable Trading Hour of the Real-Time Market with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, not including Bids from Reliability Demand Response Resources, or (2) the Maximum Import Bid Price exceeds the Soft Energy Bid Cap.

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30.6 Bidding and Scheduling of PDRs and RDRRs

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30.6.2 Bidding and Scheduling of RDRRs

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30.6.2.1.2 Real-Time Dispatch Options

For purposes of bidding and scheduling in the Real-Time Market, each Scheduling Coordinator for a Demand Response Provider representing a Reliability Demand Response Resource shall select either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option prior to the start of the initial Reliability Demand Response Services Term applicable to the Reliability Demand Response Resource. The selection for each Reliability Demand Response Resource shall remain in effect until

such time as the Scheduling Coordinator for the Reliability Demand Response Resource chooses to change its selection from the Marginal Real-Time Dispatch Option to the Discrete Real-Time Dispatch Option or vice versa, in which case the change in selection shall go into effect at the start of the next Reliability Demand Response Services Term applicable to the Reliability Demand Response Resource. A Reliability Demand Response Resource that is subject to either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option shall have a Default Minimum Load Bids of zero (0) dollars.

30.6.2.1.2.1 Marginal Real-Time Dispatch Option

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

- (a) May submit either a single-segment Bid or a multi-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Soft Energy Bid Cap.
- (b) When (1) the CAISO has accepted a Bid for the applicable Trading Hour of the Real-Time Market with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or (2) the Maximum Import Bid Price exceeds the Soft Energy Bid Cap, may submit either a single-segment Bid or a multi-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Hard Energy Bid Cap, not to exceed the Hard Energy Bid Cap.

In any instance where the Scheduling Coordinator for a Reliability Demand Response Resource has submitted a Real-Time Market Bid and the Soft Energy Bid Cap changes for the same Trading Hour, the Scheduling Coordinator should submit a revised Bid by Market Close. Where the Scheduling Coordinator does not submit a revised Bid, the CAISO will automatically adjust the Bid after Market Close, maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator, not to exceed the Hard Energy Bid Cap.

- (c) Shall be dispatched as a marginal resource if it is dispatched by the CAISO. For the purpose of making this determination and setting the Locational Marginal Price, the

CAISO treats a Reliability Demand Response Resource as if it were flexible with an infinite Ramp Rate between zero (0) and its PMax.

30.6.2.1.2.2 Discrete Real-Time Dispatch Option

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

- (a) May submit only a single-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Soft Energy Bid Cap.
- (b) When (1) the CAISO has accepted a Bid for the applicable Trading Hour of the Real-Time Market with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or (2) the Maximum Import Bid Price exceeds the Soft Energy Bid Cap, may submit only a single-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Hard Energy Bid Cap, not to exceed the Hard Energy Bid Cap.

In any instance where the Scheduling Coordinator for a Reliability Demand Response Resource has submitted a Real-Time Market Bid and the Soft Energy Bid Cap changes for the same Trading Hour, the Scheduling Coordinator should submit a revised Bid by Market Close. Where the Scheduling Coordinator does not submit a revised Bid, the CAISO will automatically adjust the Bid after Market Close, maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator, not to exceed the Hard Energy Bid Cap.

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

* * * * *

30.7 Bid Validation

The CAISO shall validate submitted Bids pursuant to the procedures set forth in this Section 30.7 and the rules set forth in the Business Practice Manuals.

30.7.1 Scheduling Coordinator Access

Each Scheduling Coordinator will be provided access to the CAISO's secure communication system to submit, modify and cancel Bids prior to the close of both the DAM and RTM, as specified in Section 30.5.1. The CAISO shall provide information regarding submitted Bids including, but not be limited to, the following: (i) notification of acceptance; (ii) notification of validation; (iii) notification of rejection; (iv) notification of status; (v) notification of submission error(s); and (vi) default modification or generation of Bids, including as further provided below, if any, on behalf of Scheduling Coordinators.

Attachment B – Marked Tariff
Reliability Demand Response Resource Bidding
California Independent System Operator Corporation
March 23, 2022

30.5.8.2 Real-Time Market.

Scheduling Coordinators may submit Demand Bids, Export Bids, Virtual Bids, and Bids for Non-Resource-Specific System Resources above the Soft Energy Bid Cap, not to exceed the Hard Energy Bid Cap, for any Trading Hour of the Real-Time Market in which

- (a) The conditions in Section 30.5.8.1 applied to the same Trading Hour of the Day-Ahead Market; or
- (b) (1) The CAISO has accepted a Bid for the applicable Trading Hour of the Real-Time Market with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, not including Bids from Reliability Demand Response Resources, or (2) the Maximum Import Bid Price exceeds the Soft Energy Bid Cap.

