



California Public Utilities Commission  
505 Van Ness Ave., San Francisco

## MEMORANDUM

Date: April 2, 2024

To: California Independent System Operator, Stakeholder Affairs

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Subject: CPUC Energy Division Policy Proposal for review of shaping factors

Staff of the California Public Utilities Commission in the Energy Division (CPUC Staff or Staff) develop and administer energy policy and programs to serve the public interest, advise the CPUC, and ensure compliance with CPUC decisions and statutory mandates. The CPUC Energy Division Staff provide objective and expert analyses that promote reliable, safe, and environmentally sound energy services at just and reasonable rates for the people of California.<sup>1</sup> Further, CPUC Staff advocate on behalf of California ratepayers at the Federal Energy Regulatory Commission (FERC), under whose jurisdiction the CAISO tariff falls.

CPUC Staff appreciate this opportunity to propose correction of the hourly shaping factors used in the maximum import bid price.

### 1. Submission Title

Correction of the hourly shaping factors used in the maximum import bid price.

### 2. Has this issue been previously submitted?

CPUC Staff have not previously submitted this request.

CAISO developed the calculation for the hourly shaping factor within the initiative “FERC Order 831 – Import bidding and market parameters.”<sup>2</sup>

<sup>1</sup> More information about the CPUC Energy Division is available at: <https://www.cpuc.ca.gov/about-cpuc/divisions/energy-division>.

<sup>2</sup> Available at: <https://stakeholdercenter.caiso.com/StakeholderInitiatives/FERC-Order-831-Import-bidding-and-market-parameters>.

### 3. Issue Description: Briefly provide a description of the issue that the proposed initiative is intended to address.

CPUC Staff suggest that CAISO re-examine its methodology for calculating the CAISO’s Balancing Area Authority (BAA) hourly shaping factor value used to establish the energy price component for the maximum import price bid (MIPB). The hourly shaping factors are meant to shape the bilateral indices used in the maximum import bid price calculation. However, it appears that these shaping factors are miscalculated and not consistent with the CAISO tariff. The CAISO tariff, Section 30.7.12.5.3, states the following:

#### 30.7.12.5.3 Maximum Import Bid Price

The CAISO calculates hourly Maximum Import Bid Prices for the Day-Ahead Market and Real-Time Market, separately, including for on-peak and off-peak hours. The CAISO calculates the Maximum Import Bid Price as 110 percent of the greater of the published bilateral electric index prices for the Mid-Columbia or Palo Verde trading hub locations, multiplied by an hourly shaping ratio. As detailed in the CAISO Business Practice Manual, the CAISO calculates the hourly shaping ratio for each hour by dividing the Day-Ahead Market System Marginal Energy Cost for the CAISO Balancing Authority Area in that hour of a previous representative Trading Day by the average Day-Ahead Market System Marginal Energy Cost for the CAISO Balancing Authority Area in all on-peak hours of the same previous representative Trading Day. If for any given Trading Hour the CAISO cannot calculate the Maximum Import Bid Price, the applicable Maximum Import Bid Price will be the most recently available calculated Maximum Import Bid Price.

However, rather than using the hourly System Marginal Energy Cost (SMEC) for the “representative day” divided by the average SMEC for the “representative day,” CAISO uses the hourly SMEC for the next day in its calculation, as shown as follows:

The Hourly Shaping Factor calculation would be as follows:

$$1 + \left[ \frac{(DA\ SMEC\ of\ Aug\ 20,\ 2020\ HE\ 11) - (Avg\ DA\ SMEC\ of\ ON\ peak\ hrs\ of\ Aug\ 19,\ 2020)}{Avg\ DA\ SMEC\ of\ ON\ peak\ hrs\ of\ Aug\ 19,\ 2020} \right]$$

This appears to be inconsistent with the CAISO tariff because section 30.7.12.5.3 of the tariff defines the MIBP calculation as (emphasis added) “dividing the [DA SMEC] for the CAISO [BAA] in that hour of a previous representative Trading Day by the average [DA SMEC] for the CAISO [BAA] in all on-peak hours of *the same previous representative Trading Day.*” The tariff does not describe using both the DA SMEC from the representative day and the following day to calculate the shaping factor.

This results in maximum import bid prices that are either too high or too low depending on whether the hourly price for the next day is less than or greater than the representative day. For example, as shown below in the screenshot from OASIS, the hourly shapes for February are largely below one, since prices in February are less than the representative day, which appears to be January 16, 2024.



