



March 31, 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. ER15-861-\_\_\_\_  
Energy Imbalance Market – Fourth Quarter 2020  
Available Balancing Capacity Report**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its quarterly informational report for the fourth quarter of 2020 (October 1 to December 31, 2020) on the Available Balancing Capacity (ABC) enhancement for the Western Energy Imbalance Market (WEIM). The quarterly informational report is to provide the Commission with information on the performance of the ABC enhancement and to provide the same information the CAISO provides in its monthly informational reports submitted during an EIM entity's first six-month transition period.

Consistent with the Commission's directive in the December 17, 2015 order, the CAISO will continue to file such quarterly reports for at least the first year after implementation of the ABC enhancement, or until the Commission finds the quarterly informational reports are no longer needed.

Please contact the undersigned with any questions.

Respectfully submitted

**By: /s/ John Anders**

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# California ISO

## **Energy Imbalance Market**

**October 1 – December 31, 2020**

## **Available Balancing Capacity Report**

March 31, 2022

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## I. Background

On December 17, 2015, the Federal Energy Regulatory Commission (Commission) approved the California Independent System Operator Corporation's (CAISO) proposed tariff revisions to comply with the Commission's July 20, 2015 order in FERC Docket No. ER15-861-006.<sup>1</sup> The CAISO's proposed tariff provisions enhanced the western Energy Imbalance Market (EIM) functionality so that the market systems automatically recognize and account for capacity an EIM entity has available to maintain reliable operations in its own balancing authority area (BAA), but has not been bid into the EIM.<sup>2</sup> This enhancement is referred to as the Available Balancing Capacity (ABC) enhancement. The CAISO implemented the ABC enhancement on March 23, 2016.

Consistent with the CAISO's commitments made in this proceeding, the Commission directed the CAISO to prepare and file with the Commission quarterly informational reports for at least the first year after implementation of the ABC enhancement, and until the Commission finds the quarterly informational reports are no longer needed.<sup>3</sup> The quarterly informational reports are to provide information on the performance of the ABC enhancement and to include the same information the CAISO provides in its monthly informational reports submitted during an EIM entity's first six-month transition period.<sup>4</sup>

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<sup>1</sup> *Cal. Indep. Sys. Operator Corp.*, 152 FERC ¶ 61,060 (2015) (July 20 Order); and *Cal. Indep. Sys. Operator Corp.*, 153 FERC ¶ 61, 305 (2015) (December 17 Order).

<sup>2</sup> December 17 Order at P 1.

<sup>3</sup> December 17 Order at P 99

<sup>4</sup> December 17 Order at P 39.

## II. Available Balancing Capacity

### A. ABC Submitted to the Market

Each EIM entity can identify and choose the amount of ABC they will make available to the CAISO and the resources supporting this capacity through its resource plan. The EIM entity submits this capacity to the CAISO on an hourly basis, and it is available for both the Fifteen-Minute Market (FMM) and the five-minute Real-Time Dispatch (RTD). The data in this section shows the ABC bid into, and awarded by, the market in each of the EIM BAAs for each month within the last quarter of 2020.

The table below summarizes the percentage of hours in which each EIM entity submitted upward and downward ABC bids to the EIM for each month within the quarter. Many entities submitted ABC for more than 90 percent of intervals in each month. Idaho Power Company (IPCO) did not submit any ABC to the EIM during the quarter.

**Table 1: Frequency of ABC Submitted to the EIM**

BAA	October 2020		November 2020		December 2020	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	92.47%	91.53%	92.37%	94.31%	92.07%	88.58%
BANCSMUD	99.87%	95.43%	99.72%	97.78%	100.00%	98.93%
BCHA	100.00%	100.00%	99.86%	100.00%	100.00%	100.00%
IPCO	--	--	--	--	--	--
NEVP	99.87%	99.87%	100.00%	99.03%	96.77%	96.51%
PACE	30.78%	4.57%	6.80%	20.80%	9.01%	4.03%
PACW	9.81%	21.51%	4.30%	12.48%	7.93%	1.88%
PGE	97.31%	0.27%	97.09%	0.14%	98.52%	--
PSEI	0.13%	--	--	--	1.88%	--
SCL	2.29%	--	17.61%	--	9.41%	--
SRP	95.16%	93.55%	99.31%	96.39%	99.87%	94.09%

The table below shows the average ABC capacity, in MW, which each EIM entity submitted to the EIM for each month within the quarter. BCHA consistently submitted the highest average ABC capacity to the EIM in both the upward and downward directions, while IPCO did not submit any ABC capacity to the EIM.