* * * * *

30.6 Bidding and Scheduling of PDRs and RDRRs

* * * * *

30.6.2 Bidding and Scheduling of RDRRs

* * * * *

30.6.2.1.2 Real-Time Dispatch Options

For purposes of bidding and scheduling in the Real-Time Market, each Scheduling Coordinator for a Demand Response Provider representing a Reliability Demand Response Resource shall select either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option prior to the start of the initial Reliability Demand Response Services Term applicable to the Reliability Demand Response Resource. The selection for each Reliability Demand Response Resource shall remain in effect until

such time as the Scheduling Coordinator for the Reliability Demand Response Resource chooses to change its selection from the Marginal Real-Time Dispatch Option to the Discrete Real-Time Dispatch Option or vice versa, in which case the change in selection shall go into effect at the start of the next Reliability Demand Response Services Term applicable to the Reliability Demand Response Resource. A Reliability Demand Response Resource that is subject to either the Marginal Real-Time Dispatch Option or the Discrete Real-Time Dispatch Option shall have a Default Minimum Load Bids of zero (0) dollars ~~registered in the Master File.~~

30.6.2.1.2.1 Marginal Real-Time Dispatch Option

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

(a) May submit either a single-segment Bid or a multi-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Soft Energy Bid Cap.

~~(b) When (1) the CAISO has accepted a Bid for the applicable Trading Hour of the Real-Time Market with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or (2) the Maximum Import Bid Price exceeds the Soft Energy Bid Cap, may submit either a single-segment Bid or a multi-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Hard Energy Bid Cap, not to exceed the Hard Energy Bid Cap.~~

~~In any instance where the Scheduling Coordinator for a Reliability Demand Response Resource has submitted a Real-Time Market Bid and the Soft Energy Bid Cap changes for the same Trading Hour, the Scheduling Coordinator should submit a revised Bid by Market Close. Where the Scheduling Coordinator does not submit a revised Bid, the CAISO will automatically adjust the Bid after Market Close, maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator, not to exceed the Hard Energy Bid Cap.~~

~~(b)~~ Shall be dispatched as a marginal resource if it is dispatched by the CAISO. For the purpose of making this determination and setting the Locational Marginal Price, the

CAISO treats a Reliability Demand Response Resource as if it were flexible with an infinite Ramp Rate between zero (0) and its PMax.

30.6.2.1.2.2 Discrete Real-Time Dispatch Option

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

(a) May submit only a single-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Soft Energy Bid Cap.

(b) When (1) the CAISO has accepted a Bid for the applicable Trading Hour of the Real-Time Market with an Energy Bid price that exceeds the Soft Energy Bid Cap pursuant to Section 30.7.12, or (2) the Maximum Import Bid Price exceeds the Soft Energy Bid Cap, may submit only a single-segment Bid in the Real-Time Market that must be at least ninety-five percent (95%) of the applicable Hard Energy Bid Cap, not to exceed the Hard Energy Bid Cap.

In any instance where the Scheduling Coordinator for a Reliability Demand Response Resource has submitted a Real-Time Market Bid and the Soft Energy Bid Cap changes for the same Trading Hour, the Scheduling Coordinator should submit a revised Bid by Market Close. Where the Scheduling Coordinator does not submit a revised Bid, the CAISO will automatically adjust the Bid after Market Close, maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator, not to exceed the Hard Energy Bid Cap.

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

* * * * *

30.7 Bid Validation

The CAISO shall validate submitted Bids pursuant to the procedures set forth in this Section 30.7 and the rules set forth in the Business Practice Manuals.

30.7.1 Scheduling Coordinator Access

Each Scheduling Coordinator will be provided access to the CAISO's secure communication system to submit, modify and cancel Bids prior to the close of both the DAM and RTM, as specified in Section 30.5.1. The CAISO shall provide information regarding submitted Bids including, but not be limited to, the following: (i) notification of acceptance; (ii) notification of validation; (iii) notification of rejection; (iv) notification of status; (v) notification of submission error(s); and (vi) default modification or generation of Bids, including as further provided below, if any, on behalf of Scheduling Coordinators.

