UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	))	**Docket No. ER24-2168-000**

ANSWER OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

The California Independent System Operator Corporation ("CAISO") respectfully submits its answer to the comments filed by the CAISO Department of Market Monitoring ("DMM") and the California Public Utilities Commission ("CPUC") in the above-identified docket, in which the CAISO proposes to enhance cost-verified bidding above the CAISO's $1,000/MWh soft energy bid cap consistent with Order No. 831.[1] Neither DMM nor the CPUC protest the CAISO's tariff revisions, ask the Commission to reject them, or argue they are not just and reasonable. As DMM and the CPUC both acknowledge, without the CAISO's tariff revisions, roughly one-fifth of the CAISO's generation fleet cannot submit energy bids above the soft energy bid cap on what are likely to be the most critical days of demand this summer. This is an untenable *status quo* because this one-fifth of resources consists of batteries and hydroelectric resources—two of the few technologies that can deplete themselves early and thus cannot respond in peak hours. If dispatched by the market early due to lower bids, the CAISO will either be without their capacity in peak hours or must manually dispatch dozens or hundreds of resources outside the market to keep them available for later.

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1 The CAISO submits this answer pursuant to Rule 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213. Capitalized terms not otherwise defined herein have the meanings set forth in the Master Definitions Supplement, Appendix A to the CAISO tariff.

DMM and the CPUC both acknowledge that the CAISO is the first transmission provider to address this issue because of the rapid proliferation of storage in the West. The CAISO has committed to continue to refine how to optimize resources whose bidding and scheduling are driven by opportunity costs. But the Commission should not let an elusive perfect be the enemy of the good. For the reasons explained below and in the CAISO's transmittal letter, the Commission should approve the CAISO's filing as just and reasonable.

A. Without the CAISO's proposed tariff revisions, resource schedules on critical days will be incorrect, likely requiring manual dispatch to correct.

Although DMM "agrees that resources with daily limitations, such as battery storage resources, may have intra-day opportunity costs that exceed $1,000/MWh on days when the $2,000/MWh hard bid cap is in effect," it nonetheless "questions the urgency of needing to implement a higher bid cap for battery storage resources by summer 2024.[2] According to DMM, "a limited portion of battery capacity was constrained by the $1,000/MWh bid cap on the days when these proposed changes would have been triggered."[3] The CPUC, likewise states, "it is not clear that there was a real need for expediting this initiative, given that the historical review of high-priced days does not illustrate a pressing bid cap problem."[4]

While the CAISO agrees that costs rise above the soft energy bid cap on a handful of days, it disagrees with the CPUC and DMM's view that no action is

[2] DMM Comments at 2.

[3] *Id.*

[4] CPUC Comments at 11-12.

necessary. This handful of days generally are critical days with significant fuel or capacity constraints. The Commission issued Order No. 831 for this reason, despite facing comments similar to the CPUC and DMM's.[5] One does not forgo insurance because a risk arises infrequently. It is the point of the insurance.

Neither the CPUC nor DMM dispute what will occur on constrained days without the CAISO's proposed tariff revisions: storage and hydroelectric resources cannot represent their costs in their bids, and the resources may deplete prematurely.[6] As the Market Surveillance Committee opinion noted, "The impact of the premature dispatch of batteries on September 6, [2022] was that the CAISO was unable to meet its contingency reserves with its available resources and had to arm up to 800 MW of load for shedding in order to meet WECC requirements."[7] The CPUC dismisses this issue because it may not result in "reliability issues" so long as the CAISO uses exceptional dispatch, which "the CAISO can use to hold back resources from discharging, should such discharge threaten reliability."[8] The CPUC effectively argues that market bids, awards, and schedules can all be wrong because the CAISO can undo them through exceptional dispatch, a tool reserved under the CAISO tariff for system reliability and market disruptions.[9] Exceptional dispatch is a necessary tool but it impacts market

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5 Order No. 831 at P 22 ("several commenters assert that revising the offer cap is an overreaction to anomalous, infrequent, and/or transitory market and weather conditions that do not justify changing the offer cap").