**Table 2: Average ABC Capacity Submitted to the EIM**

BAA	October 2020		November 2020		December 2020	
	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)
AZPS	21.04	23.15	19.99	20	19.92	20
BANCSMUD	22.83	47.1	31.47	43.96	29.12	43.94
BCHA	578.31	299.97	580.21	300	586.55	300
IPCO	--	--	--	--	--	--
NEVP	20.91	19.51	20.65	24.03	21.83	27.78
PACE	71.15	83.05	43.94	43.29	63.05	81.25
PACW	82.47	72.73	91.72	29.26	49.52	55.59
PGE	28.63	30	29.21	4	26.31	--
PSEI	35	--	--	--	35	--
SCL	9.12	--	40.59	--	37.12	--
SRP	21.52	26.75	24.33	34.36	25.74	33.45

The table below shows the maximum ABC capacity, in MW, which each EIM entity submitted to the EIM for each month within the quarter. The highest ABC bid was submitted by BCHA in the upward direction for 1000 MW, which was consistent across all three months of the quarter.

**Table 3: Maximum ABC Capacity Submitted to the EIM**

BAA	October 2020		November 2020		December 2020	
	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)
AZPS	315	182	20	20	20	20
BANCSMUD	91	80	99	76	78	111
BCHA	1000	500	1000	500	1000	500
IPCO	--	--	--	--	--	--
NEVP	40	50	40	50	40	40
PACE	175	125	100	100	100	125
PACW	175	175	175	60	150	75
PGE	30	30	30	4	30	--
PSEI	35	--	--	--	35	--
SCL	20	--	50	--	87	--
SRP	88	50	90	50	100	50

The table below shows the number of different resources supporting the ABC that the EIM entities bid into the EIM in both the upward and downward directions, for each month within the quarter. A maximum of 22 resources supported upward ABC capacity bids in November 2020, submitted by Salt River Project (SRP). Some entities

used as few as one resource to support their ABC bids.

**Table 4: Number of Resources Supporting ABC**

BAA	October 2020		November 2020		December 2020	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	4	3	3	3	5	4
BANCSMUD	13	11	12	8	10	8
BCHA	2	2	4	4	2	2
IPCO	--	--	--	--	--	--
NEVP	11	13	14	15	10	10
PACE	6	5	6	3	3	3
PACW	2	2	2	2	2	2
PGE	3	1	8	1	5	--
PSEI	1	--	--	--	1	--
SCL	2	--	3	--	3	--
SRP	17	16	22	16	14	12

## B. ABC Awarded by the Market

The table below shows the frequency of each EIM entities' dispatched ABC for the FMM market, when the EIM entities made ABC available, for each month within the quarter. Overall, the market dispatched ABC quite infrequently throughout the quarter. The highest frequency of ABC dispatch in FMM occurred in December 2020 on SRP's bid-in upward ABC capacity. Often, the market dispatched ABC less than 1 percent of the time during the month.