Attachment C – Draft Final Proposal
Reliability Demand Response Resource Bidding
California Independent System Operator Corporation
March 23, 2022



California ISO

RDRR Bidding Enhancements

Track 1 – Draft Final Proposal

January 26, 2022

Prepared by:

Danielle Tavel

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1. Executive Summary

The CAISO has bifurcated the RDRR Bidding Enhancements into two tracks to facilitate board approval and summer 2022 implementation to align RDRR bidding rules with real-time price conditions and leave the rest of the enhancements for a future policy and implementation timeline. The updated tracks include:

- Track 1 will address aligning RDRR bidding rules with real-time price conditions, consistent with FERC Order No. 831, seeking a March 2022 ISO Board of Governors approval and Summer 2022 implementation.
- Track 2 will address adjusting discrete RDRRs operating range to reflect operational capabilities in real time and re-examine the cap on discrete RDRR registration. It is planning for a May 2022 ISO Board of Governors approval and implementation in either fall of 2022 or 2023.

In this Track 1 Draft Final Proposal, the CAISO proposes enhancements to real-time bidding for the Reliability Demand Response Resource (RDRR) model by:

- Aligning RDRR bidding rules with real-time price conditions consistent with FERC Order No. 831 by proposing that RDRRs must bid at least 95% of the hard energy bid cap (\$1,900/MWh) when the conditions are satisfied to raise the soft energy bid cap to \$2,000/MWh.¹ To implement this, the CAISO proposes to automatically adjust the submitted RDRR bids based on the change in energy bid cap by maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator. This automatic adjustment will occur after the market close and will only apply if no action is taken by the close of each hour's real-time market by the Scheduling Coordinator.

2. Background

On June 24, 2010, in D.10-06-034 the CPUC approved a multi-party settlement in its demand response proceeding (R.07-01-041) that required investor-owned utilities to transition their CPUC-approved retail emergency-triggered demand response programs into a CAISO reliability demand response product.² The settlement specified the minimum operating and technical requirements for retail emergency-triggered demand response resources. The CPUC settlement also required these resources be made available for emergency operating procedures. While previously emergency demand response, like RDRR, were triggered under a “Warning” notice it will now be referred to as an “EEA 2”.³

¹ The CAISO will develop cost justification methodology for demand response resources (including RDRRs participating economically in the day-ahead market) and energy storage resources bidding above \$1,000/MWh through a separate stakeholder process.

² Details on the CPUC Reliability-Based Demand Response Settlement are available at <https://docs.cpuc.ca.gov/publishedDocs/published/Graphics/119817.PDF> and https://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/119815.PDF

³ The CAISO's Operating Procedure 4420 outlines when RDRRs are conditionally released for dispatch in the real-time market <http://www.aiso.com/Documents/4420.pdf>

Consistent with the terms of the CPUC settlement, the CAISO developed the RDRR product. On October 26, 2010, the CAISO Board of Governors authorized the RDRR product. The Board of Governors memorandum approving the RDRR product specifically noted that it would enable the CAISO “to dispatch these emergency-triggered programs when and where they are needed and, appropriately, reflect their value in the [CA]ISO market.”⁴

Fast forward ten years, the Final Root Cause Analysis of the August 2020 load shedding events found that RDRRs were manually dispatched out of market by the CAISO system operators versus through the “market” as originally envisioned.⁵ As a result, in its 2021 Summer Readiness initiative, the CAISO modified its tariff to dispatch RDRRs in the real-time pre dispatch (RTPD) market run so that RDRRs could be more optimally dispatched through the market provided they have a longer dispatch horizon. Additionally, the CAISO updated its tariff to allow RDRRs to register as 5-, 15-, or 60-minute dispatchable resources to better elect and reflect an RDRR’s operating parameters. Resources registered as 15-minute dispatchable are allowed to set the marginal energy price in the fifteen-minute market. Resources registered as 5- minute dispatchable are allowed to set the marginal energy price in real-time dispatch (RTD). These changes were accomplished by reflecting discrete RDRRs as discrete in the scheduling run, but treating them as continuous in the pricing run. Continuous RDRR’s bid curve submitted by the scheduling and pricing runs allows RDRR to set the price. RDRRs registered as 60-minute dispatchable that clear in the hour-ahead scheduling process (HASP) will receive a fifteen-minute market schedule and will settle at the corresponding locational marginal price during each fifteen-minute market interval like all other HASP eligible resources.

3. RDRR Bidding Enhancements Draft Final Proposal

3.1 Aligning RDRR bidding rules with real-time price conditions consistent with FERC Order No. 831

In 2016, the Federal Energy Regulatory Commission (FERC) issued FERC Order No. 831, which 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. The rule changes in Order No. 831 created a structure where internal supply offers above \$1,000/MWh are effectively 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

⁴ The CAISO Memorandum. Decision on the Reliability Demand Response Product. October 26, 2010. <http://www.caiso.com/Documents/101101DecisiononReliabilityDemandResponseProduct-Memo.pdf>

⁵ Final Root Cause Analysis: Mid-August 2020 Extreme Heat Wave, January 13, 2021, available at: <http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>

the costs underlying the offer before the market clearing process begins, then that offer may not be used to calculate energy prices.

