

April 1, 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-____
Western Energy Imbalance Market – Second Quarter 2021
Available Balancing Capacity Report**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its quarterly informational report for the second quarter of 2021 (April 1 to June 30, 2021) 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

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California ISO

Western Energy Imbalance Market

April 1 – June 30, 2021

Available Balancing Capacity Report

April 1, 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. ER15-861-006.¹ The CAISO's proposed tariff provisions enhanced the Western Energy Imbalance Market (WEIM) 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 WEIM.² 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.³ 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.⁴

¹ *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).

² December 17 Order at P 1.

³ December 17 Order at P 99

⁴ 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 WEIM BAAs for each month within the second quarter of 2021.

On April 1, 2021, Los Angeles Department of Water and Power (LADWP) and Public Service Company of New Mexico (PNM) joined the WEIM. On June 16, 2021, Northwestern Energy (NWM) joined the WEIM. June 2021 data for NWM represents only the portion of the month for which they were part of the WEIM; data for April and May 2021 does not exist for NWM because they had not yet joined the WEIM.

The table below summarizes the percentage of hours in which each EIM Entity submitted upward and downward ABC bids to the WEIM for each month within the quarter. Powerex (BCHA), Balancing Authority of Northern California (BANC), and Turlock Irrigation District (TIDC) submitted ABC for nearly all intervals in each month. Idaho Power Company (IPCO) did not submit any ABC to the WEIM during the quarter.

Table 1: Frequency of ABC Submitted to the WEIM

BAA	April 2021		May 2021		June 2021	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	95.83%	94.86%	95.57%	95.43%	95.42%	94.03%
BANC	100.00%	100.00%	100.00%	100.00%	99.86%	99.86%
BCHA	100.00%	100.00%	100.00%	100.00%	99.58%	99.86%
IPCO	--	--	--	--	--	--
LADWP	0.28%	0.42%	36.69%	25.13%	44.58%	13.19%
NEVP	99.58%	99.03%	100.00%	99.60%	99.72%	99.58%
NWMT	--	--	--	--	99.44%	99.44%
PACE	32.22%	18.89%	30.38%	41.26%	34.03%	12.50%
PACW	5.00%	6.53%	2.42%	16.94%	2.08%	17.22%
PGE	100.00%	--	98.93%	--	99.44%	--
PNM	64.86%	22.64%	73.25%	31.45%	52.22%	62.08%
PSEI	--	--	1.08%	--	--	--
SCL	2.78%	--	34.68%	--	1.25%	--
SRP	99.58%	95.42%	99.60%	95.83%	99.72%	96.94%
TIDC	99.86%	99.72%	100.00%	100.00%	99.86%	99.86%

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

Table 2: Average ABC Capacity Submitted to the WEIM

BAA	April 2021		May 2021		June 2021	
	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)
AZPS	20.01	20	20	19.98	20	20
BANC	17.25	33.14	17.44	51.14	19.25	45.34
BCHA	569.93	300	708.03	300	770.38	300
IPCO	--	--	--	--	--	--
LADWP	15.33	35	80	104.15	84.45	45.92
NEVP	25.72	29.42	24.97	32.72	22.4	26.16
NWMT	--	--	--	--	11.89	13.21
PACE	38.35	41.72	51.53	41.15	40.55	34.72
PACW	70.14	50.49	48.89	42.94	66.67	44.42
PGE	28.79	--	29.23	--	29.2	--
PNM	24.03	25.02	28.39	25.19	27.42	24.86
PSEI	--	--	23	--	--	--
SCL	57.6	--	40.19	--	40	--
SRP	25.06	33.73	21.73	32.36	24.28	27.18
TIDC	9.99	5	9.98	5	10	5

The table below shows the maximum ABC capacity, in MW, which each EIM Entity submitted to the WEIM 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 WEIM