**Table 5: Frequency of ABC Dispatched by EIM in the FMM**

BAA	October 2020		November 2020		December 2020	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	0.13%	0.34%	0.14%	0.14%	0.03%	0.07%
BANCSMUD	0.30%	0.03%	--	0.07%	0.03%	--
BCHA	0.07%	0.07%	--	--	--	--
IPCO	--	--	--	--	--	--
NEVP	0.94%	1.18%	1.08%	1.32%	--	0.44%
PACE	--	0.07%	--	--	--	--
PACW	--	--	--	--	--	--
PGE	0.03%	--	0.04%	--	--	--
PSEI	--	--	--	--	--	--
SCL	--	--	--	--	--	--
SRP	3.16%	0.34%	1.63%	0.14%	9.51%	1.61%

The table below shows the frequency of each EIM entities' dispatched ABC for the RTD market, when the EIM entities made ABC available, for each month within the quarter. Overall, the market dispatched ABC quite infrequently throughout the quarter. The highest frequency of ABC dispatch in RTD occurred in October 2020 on SRP's bid in upward ABC capacity. Often, the market dispatched ABC less than 1 percent of the time during the month.

**Table 6: Frequency of ABC Dispatched by EIM in the RTD**

BAA	October 2020		November 2020		December 2020	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	0.31%	0.30%	0.10%	0.08%	0.10%	0.08%
BANCSMUD	0.26%	0.06%	0.01%	0.04%	0.01%	0.06%
BCHA	0.10%	0.01%	0.01%	--	--	--
IPCO	--	--	--	--	--	--
NEVP	0.76%	0.68%	0.74%	1.45%	0.01%	1.00%
PACE	0.07%	0.10%	--	--	0.01%	--
PACW	--	--	--	--	--	--
PGE	0.02%	--	0.38%	--	0.06%	--
PSEI	--	--	--	--	--	--
SCL	--	--	--	--	--	--
SRP	5.77%	0.80%	1.29%	0.43%	0.21%	0.94%

### C. ABC and Power Balance Constraint Infeasibilities

The purpose of the ABC enhancement is to make capacity available that otherwise would not be visible to the EIM. The primary objective in making such capacity available is that the EIM can recognize and access that capacity when the conditions warrant its use, namely when the EIM is running out of capacity made available through economic bids. The ABC is capacity stacked above economic bids, but below the power balance constraint relaxation penalty price. When the market is tight in supply and it has exhausted all effective economic bids, the market clearing process will access the ABC. If there is sufficient ABC, the EIM will relax the power balance constraint to clear the market. As such, the market clearing process uses the ABC to resolve the power balance infeasibility. If instead the ABC identified is not sufficient to cure the infeasibility, the ABC may be exhausted and there may still be the need to relax the power balance constraint in order to clear the EIM.

The table below shows the frequency of intervals in which the EIM entities did not make any ABC available to the EIM, when there was a power balance infeasibility for each month within the quarter, in the FMM. Specifically, the data in the table below provides the percentage amount of over-supply infeasibilities where downward ABC was needed, and under-supply infeasibilities where upward ABC was needed. No data indicates that there were no infeasibilities during the period. For example, a metric of 100 percent indicates that in all intervals when there was an infeasibility observed, the EIM entity did not submit any ABC to the EIM. These instances occurred relatively

infrequently throughout the quarter, indicating that the EIM entities typically had submitted ABC bids during instances when infeasibilities were observed. However, these instances occurred most frequently in SCL's BAA across the months in the quarter, and more frequently in FMM than RTD.

**Table 7: Frequency of Power Balance Infeasibilities When no ABC was Available in FMM**

BAA	October 2020		November 2020		December 2020	
	Over-supply	Under-supply	Over-supply	Under-supply	Over-supply	Under-supply
AZPS	23.08%	75.00%	33.33%	40.00%	41.18%	50.00%
BANCSMUD	--	0.00%	0.00%	--	--	--
BCHA	--	--	--	--	--	--
IPCO	--	--	--	--	--	--
NEVP	0.00%	0.00%	--	0.00%	0.00%	--
PACE	--	100.00%	--	--	--	--
PACW	--	100.00%	--	--	--	--
PGE	--	--	--	0.00%	--	--
PSEI	--	100.00%	--	--	--	--
SCL	--	100.00%	100.00%	100.00%	100.00%	100.00%
SRP	--	37.50%	0.00%	0.00%	9.09%	0.00%

The table below shows the frequency of intervals in which the EIM entities did not make any ABC available to the EIM, when there was a power balance infeasibility for each month within the quarter, in the RTD. Instances of observed infeasibilities with no submitted ABC were relatively infrequent throughout the quarter, and they did occur less often in RTD than FMM.