Building on the CAISO's Order No. 831 Compliance Filing made in September 2019,⁶ the FERC Order No. 831 – Import Bidding and Market Parameters initiative⁷ was the CAISO's formal stakeholder process to propose various tariff revisions and system updates to accommodate bidding flexibility above the \$1,000/MWh soft energy bid cap. On February 22, 2021, the CAISO received FERC approval⁸ for these changes that were activated in June 2021.

Within the Compliance Filing,⁹ the CAISO proposed that RDRRs would maintain their bidding structure in the real-time market by bidding at least 95% of the soft energy bid cap (\$950/MWh). If scheduling coordinators for RDRRs desired to bid above the soft energy cap, they would need to submit reference level change adjustment requests before the market opens. Although FERC accepted this proposal in compliance with Order No. 831, Scheduling Coordinators lack guidance on *how* to justify above-cap bids when RDRRs are supposed to be real-time resources of last resort, dispatched when the CAISO has exhausted economic bids. Moreover, based on the RDRR impacts during the Summer 2020 events, the CAISO became concerned that dispatching RDRRs based on lower bids could lead to real-time price suppression. This initiative seeks to explore solutions to resolve stakeholder concerns, maintain compliance with FERC Order No. 831, and be consistent with the terms of the CPUC settlement.¹⁰

Stakeholder Feedback

Stakeholders generally supported the CAISO's revised straw proposal to require RDRRs to bid at least 95% of the hard energy bid cap (\$1,900/MWh) when the conditions are satisfied to raise the bid cap to \$2,000/MWh. Further, stakeholders supported the CAISO's proposal for SIBR implementation to automatically adjust the submitted RDRR bids based on the change in energy bid cap by maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator. This automatic adjustment will occur after the market close and will only apply if no bid adjustment actions are taken by the close of each hour's real-time market by the Scheduling Coordinator.¹¹

However, the Department of Market Monitoring (DMM) opposed the proposal. The DMM reiterated their previously submitted comments that when the bid cap is raised to \$2,000/MWh,

⁶ The CAISO's September 2019 FERC Order No. 831 Compliance Filing is available at [Microsoft Word - Tx letter for filing to comply with Order No. 831 \(caiso.com\)](#)

⁷ More information on the CAISO's stakeholder initiative on FERC Order No. 831 is available at [California ISO - FERC Order 831 - Import bidding and market parameters \(caiso.com\)](#)

⁸ The FERC Letter accepting the CAISO's FERC Order No. 831 policy is available at [Feb22-2021-LetterOrderAccepting-FERCOrderNo831-ER21-1164.pdf \(caiso.com\)](#)

⁹ Proposed tariff changes to sections 30.6.2.1.2.1 and 30.6.2.1.2.2 are available on page 37 of [Microsoft Word - Tx letter for filing to comply with Order No. 831 \(caiso.com\)](#)

¹⁰ See footnote 2.

¹¹ The automatic adjustment of RDRR bids will occur immediately after the close of the real-time markets at 75 minutes before the start of each applicable hour when the conditions are satisfied to raise the bid cap to \$2,000/MWh and there is no action taken by the Scheduling Coordinator to resubmit their bid at least at 95% of the hard energy bid cap.

RDRRs should be allowed to bid between 95% of the soft energy bid cap and the hard bid cap (\$950/MWh - \$2,000/MWh). They noted this approach would promote efficient market outcomes as RDRRs would not be required to bid above their marginal costs.

California Large Energy Consumers Association (CLECA), PG&E, and Shell Energy expressed support for the proposal with specific requests for clarification. CLECA requested the CAISO to clarify, 1) when the bid cap is revised downward from \$2,000/MWh to \$1,000/MWh, RDRR bids are not dispatched prior to non-RDRR bids, and 2) RDRR bids are dispatched after economic PDRs. Both PG&E and Shell Energy requested the CAISO confirm the proposal including SIBR implementation is fully compliant with FERC requirements and existing CAISO tariff related to FERC Order No. 831.