BAA	April 2021		May 2021		June 2021	
	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)	Upward Capacity (MW)	Downward Capacity (MW)
AZPS	27	20	20	20	20	20
BANC	100	110	90	200	114	155
BCHA	1000	500	1000	500	1000	500
IPCO	--	--	--	--	--	--
LADWP	33	100	250	325	258	73
NEVP	50	50	69	70	60	70
NWMT	--	--	--	--	37.96	15
PACE	125	110	150	100	150	50
PACW	150	125	60	60	75	120
PGE	30	--	50	--	30	--
PNM	27	27	65	70	35	27
PSEI	--	--	35	--	--	--
SCL	80	--	70	--	65	--
SRP	100	50	100	50	125	50
TIDC	10	5	10	5	10	5

The table below shows the number of different resources supporting the ABC that the WEIM entities bid into the WEIM in both the upward and downward directions, for each month within the quarter. A maximum of 21 resources supported upward ABC capacity bids in May and June 2021, 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	April 2021		May 2021		June 2021	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	4	3	5	6	6	6
BANC	12	12	14	12	16	13
BCHA	2	2	2	2	2	2
IPCO	--	--	--	--	--	--
LADWP	2	3	7	8	10	9
NEVP	10	10	11	12	12	13
NWMT	--	--	--	--	3	2
PACE	8	3	8	3	10	3
PACW	1	2	1	2	1	2
PGE	7	--	5	--	5	--
PNM	3	4	3	2	2	3
PSEI	--	--	4	--	--	--
SCL	3	--	1	--	1	--
SRP	18	15	21	15	21	14
TIDC	3	3	3	3	2	2

B. ABC Awarded by the Market

The table below shows the frequency of each WEIM entities' dispatched ABC for the FMM market, when the WEIM 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 May 2021 on NEVP's bid-in downward ABC capacity. Often, the market dispatched ABC less than 1 percent of the time during the month.

Table 5: Frequency of ABC Dispatched by WEIM in the FMM

BAA	April 2021		May 2021		June 2021	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	--	0.07%	0.10%	--	0.04%	0.04%
BANC	--	--	--	--	--	--
BCHA	--	--	--	--	--	0.35%
IPCO	--	--	--	--	--	--
LADWP	--	--	--	0.07%	--	--
NEVP	0.14%	0.38%	1.24%	2.86%	1.60%	1.67%
NWMT	--	--	--	--	0.49%	--
PACE	--	--	--	--	--	--
PACW	--	--	--	--	--	--
PGE	--	--	--	--	0.10%	--
PNM	0.10%	0.04%	0.03%	0.03%	0.14%	0.04%
PSEI	--	--	--	--	--	--
SCL	--	--	--	--	--	--
SRP	1.60%	0.49%	1.18%	0.77%	1.81%	0.10%
TIDC	--	0.10%	0.13%	0.07%	--	--

The table below shows the frequency of each WEIM entities' dispatched ABC for the RTD market, when the WEIM 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 June 2021 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 WEIM in the RTD

BAA	April 2021		May 2021		June 2021	
	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity	Upward Capacity	Downward Capacity
AZPS	0.02%	0.08%	0.02%	0.02%	0.12%	0.04%
BANC	0.02%	0.10%	0.07%	0.07%	0.04%	--
BCHA	--	0.06%	--	0.37%	0.01%	0.66%
IPCO	--	--	--	--	--	--
LADWP	--	--	--	0.03%	--	--
NEVP	0.41%	0.69%	1.69%	3.41%	2.64%	2.13%
NWMT	--	--	--	--	0.65%	0.02%
PACE	0.04%	--	0.15%	--	0.06%	--
PACW	--	--	--	--	--	--
PGE	0.13%	--	--	--	0.26%	--
PNM	0.51%	0.02%	0.24%	0.01%	0.22%	0.08%
PSEI	--	--	--	--	--	--
SCL	--	--	--	--	--	--
SRP	1.57%	1.04%	2.67%	1.41%	2.84%	0.39%
TIDC	0.02%	0.14%	0.15%	--	--	--

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 WEIM. The primary objective in making such capacity available is that the WEIM can recognize and access that capacity when the conditions warrant its use, namely when the WEIM 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 WEIM 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 WEIM.

The table below shows the frequency of intervals in which the WEIM entities did not make any ABC available to the WEIM, 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 WEIM. These instances occurred relatively infrequently throughout the quarter, indicating that the WEIM entities typically had submitted ABC bids during instances when infeasibilities were observed.