**Table 8: Frequency of Power Balance Infeasibilities When no ABC was Available in RTD**

BAA	October 2020		November 2020		December 2020	
	Over-supply	Under-supply	Over-supply	Under-supply	Over-supply	Under-supply
AZPS	30.00%	63.27%	71.43%	50.00%	50.00%	25.00%
BANCSMUD	--	0.00%	--	--	--	0.00%
BCHA	--	--	--	--	--	--
IPCO	--	--	--	--	--	--
NEVP	0.00%	0.00%	0.00%	0.00%	--	--
PACE	--	91.67%	--	--	--	--
PACW	--	--	--	--	--	100.00%
PGE	--	0.00%	--	0.00%	--	--
PSEI	--	--	--	--	--	--
SCL	--	100.00%	--	--	100.00%	100.00%
SRP	9.38%	20.51%	0.00%	15.79%	15.15%	0.00%

### III. EIM Performance

This section provides the information the CAISO previously provided in its monthly informational reports submitted during an EIM entity's first six-month transition period.

#### A. ELAP Prices

The figures in this section show the EIM load aggregation point (ELAP) prices<sup>5</sup> for the FMM and RTD in each EIM BAA. In prior reports, the CAISO provided these factual prices in comparison to counterfactual prices in order to show the effect of using the pricing waiver of the price discovery mechanism.<sup>6</sup>

The CAISO may correct prices posted on its Open Access Same-time Information System (OASIS) pursuant to the CAISO's price correction authority in section 35 of the CAISO tariff, if it finds: (1) that the prices were the product of an invalid market solution; or (2) the market solution produced an invalid price due to data input failures, hardware or software failures; or (3) a result that is inconsistent with the CAISO Tariff.

The prices presented in the figures below include all prices produced by the CAISO consistent with the CAISO tariff requirements. That is, the trends below represent: (1) prices as produced in the market for which the CAISO deemed valid; (2) prices that the CAISO could and did correct pursuant to section 35; and (3) any prices the CAISO adjusted pursuant to transition period pricing reflected in section 29.27 of the CAISO tariff.

The table below shows the average ELAP prices for all EIM entities for each month within the quarter. Overall, prices remained relatively low and consistent across the months within the quarter.

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<sup>5</sup> The ELAP provides aggregate prices that are representative of pricing in the overall BAA.

<sup>6</sup> In Docket ER15-402, the CAISO reported on prices based on the price discovery mechanism in effect during the term of the Commission's waiver granted in that docket and the prices as they would be if the waiver was not in effect, *i.e.*, what prices would have been had they been on the penalty prices in the CAISO tariff. Because pricing under the waiver pricing is based on the last economic bid price signal, these prices are a proxy of what the prices would have been absent the seven category of learning curve type issues experience in that market. The difference between the counterfactual pricing and the price in effect during the term of the reports in that docket illustrated the market impact of the waiver pricing.

**Table 9: Average FMM and RTD ELAP Prices**

BAA	October 2020		November 2020		December 2020	
	FMM (\$/MWh)	RTD (\$/MWh)	FMM (\$/MWh)	RTD (\$/MWh)	FMM (\$/MWh)	RTD (\$/MWh)
AZPS	34.72	29.92	30.52	25.57	25.92	22.13
BANCSMUD	42.06	36.12	37.84	32.94	39.88	35.82
BCHA	25.00	24.25	25.86	24.29	28.52	28.26
IPCO	27.2	25.43	29.21	25.36	31.77	29.45
NEVP	36.73	30.00	32.91	28.48	26.71	24.07
PACE	27.9	25.13	25.41	21.67	26.85	24.48
PACW	24.86	24.11	25.75	24.49	29.9	29.69
PGE	24.97	24.16	27.14	27.00	29.58	28.96
PSEI	24.6	23.23	24.89	23.74	28.97	28.15
SCL	24.78	23.49	26.19	23.95	30.33	29.6
SRP	36.27	33.88	30.53	27.07	25.87	21.72

**B. Balancing Test Failures**

The CAISO performs the balancing test pursuant to Section 29.34(k) of the CAISO tariff. Powerex is not subject to the balancing test.