Finally, the Western Power Trading Forum (WPTF) supported the proposal. However, they raised concern that the proposal is characterized in a manner that may introduce FERC risk as it does not include a methodology to cost verify RDRR bids. WPTF noted that FERC Order No. 831 is specific to allowing energy offers greater than \$1,000/MWh to be used in the market and set prices when those offers are cost verified. Since the CAISO's proposal does not contain a proposal to cost verify RDRR bids, they suggested characterizing the proposal instead as, "administratively increasing energy offers of RDRRs under a \$2,000/MWh bid cap to ensure continued alignment with the bidding requirements of RDRRs."

Response to Stakeholder Feedback

Based on consideration of all of these comments, the CAISO proposes to maintain its approach to require RDRRs to bid at least 95% of the hard energy bid cap (\$1,900/MWh) when the conditions are satisfied to raise the bid cap to \$2,000/MWh. Additionally, the CAISO proposes to retain its proposal for SIBR implementation to automatically adjust the submitted RDRR bids based on the change in energy bid cap by maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator. The CAISO acknowledges the DMM's concern that this approach may inaccurately reflect the marginal costs of RDRRs. However, this proposal maintains the design of RDRRs in the market as intended, consistent with the terms of the CPUC settlement and compliant with FERC Order No. 831. Further, this proposal reflects the need to uniquely position RDRRs in the market in response to the energy bid increase to \$2,000/MWh in order to provide appropriate scarcity pricing signals to the market when they are conditionally released for dispatch.

Specific to the requests by CLECA, PG&E, and Shell Energy for clarification, the CAISO notes that in the rare instances the bid cap is lowered in the real-time market, any non-RDRR bids submitted above \$1,000/MWh will be invalidated and will need to be resubmitted at or below \$1,000/MWh.¹² The CAISO believes this proposal supports the intent for real-time market RDRRs to be dispatched after non-RDRR energy bids when an EEA 2 notice is issued, indicating system emergency conditions. There may be scenarios when RDRRs may be dispatched prior to other resources, including PDRs. However, this would only occur if the

¹² The BPM for Market Instruments Attachment P.3 Example 4 outlines this specific scenario <https://bpmcm.aiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

CAISO Operators exceptionally dispatch an RDRR, likely in the event of a contingency or local reliability issue.

Finally, based on comments received specific to the characterization of the proposal, the CAISO agrees with WPTF that the CAISO's characterization of this issue has been imprecise to date. The intent of this proposal is not to comply with Order No. 831, which the CAISO already has. The CAISO proposes to re-characterize the proposal as "Aligning RDRR bidding rules with real-time price conditions consistent with FERC Order No. 831."

Proposal

To address concerns that RDRRs are restricted from bidding greater than \$1,000/MWh when the energy bid cap is raised to \$2,000/MWh, the CAISO proposes that RDRRs must bid at least 95% of the hard energy bid cap (\$1,900/MWh) when the conditions are satisfied to raise the bid cap to \$2,000/MWh.¹³ The CAISO believes this proposal is consistent with the intent of the RDRR settlement and the CAISO's RDRR design, which dispatches RDRRs under emergency conditions when economic bids are approaching or already exhausted. Without enabling RDRRs to bid close to the hard energy bid cap, RDRRs may suppress real-time prices during scarcity events, thereby interfering with the economic signal the CAISO would otherwise send to supply.

As illustrated in the Business Practice Manual (BPM) for Market Instruments, the CAISO communicates to Scheduling Coordinators in the bidding platform SIBR, when the energy bid cap has been raised from \$1,000/MWh to \$2,000/MWh for each hour. Likewise, Scheduling Coordinators are notified through SIBR in the rare situations when the energy bid cap is revised down from \$2,000/MWh to \$1,000/MWh.¹⁴ To alleviate stakeholder concerns that there is not enough time for Scheduling Coordinators to revise their bids to reflect the change in energy bid cap, the CAISO proposes to automatically adjust the submitted RDRR bids based on the change in energy bid cap by maintaining the percentage of the bid cap originally submitted by the Scheduling Coordinator. This automatic adjustment will occur after the market close and will only apply if no action is taken by the close of each hour's real-time market by the Scheduling Coordinator.¹⁵ The CAISO believes this proposal supports the intent for real-time market RDRR energy bids to be dispatched after non-RDRR bids during system emergency conditions. Further, this proposal recognizes the need to uniquely position RDRRs in the market in response to the energy bid cap increasing to \$2,000/MWh, in order to provide appropriate scarcity pricing signals to the market when they are dispatched.

The following examples illustrate the CAISO's proposal for SIBR implementation:

¹³ The conditions to raise the energy bid cap from \$1,000/MWh to \$2,000/MWh are outlined on pages 14 and 15 [FinalProposal-FERCOrder831-ImportBidding-MarketParameters.pdf \(caiso.com\)](#). When the conditions are satisfied to raise the bid cap to \$2,000/MWh, this bid cap applies only to a subset of resources (e.g. non-resource specific import resources).