6 DMM Comments at 8; CPUC Comments at 13.

7 Market Surveillance Committee Opinion at 12, included as Attachment E to the CAISO's transmittal letter, https://www.caiso.com/documents/msc-final-opinion-on-price-formation-enhancements-831.pdf.

8 CPUC Comments at 13.

9 *See* Section 34.11 of the CAISO tariff (listing the conditions in which the CAISO can issue exceptional dispatches).

efficiency and creates burdens for the CAISO to administer. Here, the CAISO faces a challenge everyone agrees on: energy-limited resources now comprise a critical share of the CAISO's generation fleet, and these same resources cannot bid their costs on high-priced days. Relying on exceptional dispatch would create undue burdens for the CAISO. Exceptional dispatch is a manual process, often carried out by phone calls to each resource's scheduling coordinator. Although the CAISO has new tools for dispatch, the CPUC should not take for granted the work required to exceptionally dispatch the storage and hydroelectric fleets on the same days the CAISO relies on them to meet peak demand. Energy storage capacity has more than doubled since 2022, now comprising almost 10,000 MW in capacity, equivalent to roughly one fifth of the CAISO's historic peak demand.[10] The CAISO would prefer these resources simply submit accurate bids, receive fair awards, and follow optimal schedules, avoiding the need to use exceptional dispatch.

B. The CAISO's proposal for energy storage bidding is tailored for storage resources' opportunity costs in the real-time market.

DMM states it "does not oppose" the CAISO's proposal for real-time storage bidding "as a short-term measure until a more effective solution can be developed."[11] It notes, however, that "the CAISO is proposing a bid cap that may be static throughout the day, rather than targeting specific hours where intra-day opportunity costs are most likely to exceed $1,000/MWh. This less targeted approach would allow bids that are

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[10] CAISO Key Statistics, May 2024, https://www.caiso.com/documents/key-statistics-may-2024.pdf.

[11] DMM Comments at 6.

likely to exceed intra-day opportunity costs for some hours of the day."[12] The CPUC likewise notes the CAISO's proposal will "allow resources to bid above the cap during hours in which their opportunity costs are below $1,000/MWh."[13] But neither the CPUC nor DMM provide any basis to conclude that this ability makes the CAISO's proposal unjust, unreasonable, or unduly discriminatory.

The CAISO itself explained this feature at length in its original filing. The CAISO's proposal uses the fourth-highest hour of the maximum import bid price for the entire trading day to reflect that CAISO storage resources are almost universally four-hour resources, and that storage resources' opportunity costs should be based on when the resource would elect to discharge (foregoing lesser hours).[14] The CAISO thus uses the fourth-highest hour of the maximum import bid price for the whole trading day rather than matching hour to hour. The CAISO's proposal recognizes when real-time prices may materialize from other resources that can bid beyond the soft energy bid cap, thus creating opportunity costs for energy-limited resources in those hours. The CAISO quoted its Market Surveillance Committee opinion, which disagreed with DMM and the CPUC's arguments, explaining:

> The opportunity cost of energy-limited resources is not the opportunity cost of selling power in another market in the same hour as would be the case for a thermal resource. Instead, the opportunity cost of an energy-limited resource is the value of the power in a future hour.

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12 *Id.*

13 CPUC Comments at 16-17.

14 Meaning that a completely charged storage resource would discharge in four hours if the CAISO's optimization dispatched it to discharge at maximum until depleted.

> Hence, the opportunity cost of an energy-limited resource does not vary over the hours of the day in the same way as those of a thermal resource for which the MIBP hourly shaping of opportunity costs were designed.
>
> The offer prices of energy-limited resources need to rise prior to the hours with the highest prices (such as the hours of the net load peak), to avoid prematurely depleting state of charge or reaching a daily energy limit. It is too late to increase offer prices after the net load peak hours have arrived.[15]

That storage resources theoretically could submit bids beyond their actual costs in some hours under a soft offer cap does not mean they will. Nor is that result different than other resources' abilities under Order No. 831.[16] Predicting costs—especially opportunity costs—before resources submit energy bids is inherently limited to the information available before bidding. The CPUC and DMM offer no data that resources have bid above their actual costs since Order No. 831. There is no basis they suddenly will. The CAISO, DMM, and regulators monitor market behavior on stressed days. Bidding above costs also comes with risk: if a resource bids above the marginal bid, it will miss out on any market award and compensation.