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

BAA	April 2021		May 2021		June 2021	
	Over-supply	Under-supply	Over-supply	Under-supply	Over-supply	Under-supply
AZPS	81.82%	--	--	0.00%	--	--
BANC	--	--	--	--	--	--
BCHA	--	--	--	--	0.00%	--
IPCO	--	--	--	--	--	100.00%
LADWP	--	100.00%	--	--	100.00%	--
NEVP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NWMT	--	--	--	--	--	0.00%
PACE	--	--	--	--	--	--
PACW	--	--	--	100.00%	--	--
PGE	--	--	--	--	--	0.00%
PNM	100.00%	83.33%	--	--	100.00%	100.00%
PSEI	--	--	--	100.00%	--	100.00%
SCL	--	--	--	--	100.00%	--
SRP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
TIDC	--	--	0.00%	--	--	--

The table below shows the frequency of intervals in which the WEIM entities did not make any ABC available to the WEIM, 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, however they did occur more often in RTD than FMM.

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

BAA	April 2021		May 2021		June 2021	
	Over-supply	Under-supply	Over-supply	Under-supply	Over-supply	Under-supply
AZPS	81.82%	0.00%	--	55.56%	0.00%	0.00%
BANC	--	0.00%	--	--	--	0.00%
BCHA	--	--	--	--	0.00%	--
IPCO	--	100.00%	--	--	--	100.00%
LADWP	--	100.00%	--	25.00%	--	100.00%
NEVP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NWMT	--	--	--	--	--	0.00%
PACE	--	81.82%	100.00%	14.29%	100.00%	28.57%
PACW	--	100.00%	--	100.00%	--	100.00%
PGE	--	0.00%	--	--	--	0.00%
PNM	100.00%	35.14%	100.00%	50.00%	94.57%	6.25%
PSEI	--	100.00%	--	100.00%	--	100.00%
SCL	--	100.00%	--	--	100.00%	100.00%
SRP	10.00%	0.00%	0.00%	0.00%	8.70%	0.00%
TIDC	0.00%	0.00%	--	0.00%	--	0.00%

III. WEIM Performance

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

On April 1, 2021, Los Angeles Department of Water and Power (LADWP) and Public Service Company of New Mexico (PNM) joined the WEIM. On June 16, 2021, Northwestern Energy (NWMT) joined the WEIM. June 2021 data for NWMT represents only the portion of the month for which they were part of the WEIM; data for April and May 2021 does not exist for NWMT because they had not yet joined the WEIM.

A. ELAP Prices

The figures in this section show the WEIM load aggregation point (ELAP) prices⁵ for the FMM and RTD in each WEIM BAA. In prior reports, the CAISO provided these factual prices in comparison to counterfactual prices in order to show the effect of using

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

the pricing waiver of the price discovery mechanism.⁶

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 WEIM entities for each month within the quarter. Overall, prices stayed lower in the first two months of the quarter and increased modestly moving into the first month of summer.

Table 9: Average FMM and RTD ELAP Prices

BAA	April 2021		May 2021		June 2021	
	FMM (\$/MWh)	RTD (\$/MWh)	FMM (\$/MWh)	RTD (\$/MWh)	FMM (\$/MWh)	RTD (\$/MWh)
AZPS	22.63	20.33	23.68	22.03	36.59	37.2
BANC	37.85	33.44	38.12	33.03	44.25	41.13
BCHA	28.96	26.4	26.84	24	29.15	27.81
IPCO	28.25	25.35	25.12	22.44	35.52	34.05
LADWP	30.05	26.67	28.87	25.18	41.53	39.32
NEVP	29.04	29.57	26.57	25.7	40.74	46.96
NWMT	--	--	--	--	33.52	30.94
PACE	25.55	24.74	23.54	24.02	34.29	33.26
PACW	29.07	26.51	28.46	25.53	30.18	29.52
PGE	29.92	26.6	27.51	24.48	31.07	30.19
PNM	24.18	20.6	22.54	19.84	34.2	33.16
PSEI	28.91	26.4	28.4	27.04	30.19	34.81
SCL	29.02	26.41	27.46	24.62	29.06	28.47
SRP	24.78	24.06	24.02	25.57	40.78	41.63
TIDC	38.18	33.64	39.87	34.26	44.65	41.57

⁶ 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.