¹⁴ BPM for Market Instruments Attachment P

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

¹⁵ See footnote 11.

- Example 1:
A real-time market RDRR bid has been submitted at 95% of the soft energy bid cap (\$950/MWh). If the conditions are satisfied to raise the bid cap to \$2,000/MWh and the Scheduling Coordinator who submitted the \$950/MWh RDRR bid takes no action to resubmit their bid, SIBR will automatically increase their bid to 95% of the hard energy bid cap (\$1,900/MWh) after market close.
- Example 2:
In the day-ahead market for a specific trade date, the bid cap is set to \$1,000/MWh because the conditions have not be satisfied to raise the bid cap to \$2,000/MWh. However, in the real-time market for the same trade date, there was one cost verified energy bid submitted from a resource-specific resource greater than \$1,000/MWh. This condition satisfies raising the bid cap in the real-time market to \$2,000/MWh.

A real-time market RDRR bid has been submitted based on this information at 98% of the hard energy bid cap (\$1,960/MWh). In the rare instance, the resource-specific resource with the cost-verified energy bid greater than \$1,000/MWh has decided to withdraw their bid and the conditions are no longer satisfied to maintain the \$2,000/MWh energy bid cap, the energy bid cap is lowered to \$1,000/MWh at a later time prior to market close. At this point the Scheduling Coordinator for the RDRR bid takes no action or is unable to take action and SIBR will automatically decrease the Scheduling Coordinator's RDRR bid to 98% of the soft energy bid cap (\$980/MWh) after market close.

Consistent with the Business Practice Manual for Market Instruments Attachment P, in this scenario all real-time market non-RDRR bids above \$1,000/MWh will be invalidated and will need to be resubmitted at or below \$1,000/MWh. Scheduling Coordinators will be notified through SIBR regarding this change to the energy bid cap and it will be reflected in SIBR as soon as practicable.

This proposal aligns RDRR bidding rules with real-time price conditions, consistent with FERC Order No. 831 and maintains that in the real-time market, RDRRs are treated as emergency response resources with limited availability and are only released for dispatch when an EEA 2 notice is issued.¹⁶ This underscores the intent of the proposal to value RDRRs when the conditions are satisfied to raise the soft energy bid cap to \$2,000/MWh without requiring additional cost-justification support to substantiate their bids.¹⁷ Additionally, this proposal maintains the positioning of RDRRs in the market consistent with the terms of the CPUC settlement. Further, the CAISO proposes to preserve the existing bidding structure for RDRRs when the \$1,000/MWh soft energy bid cap is in place.

¹⁶ See footnote 3.

¹⁷ To clarify, any RDRR bid submitted greater than \$1,000/MWh would not be considered as a cost-verified bid for purposes of raising the bid cap for resource-specific resources.

4. EIM Governing Body Role

This initiative proposes changes for bidding RDRRs in the real-time market. The CAISO staff believes that the EIM Governing Body has joint authority with the Board of Governors over these proposed changes.

The role of the EIM Governing Body with respect to policy initiatives changed on September 23, 2021, when the Board of Governors adopted revisions to the corporate bylaws and the Charter for EIM Governance to implement the Governance Review Committee’s Part Two Proposal. Under the new rules, the Board and the EIM Governing Body have joint authority over any proposal to change or establish any CAISO tariff rule(s) applicable to the EIM Entity balancing authority areas, EIM Entities, or other market participants within the EIM Entity balancing authority areas, in their capacity as participants in EIM. This scope excludes from joint authority, without limitation, any proposals to change or establish tariff rule(s) applicable only to the CAISO balancing authority area or to the CAISO-controlled grid. Charter for EIM Governance § 2.2.1.

The tariff changes to implement this initiative would be “applicable to EIM Entity balancing authority areas, EIM Entities, or other market participants within EIM Entity balancing authority areas, in their capacity as participants in EIM.” EIM balancing authority areas may use the RDRR model assuming they have approval from their local regulatory authority and meet the requirements of RDRR participation. Accordingly, the proposed changes to the RDRR model fall within the scope of joint authority.

This proposed classification reflects the current state of the initiative and could change as the stakeholder process moves ahead. The CAISO did receive comments from PG&E regarding this misalignment with the current BPM language. The CAISO plans to update the RDRR BPM to align with this EIM governing body role during the implementation phase.