C. There is no basis to conclude that the CAISO's proposals will result in the exercising of market power.

The CPUC argues that the CAISO's proposal for energy storage resources is "in tension with Order 831, [and] it removes a key market power mitigation safeguard

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[15] Market Surveillance Committee Opinion at 27-28, included as Attachment E to the CAISO's transmittal letter.

[16] Likewise, the CAISO's proposal builds upon the existing default energy bid for energy storage resources, which enables them to bid up to the locational marginal price from the 4th highest priced hour of the day-ahead market *all day* in the real-time market.

during the times the market needs it most."[17] Here, again, the CPUC makes a conclusory statement without evidentiary support.[18] Energy storage resources are subject to market power mitigation. Like all resources, if the CAISO mitigates an energy storage resource's bid for market power, it replaces the bid with its default energy bid. These processes are already part of the CAISO's Commission-approved tariff.[19] The CPUC complains that "not all storage resources are located in areas subject to mitigation; and those that are, have been subject to very little bid mitigation on dispatched power."[20] This effectively calls for mitigating storage resources without evidence they are exercising market power (or could). Not all storage resources are subject to bid mitigation because they are in competitive areas. Likewise, those that could exercise market power "have been subject to very little bid mitigation" because they are *not* submitting bids that would be uncompetitive. High bids naturally come with a risk the resource is above marginal, leaving the resource without an award. The CPUC's complaint that storage bids are infrequently mitigated only demonstrates that the system is working, and there is no evidentiary basis to conclude that storage resources will begin to exercise market power and submit higher bids.[21] At the May

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17 CPUC Comments at 17.

18 The CPUC admits, "The [Market Surveillance Committee] does not share the CPUC's concerns, stating that battery resources' exercise of market power would be limited by local market power mitigation and by financially binding schedules from the day-ahead market." CPUC Comments at 19.

19 *See* Section 39 of the CAISO tariff.

20 CPUC Comments at 19.

21 The CPUC also states that "bidding data show that a certain share of storage resources are bidding at the cap in the day-ahead market during net peak hours on stressed system days." This argument is misleading. As the CAISO's filing is intended to address, storage resources can only bid up

Board of Governors meeting that approved these enhancements, DMM commented it did not see any indication storage resources would exercise market power.[22]

D. The risk of excess bid cost recovery is not cause to continue to impede energy-limited resources from bidding their actual costs.

DMM "cautions" that allowing storage resources to bid higher—even if their actual costs are higher—may affect the bid cost recovery payments to storage resources.[23] DMM recommends enhancing bid cost recovery rules for storage resources to consider state-of-charge limitations and other attributes unique to storage resources. The CAISO agrees that current bid cost recovery rules are an imprecise fit for the unique bid costs of energy storage resources. The CAISO has addressed this issue in the past,[24] and just launched a new initiative on storage and bid cost recovery.[25]

However, it does not follow that the risk of potentially higher bid cost recovery payments to storage resources is cause to prohibit storage resources from bidding their actual costs. DMM itself uses the scale of the issue both ways, first arguing that the CAISO should be content with the *status quo* because resources bid above the soft energy bid cap on very few days, but then arguing that the risk of some potentially higher bid cost recovery payments on those very few days also means the CAISO

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to the soft energy bid cap regardless of whether their costs are actually higher. Other resources, meanwhile, can bid above it, increasing storage resources' real-time opportunity costs even more.

22 https://www.youtube.com/watch?v=qJqbTEU14QU (discussion at 1:12 to 1:16).