## Hourly Energy Price Shaping Factor

1 - 20 of ???

Market	Opr Date	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09	HE10	HE11
DAM	02/01/2024	0.21146	0.20749	0.20107	0.19700	0.20290	0.21350	0.30219	0.29549	0.24446	0.22398	0.22117
DAM	02/02/2024	0.18865	0.17911	0.17915	0.17910	0.18106	0.20041	0.27829	0.28950	0.29570	0.30569	0.29084
DAM	02/03/2024	0.19811	0.18598	0.18029	0.17916	0.18478	0.22293	0.28526	0.27873	0.22519	0.18770	0.15245
DAM	02/04/2024	0.18768	0.20130	0.18791	0.20135	0.20548	0.19792	0.23694	0.20310	0.11179	0.08820	0.08675
DAM	02/05/2024	0.21331	0.21095	0.21158	0.21040	0.20818	0.21441	0.24461	0.22371	0.20745	0.18781	0.19400
DAM	02/06/2024	0.22833	0.22936	0.22060	0.21863	0.22458	0.24545	0.29942	0.30679	0.28842	0.28634	0.24568
DAM	02/07/2024	0.23591	0.21250	0.21120	0.21103	0.21334	0.25478	0.29930	0.30311	0.28596	0.27188	0.25225
DAM	02/08/2024	0.21632	0.20890	0.20775	0.20279	0.20908	0.22021	0.29483	0.27216	0.22424	0.18000	0.15247
DAM	02/09/2024	0.19167	0.19175	0.18952	0.18953	0.19254	0.22855	0.30723	0.27628	0.17511	0.10243	0.09266
DAM	02/10/2024	0.23266	0.22999	0.22946	0.22774	0.23548	0.29798	0.36831	0.33739	0.21867	0.15004	0.13084
DAM	02/11/2024	0.23814	0.23269	0.22946	0.22686	0.23038	0.23863	0.27656	0.22960	0.11156	0.07110	0.05065
DAM	02/12/2024	0.24402	0.24112	0.24006	0.23914	0.23283	0.24087	0.26927	0.23232	0.09135	0.03055	0.02728
DAM	02/13/2024	0.24101	0.23396	0.23267	0.23240	0.25531	0.27826	0.34427	0.28901	0.16270	0.10330	0.09146
DAM	02/14/2024	0.21949	0.21970	0.21765	0.21737	0.22781	0.25374	0.33862	0.26482	0.18994	0.12332	0.09896
DAM	02/15/2024	0.22372	0.21326	0.21269	0.21455	0.23167	0.24894	0.31751	0.26501	0.16049	0.11748	0.10376
DAM	02/16/2024	0.21180	0.20288	0.20014	0.20822	0.21441	0.24315	0.31400	0.25880	0.15420	0.09898	0.07451
DAM	02/17/2024	0.21503	0.21054	0.20083	0.20941	0.21505	0.23365	0.29884	0.24706	0.16264	0.12482	0.11675
DAM	02/18/2024	0.22045	0.21663	0.21358	0.21647	0.21556	0.21799	0.21801	0.16395	0.11198	0.08320	0.08205
DAM	02/19/2024	0.22199	0.20749	0.20542	0.20553	0.20542	0.20536	0.23536	0.17967	0.07735	0.04147	0.04213
DAM	02/20/2024	0.21905	0.20978	0.20886	0.20965	0.21621	0.24226	0.27873	0.24248	0.19593	0.18520	0.18098