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 within the quarter. Overall, the entities passed the balancing test at high frequencies.

Table 10: Frequency of Passing Balancing Test

BAA	April 2021	May 2021	June 2021
AZPS	97.92%	97.72%	97.78%
BANC	98.33%	99.60%	99.03%
BCHA	--	--	--
IPCO	99.31%	99.87%	99.03%
LADWP	96.81%	97.18%	96.94%
NEVP	96.53%	96.37%	97.78%
NWMT	--	--	98.89%
PACE	98.61%	99.60%	99.03%
PACW	98.75%	99.87%	99.17%
PGE	99.03%	99.60%	98.89%
PNM	96.25%	96.10%	96.53%
PSEI	98.33%	98.12%	96.53%
SCL	99.44%	99.60%	99.31%
SRP	98.33%	97.18%	97.92%
TIDC	98.61%	99.46%	99.44%

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	April 2021		May 2021		June 2021	
	Over-scheduling	Under-Scheduling	Over-scheduling	Under-Scheduling	Over-scheduling	Under-Scheduling
AZPS	41.67%	58.33%	47.06%	52.94%	78.57%	21.43%
BANC	55.56%	44.44%	66.67%	33.33%	40.00%	60.00%
BCHA	--	--	--	--	--	--
IPCO	50.00%	50.00%	100.00%	--	60.00%	40.00%
LADWP	65.00%	35.00%	57.14%	42.86%	70.00%	30.00%
NEVP	59.09%	40.91%	55.56%	44.44%	57.14%	42.86%
NWMT	--	--	--	--	50.00%	50.00%
PACE	57.14%	42.86%	33.33%	66.67%	20.00%	80.00%
PACW	66.67%	33.33%	--	100.00%	75.00%	25.00%
PGE	50.00%	50.00%	66.67%	33.33%	16.67%	83.33%
PNM	45.83%	54.17%	20.69%	79.31%	43.48%	56.52%
PSEI	11.11%	88.89%	21.43%	78.57%	52.17%	47.83%
SCL	--	100.00%	33.33%	66.67%	--	100.00%
SRP	55.56%	44.44%	14.29%	85.71%	69.23%	30.77%
TIDC	--	100.00%	50.00%	50.00%	--	100.00%

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 within 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	April 2021		May 2021		June 2021	
	Upward Direction	Downward Direction	Upward Direction	Downward Direction	Upward Direction	Downward Direction
AZPS	99.58%	97.67%	99.16%	99.70%	99.58%	99.17%
BANC	99.58%	99.58%	100.00%	100.00%	99.58%	99.31%
BCHA	99.44%	99.34%	100.00%	99.09%	99.44%	98.06%
IPCO	99.58%	99.58%	100.00%	99.97%	99.58%	99.31%
LADWP	99.55%	99.58%	99.90%	100.00%	99.51%	99.24%
NEVP	99.13%	99.06%	99.03%	95.73%	98.40%	97.29%
NWMT	--	--	--	--	98.68%	98.19%
PACE	99.44%	99.58%	99.97%	100.00%	99.41%	99.31%
PACW	99.44%	99.58%	99.93%	100.00%	99.58%	99.17%
PGE	99.20%	99.58%	99.76%	100.00%	99.17%	99.31%
PNM	99.20%	98.33%	99.97%	100.00%	99.48%	99.27%
PSEI	98.58%	99.58%	99.40%	100.00%	98.30%	99.31%
SCL	99.58%	99.58%	100.00%	100.00%	99.58%	99.31%
SRP	99.03%	99.38%	99.70%	99.93%	98.54%	99.10%
TIDC	99.58%	99.44%	99.66%	99.40%	99.58%	99.31%

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 1st day of April 2022.

1st Anna Pascuzzo

Anna Pascuzzo