23 DMM Comments at 10-11.

24 *California Independent System Operator Corp.*, 181 FERC ¶ 61,146 (2022) (removing real-time bid cost recovery revenues for storage resources under the ancillary services state of charge constraint).

25 https://www.caiso.com/notices/new-initiative-storage-bid-cost-recovery-and-default-energy-bids-enhancements-workshop-call-on-7-8-24.

should be content with the *status quo*. DMM exaggerates how much the CAISO's proposal could affect bid cost recovery on the very few days when resources submit bids above the soft energy bid cap. More critically, the *status quo* is inconsistent with Order No. 831 principles and creates real risks on stressed days. The CAISO proposed its solutions for these reasons, and will address bid cost recovery for storage resources in consultation with DMM and all stakeholders.

E. The CAISO did not propose to revise the tariff provisions for the maximum import bid price calculation in this proceeding.

The CAISO currently calculates a maximum import bid price to help determine the bid cap for certain imports on high-priced days.[26] Because these imports can bid up to the maximum import bid price, the CAISO and stakeholders recognized that the maximum import bid price is a proxy for storage resources' opportunity costs. The CAISO thus proposed to use it as one metric to help determine the bid cap for storage resources. The CAISO did *not* propose to revise the maximum import bid price, and the Commission has approved the tariff provisions that describe it.[27]

Nonetheless, DMM and the CPUC both argue that one mathematical component of the maximum import bid price calculation—the shaping factor formula—could be improved if calculated differently. These comments are out of scope of this proceeding, as they pertain to approved tariff provisions not at issue here. As the CAISO explained in 2021 when it established the maximum import bid price, it is a useful proxy for determining incentives for imports to bid into the CAISO markets on stressed days when

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[26] Section 30.7.12.5.3 of the CAISO tariff.

[27] *California Independent System Operator Corp.,* 175 FERC ¶ 61,076 (2021).

the CAISO depends on their capacity. The inputs into the maximum import bid price meet all Commission requirements for liquidity, and has worked well since implemented.

Moreover, both DMM and the CPUC only mention in short footnotes that the CAISO recently held a workshop on the shaping factor calculation, and DMM and the CPUC both participated.[28] The CAISO expects to refine the business practice manual provisions describing the specific algorithm used to calculate the shaping factor soon. But the Commission should disregard DMM and the CPUC's comments as outside of the scope of this proceeding. Their comments do not pertain to the CAISO's proposed tariff revisions, and were only intended to leverage the CAISO into making changes outside of this proceeding.

The CPUC (but not DMM) goes one step further and argues "the fourth-highest MIBP does not provide a reasonable proxy for storage resources' intra-day opportunity costs."[29] Looking at September 6, 2022 data, the CPUC states that "real-time prices never reached $2,000/MWh," and thus erroneously concludes that storage resources should not have been able to bid to $2,000/MWh because it did not represent their opportunity costs. The CPUC's misunderstanding of the relationship between bidding ability and prices only demonstrates why the CAISO proposed using the maximum import bid price to inform storage resources' bid cap. That prices never reached $2,000/MWh is a red herring. The CAISO did not propose to use locational marginal prices to inform storage resources' bid cap. By the time real-time prices materialize, it is

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28 DMM Comments at 13 n. 10 and 11; CPUC Comments at 30 n. 68.

29 CPUC Comments at 33 *et seq*.

too late to inform real-time bidding, and thus the market awards that determine dispatch and those real-time prices. The relevant factor in determining storage resources' opportunity costs is what other resources could bid to.[30] Otherwise storage resources' bids will be below their opportunity costs, they will be dispatched before these other resources, and they may deplete their state of charge before the end of the four-hour peak.

F. Enabling hydroelectric resources to bid up to their default energy bid is consistent with Order No. 831 and optimal for the CAISO markets.