HE12	HE13	HE14	HE15	HE16	HE17	HE18	HE19	HE20	HE21	HE22	HE23	HE24
0.21080	0.20552	0.21090	0.21326	0.24732	0.27399	0.29531	0.27118	0.26329	0.25229	0.24703	0.19960	0.19796
0.25402	0.24903	0.23783	0.23693	0.26139	0.29898	0.32100	0.29870	0.28982	0.28480	0.27827	0.22529	0.20222
0.13588	0.12638	0.11658	0.12309	0.17015	0.25730	0.28859	0.27501	0.27261	0.26798	0.26260	0.22361	0.21052
0.08513	0.07962	0.07946	0.08412	0.14205	0.23261	0.24546	0.24298	0.24151	0.24045	0.23838	0.22546	0.21382
0.18934	0.18618	0.17850	0.18808	0.21980	0.28139	0.28691	0.28674	0.28503	0.28222	0.27533	0.22544	0.21623
0.24133	0.23966	0.23998	0.24396	0.29715	0.33582	0.34546	0.33751	0.33188	0.32434	0.31421	0.24965	0.25019
0.22984	0.22882	0.22844	0.22834	0.24840	0.28347	0.28851	0.28995	0.28345	0.28167	0.27500	0.23925	0.23156
0.13674	0.13291	0.15851	0.16371	0.21426	0.26256	0.29670	0.30741	0.29885	0.28741	0.27729	0.24396	0.22469
0.08091	0.08274	0.08328	0.09457	0.10974	0.24558	0.32105	0.31645	0.31581	0.31204	0.30765	0.22565	0.22329
0.11734	0.11483	0.10570	0.10567	0.14838	0.27821	0.32542	0.32572	0.32278	0.32150	0.31462	0.27594	0.23208
0.03311	0.02712	0.01584	0.02289	0.06298	0.21703	0.28419	0.28744	0.28547	0.28435	0.28340	0.26979	0.24888
0.02389	0.01839	0.01101	0.01083	0.04773	0.22478	0.28909	0.29260	0.29116	0.29092	0.28980	0.26054	0.25495
0.08299	0.07633	0.07528	0.08058	0.11822	0.27220	0.34806	0.35073	0.34939	0.34376	0.33927	0.29420	0.26254
0.08688	0.07804	0.07475	0.07937	0.11112	0.25342	0.32740	0.32302	0.30597	0.30408	0.30104	0.24893	0.23790
0.08732	0.08312	0.08702	0.09645	0.12884	0.24710	0.32664	0.32430	0.32429	0.30861	0.30450	0.24073	0.22920
0.06651	0.05431	0.05055	0.05830	0.07142	0.21377	0.28358	0.28989	0.27473	0.27303	0.26981	0.21868	0.21343
0.10984	0.10086	0.10175	0.11463	0.16389	0.23975	0.29755	0.28725	0.28347	0.28203	0.27908	0.23667	0.21808
0.08251	0.07774	0.07907	0.08369	0.09722	0.21642	0.24568	0.22987	0.22345	0.22221	0.22038	0.21662	0.20245
0.03216	0.02603	0.02870	0.04838	0.09065	0.22396	0.28489	0.28489	0.28444	0.28345	0.28078	0.23068	0.20884
0.17940	0.17223	0.17219	0.17740	0.19448	0.27122	0.30806	0.30995	0.30571	0.30049	0.29250	0.22046	0.20522

### 4. Propose Initiative Description: To the extent possible, discuss proposed initiative scope.

Please see discussion above.

**5. Business Justification: Does the proposed initiative support ISO strategic objectives or existing ISO initiatives? Identify parties potentially impacted by the proposed initiative. Is the proposed initiative in response to regulatory requirements?**

While this does not seem to fit neatly within the CAISO’s strategic objectives, it appears that implementation is likely incorrect and, thus, review would seem to be necessary to ensure consistency with the filed tariffs. Further, given the connection between the calculation of the shaping factor and the potential for unnecessarily increased prices, CPUC staff note CAISO’s obligation to “[r]educ[e], to the extent possible, overall economic cost to [California] consumers.”<sup>3</sup>

**6. What elements of existing ISO market design do you propose to address?**

Please see discussion above.

**7. Timing and Urgency: Are there regulatory requirements for implementation dates, or time-sensitive reliability impacts? Are there consequences to not addressing this issue?**

CPUC staff recommend CAISO review the calculation of the hourly shaping factor as soon as possible, before this summer’s stressed system conditions arrive. The hourly shaping factor is intended to translate the block prices of the indices to match CAISO’s hourly prices. CPUC staff recommend the CAISO review the method for calculating the hourly shaping factor because it appears that the existing application of the hourly shaping factor may not match the written intent of the language in the CASIO tariff. The hourly shaping factor has a great influence over the calculation of the MIPB. Any seemingly small discrepancy could potentially inflate the MIBP value, resulting in CAISO accepting higher bids without justification during stressed system conditions. A clear and reproducible methodology for calculating this value will strengthen transparency within CAISO market operations.

**8. Data: Identify existing data and missing data needed to analyze the issue and develop solutions.**

Please see discussion above.

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<sup>3</sup> Public Utilities Code § 345.5(b)(2).