5. Stakeholder Engagement Plan

Date	Milestone
1/26/2022	Publish draft final proposal
2/2/2022	Stakeholder conference call on draft final proposal
2/16/2021	Stakeholder comments due on draft final proposal
2/22/2022	Publish final proposal and draft tariff language
3/1/2022	Stakeholder conference call on draft tariff language
3/9/2022	Stakeholder comments due on final proposal and draft tariff language
3/15/2022	EIM Governing Body

3/17/2022	Board of Governors Meeting
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6. Next Steps

In this draft final proposal, the CAISO has tried to capture and describe the open issues stakeholders want resolved and the enhancements stakeholders would like to see made to the CAISO RDRR model. The CAISO will hold a stakeholder call on February 2, 2022 to review the draft final proposal and seek clarity on the issues or enhancements that stakeholders believe were not fully addressed or captured. The CAISO encourages all stakeholders to submit comments on the draft final proposal by February 16, 2022.

Attachment D – Board of Governors Memo
Reliability Demand Response Resource Bidding
California Independent System Operator Corporation
March 23, 2022



Memorandum

To: ISO Board of Governors and WEIM Governing Body

From: Anna McKenna, Vice President of Market Policy and Performance

Date: March 9, 2022

Re: Decision on reliability demand response resource bidding enhancements – phase 1

This memorandum requires ISO Board of Governors and WEIM Governing Body action.

EXECUTIVE SUMMARY

Management proposes an enhancement to align reliability demand response resources energy bids with new rules implemented in 2021 that allow bids up to \$2,000/MWh under certain conditions. Reliability demand response resources are intended to be bid near the energy bid cap to ensure they are the last resources used to meet reliability needs to accommodate their use limitations. Management proposes to now require energy bids of at least \$1,900/MWh for reliability demand response resources in the real-time market for hours when the ISO is accepting energy bids priced up to \$2,000/MWh.

Reliability demand response resources represent retail emergency-triggered demand response programs. The ISO limits the dispatch of these resources by only including them in the market during system emergencies. Consistent with a multi-party settlement approved by the California Public Utility Commission, the current ISO tariff specifies that they are required to be bid into the real-time market priced at a high “strike price,” that is at least 95 percent of the ISO’s \$1,000/MWh energy bid cap, *i.e.*, \$950/MWh. Their bid price helps ensure they are only dispatched after the real-time market has exhausted bids from other resources.

In 2021, the ISO implemented rules to comply with FERC Order No. 831 that allows cost-justified bids priced up to \$2,000/MWh. In conjunction with this, the ISO implemented rules that allow import up to \$2,000/MWh under certain conditions without cost justification.

Requiring energy bids of at least \$1,900/MWh for reliability demand response resources when the ISO is accepting bids priced up to \$2,000/MWh will ensure the real-time

market only dispatches reliability demand response resources after exhausting bids for other resources under these conditions.

Moved, that the ISO Board of Governors and WEIM Governing Body approve the reliability demand response resource bidding enhancements proposal as described in the memorandum dated March 9, 2022; and

Moved, that the ISO Board of Governors and the WEIM Governing Body authorize Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposal described in the memorandum, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.

BACKGROUND

The ISO implemented the reliability demand response resource product in its market in 2012 as a result of a multi-party settlement approved by the California Public Utility Commission to integrate utility retail emergency-triggered demand response programs into the ISO market. These are programs such as interruptible air-conditioning and agricultural pumping load programs.

The ISO dispatches reliability demand response resources when it has declared an Energy Emergency Alert Level 2 (EEA 2) or higher system emergency, or for a local transmission emergency such as a significant contingency. The utilities must submit energy bids for reliability demand response resources to the ISO's real-time market that are priced at 95 percent of the ISO's \$1,000/MWh energy bid cap, *i.e.*, \$950/MWh, or higher. Allowing bids between \$950/MWh and \$1,000/MWh allows the utilities to use the energy bid price to determine the order in which the real-time market dispatches individual reliability demand response resources. Reliability demand response resources are not required to be offered in the day-ahead market.

This high price ensures reliability demand response resources are one of the last resources the market dispatches. The multi-party settlement that resulted in integrating reliability demand response resources into the ISO's market stated "CAISO dispatch of [reliability demand response resources] will recognize that participating customers have a high 'strike price' that is well above the running cost of conventional supply side resources."

In early 2021, the ISO changed market rules to comply with FERC Order No. 831. Under FERC Order No. 831, the ISO accepts energy bids priced greater than \$1,000/MWh if the bids represent actual or expected costs that the market participant

can document, such as gas costs. Bids up to \$2,000 are eligible to set market prices. The ISO also implemented associated rules that allow import bids up to \$2,000/MWh without cost-justification in hours when either (1) there is a cost-verified bid from a non-import resource greater than \$1,000/MWh submitted to the market, or (2) an ISO-calculated “maximum import bid price” is greater than \$1,000/MWh. Virtual bids up to \$2,000/MWh are also allowed in the day-ahead market in these conditions.