The CAISO did not propose any tariff revision unique to hydroelectric resources. Rather, the CAISO proposed to remove the unnecessary $1,000/MWh cap on *all* resources' default energy bids.[31] This change would allow resources to bid up to their default energy bids, including when those default energy bids would rise above $1,000/MWh by their own inputs and calculation. The CAISO's proposal recognizes, like Order No. 831, that default energy bids are an ideal, available method for cost verification. The CAISO's proposal accomplishes two goals: (1) it would remove unnecessary administrative hurdles for the CAISO and scheduling coordinators to have cost-justified bids, and (2) it would enable hydroelectric resources to bid above the soft energy bid cap, which they cannot do today because of the default energy bid cap.

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[30] In this case, imports. The CAISO also proposed that the highest verified energy bid would inform storage resources' bid cap because that could be the bid storage resources effectively compete with in the real-time markets (if marginal).

[31] More precisely, the CAISO replaced the $1,000/MWh cap with the $2,000/MWh hard cap, as required by Order No. 831.

Both goals further the CAISO's compliance with Order No. 831, and enable an entire resource class to submit cost-justified bids above the soft energy bid cap. In its comments, the CPUC argues that lifting the default energy bid cap in the day-ahead market "is simply not necessary," and that the hydroelectric default energy bid was not designed for what the CPUC calls "above-cap bidding."[32] The CAISO disagrees with both arguments. Artificially capping any resource's default energy bid at $1,0000/MWh in the day-ahead market could lead to inefficient scheduling. The CPUC argues that "no stakeholder called for this change," but that is inaccurate. Stakeholders agreed the *status quo* is inconsistent with Order No. 831, leaving hydroelectric resources without the ability to bid their actual, verified costs when other resources can. The lack of stakeholder debate on the issue resulted from consensus, not apathy.

The CPUC also notes that not all hydroelectric resources are use-limited. This ignores that each hydroelectric resource's default energy bid is already tailored to its constraints and operating characteristics.[33] The CPUC also offers various arguments to criticize the hydroelectric default energy bid itself, which the CAISO did not propose to revise. These arguments are outside the scope of this proceeding. Both Order No. 831 and the CAISO's compliance are structured to use default energy bids as an approved, filed method of cost verification. The CPUC's arguments are merely a collateral attack on Order No. 831 itself.

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[32] CPUC Comments at 24.

[33] CPUC Comments at 29.

G. The CPUC's alternative proposals are outside the scope of review.

Based on its concerns with the CAISO's proposals, the CPUC asks the Commission to include a January 1, 2025 sunset date for the tariff revisions and a mechanism to expeditiously disable these rule changes via market notice. The CAISO did not propose either, so the Commission should disregard the CPUC's alternative proposals. Commission precedent is clear that under Section 205 of the Federal Power Act, "the Commission limits its evaluation of a utility's proposed tariff revisions to an inquiry into 'whether the rates proposed by a utility are reasonable—and not to extend to determining whether a proposed rate schedule is more or less reasonable to alternative rate designs.'"[34] As such, "there is no need to consider in any detail the alternative plans proposed by" the CPUC.[35] The CAISO's proposed tariff revisions are just and reasonable today, and will be just and reasonable if used in 2025. Neither CPUC proposal would affect the justness and reasonableness of the CAISO's proposals. Although the CAISO will identify further enhancements for cost-justified bidding on high-priced days, it did not premise the proposals in this proceeding on a temporary or fleeting need. The Commission should disregard the CPUC's proposal to include such a premise in this proceeding. If market issues arise that warrant changing or removing these enhancements, the CAISO will work with the CPUC and stakeholders to do so.

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[34] *California Independent System Operator Corp.*, 141 FERC ¶ 61,135 at P 44 n. 43 (quoting *City of Bethany v. FERC,* 727 F.2d 1131, 1136 (D.C. Cir. 1984)).

[35] *Id*.

H. Conclusion

For the reasons explained above and in this proceeding, the CAISO respectfully requests that the Commission accept the proposed tariff revisions as filed.

Respectfully submitted,

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Dated: July 8, 2024

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for the above-referenced 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 8th day of July, 2024.

/s/ Jacqueline Meredith

Jacqueline Meredith