The table below shows the frequency that each EIM entity passed the balancing test, as well as what percentage of balancing test failures were due to under-scheduling and over-scheduling, for each month of the quarter. Overall, the entities passed the balancing test at high frequencies.

**Table 10: Frequency of Passing Balancing Test**

BAA	October 2020	November 2020	December 2020
AZPS	98.52%	97.92%	95.30%
BANCSMUD	99.06%	99.86%	99.60%
BCHA	--	--	--
IPCO	99.87%	100.00%	99.87%
NEVP	97.98%	98.47%	99.19%
PACE	99.73%	99.03%	99.60%
PACW	99.73%	98.89%	99.33%
PGE	99.33%	99.17%	98.92%
PSEI	98.25%	98.06%	98.66%
SCL	99.87%	99.72%	99.73%
SRP	97.72%	98.06%	98.52%

The table below shows the frequency of balancing test failures due to over-scheduling and under-scheduling respectively, for each month of the quarter. Generally, the balancing test failures were more due to under-scheduling than over-scheduling.

**Table 11: Frequency of Balancing Test Failures due to Over-Scheduling and Under-Scheduling**

BAA	October 2020		November 2020		December 2020	
	Over-scheduling	Under-Scheduling	Over-scheduling	Under-Scheduling	Over-scheduling	Under-Scheduling
AZPS	36.36%	63.64%	26.67%	73.33%	28.57%	71.43%
BANCSMUD	100.00%	--	--	100.00%	33.33%	66.67%
BCHA	--	--	--	--	--	--
IPCO	100.00%	--	--	--	--	100.00%
NEVP	40.00%	60.00%	45.45%	54.55%	50.00%	50.00%
PACE	100.00%	--	71.43%	28.57%	33.33%	66.67%
PACW	50.00%	50.00%	37.50%	62.50%	20.00%	80.00%
PGE	80.00%	20.00%	33.33%	66.67%	37.50%	62.50%
PSEI	53.85%	46.15%	35.71%	64.29%	20.00%	80.00%
SCL	--	100.00%	50.00%	50.00%	--	100.00%
SRP	52.94%	47.06%	28.57%	71.43%	27.27%	72.73%

**C. Flexible Ramp Sufficiency Test Failures**

The table below shows the frequency that each EIM entity passed the flexible ramping sufficiency test in the upward and downward directions, for each month of the quarter. Generally, the entities passed the flexible ramp sufficiency test very frequently throughout the months in the quarter.

**Table 12: Frequency of Passing Flexible Ramping Sufficiency Test**

BAA	October 2020		November 2020		December 2020	
	Upward Direction	Downward Direction	Upward Direction	Downward Direction	Upward Direction	Downward Direction
AZPS	97.95%	99.13%	99.34%	98.93%	99.36%	97.48%
BANCSMUD	99.87%	99.80%	99.97%	99.58%	99.87%	100.00%
BCHA	99.80%	99.87%	99.34%	99.86%	99.76%	100.00%
IPCO	99.83%	100.00%	100.00%	99.83%	100.00%	100.00%
NEVP	99.33%	98.52%	99.17%	98.51%	100.00%	98.92%
PACE	99.87%	99.53%	99.83%	99.86%	100.00%	100.00%
PACW	99.87%	99.90%	99.83%	99.86%	99.90%	100.00%
PGE	99.87%	99.90%	99.90%	99.86%	99.83%	100.00%
PSEI	99.87%	99.83%	100.00%	99.86%	100.00%	100.00%
SCL	99.76%	99.83%	99.83%	99.79%	99.87%	99.87%
SRP	99.76%	98.25%	99.13%	99.69%	99.73%	99.23%

## CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service list in 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, California, this 31<sup>st</sup> day of March 2022.

*Is/ Anna Pascuzzo*

Anna Pascuzzo