Also in 2021, the ISO made market changes to enhance the real-time market’s dispatch of reliability demand response resources. During the implementation of these enhancements and as part of summer readiness discussions with the utilities, the concern arose that the real-time market could dispatch reliability demand response resources before imports and other resources if energy prices exceeded \$1,000/MWh. This was highlighted by the tight supply conditions of summer 2020 in which bilateral energy prices exceeded \$1,000/MWh. Without additional rule changes, energy bids for reliability demand response resources would be limited to \$1,000/MWh because a utility would not be able to document an actual cost greater than \$1,000/MWh as required under the FERC Order No. 831 rules. This is because the requirement for utilities to bid reliability demand response resources at 95 percent of the energy bid cap is not based on actual costs. Rather it is to ensure the real-time market only dispatches them after it exhausts bids for other supply resources.

PROPOSAL

Management proposes to require energy bids of at least 95 percent of the \$2,000/MWh bid cap, i.e., \$1,900/MWh, in hours for which the ISO is accepting bids priced greater than \$1,000/MWh. As described above, these are hours in which either (1) there is a cost-verified bid greater than \$1,000/MWh from a non-import resource submitted to the market, or (2) the ISO-calculated “maximum import bid price” is greater than \$1,000/MWh.

This will ensure that the real-time market continues to dispatch reliability demand response after other resources when energy prices are greater than \$1,000/MWh. This is consistent with the intent of the existing rules that require energy bids for reliability demand response resources priced near the bid cap. Requiring bids of at least \$1,900/MWh under these conditions is particularly important given that non-resource adequacy imports may bid up to \$2,000/MWh without providing cost-justification to the ISO. It would not be desirable to dispatch reliability demand response resources when there is undischarged import supply available. As described above, reliability demand response resources are intended to be dispatched only after the real-time market exhausts bids for other supply resources.

The ISO would implement reliability demand response resources’ higher minimum bid price based on using existing procedures to notify market participants that it is accepting import bids priced up to \$2,000/MWh. The utilities would then submit energy bids, or

modify previously submitted bids, for reliability demand response resources priced between \$1,900/MWh and \$2,000/MWh. In the event a utility does not revise a bid, the ISO will modify the previously submitted bid by scaling it to the higher bid cap. Because operators only enable reliability demand response resources in an emergency, the ISO also proposes to clarify that a reliability demand response resource bid above \$1,000/MWh will not trigger the conditions to allow import bids up to \$2,000/MWh.

STAKEHOLDER POSITIONS

The utilities and demand response representatives support the proposal to require reliability demand response resources to bid at least \$1,900/MWh when the conditions are satisfied to accept energy bids priced greater than \$2,000/MWh. They state this aligns the reliability demand response resource bidding rules with the FERC Order No. 831 and related ISO rules that allow bids up to \$2,000/MWh under certain conditions.

The Department of Market Monitoring maintains the ISO's proposal may produce inefficient market outcomes because bids of at least \$1,900/MWh may not be representative of a reliability demand response resource's marginal cost. They recommend that utilities be allowed to bid reliability demand response resources at a price up to \$2,000/MWh when the ISO is accepting bids up to \$2,000/MWh, but not be required to bid higher than \$1,900/MWh. They state that they should be allowed to bid lower than \$1,900 if the reliability demand response resource's costs are lower.

Management's proposal to require bids of at least \$1,900/MWh for reliability demand resources maintains the intent of the reliability demand response resource settlement that reliability demand response resources be priced near the maximum allowable bid price to ensure the real-time market only dispatches them after it exhausts bids for other resources. To allow them to bid below 95 percent of the maximum allowable bid price would undermine the intent of CPUC-approved multi-party settlement agreement. This is especially important given that non-resource adequacy imports may bid up to \$2,000/MWh. The real-time market would be more likely to dispatch reliability demand response resources before exhausting resources with verified costs above \$1,000/MWh and import bids if reliability demand response resources bid below \$1,900/MWh when the ISO is accepting import bids priced up to \$2,000/MWh.

CONCLUSION

Management requests the ISO Board of Governors and the WEIM Governing Body approve Management's reliability demand response bidding enhancements proposal described in this memorandum. These enhancements will ensure the real-time market appropriately dispatches reliability demand response resources when the ISO is accepting energy bids priced greater than \$2,000/MWh.