



June 28, 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. ER15-2565-____
May 2022 Informational Report
Western Energy Imbalance Market – Transition Period Report –
Tucson Electric Power WEIM Entity**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its report on the transition period of Tucson Electric Power WEIM Entity during its first six months of participation in the Western Energy Imbalance Market (WEIM) for May 3, 2022 through May 31, 2022. The Commission also directed the Department of Market Monitoring (DMM) to submit an independent assessment of the CAISO's report, which the CAISO's DMM will seek to file within approximately 15 business days.

Please contact the undersigned with any questions.

Respectfully submitted

By: /s/ John Anders

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California ISO

Western Energy Imbalance Market

May 3 - May 31, 2022

Transition Period Report

Tucson Electric Power (TEPC) WEIM Entity

June 28, 2022

I. Introduction and Background

On October 29, 2015, the Federal Energy Regulatory Commission (Commission) approved the California Independent System Operator Corporation's (CAISO) proposed tariff amendments to allow a transition period for new Western Energy Imbalance Market (WEIM) entities during the first six months of WEIM participation, effective November 1, 2015.¹ Tucson Electric Power (TEPC), the prospective WEIM Entity entered the WEIM on May 03, 2022, and the transition period will apply to the TEPC balancing authority area (BAA) until October 31, 2022.²

During the six-month transition period, the price of energy in the new WEIM entity's BAA is not subject to the pricing parameters that normally apply when the market optimization relaxes a transmission constraint or the power balance constraint. Instead, during the six-month transition period, the CAISO will clear the market based on the marginal economic energy bid (referred to herein as "transition period pricing"). In addition, during the six-month transition period, the CAISO sets the flexible ramping constraint relaxation parameter for the new WEIM entity's BAA between \$0 and \$0.01, but only when the power balance or transmission constraints are relaxed in the relevant WEIM BAA. This is necessary to allow the market software to determine the marginal energy bid price.

Consistent with the Commission's October 29 Order, the CAISO and the Department of Market Monitoring (DMM) will file informational reports at 30-day intervals during the six-month transition period for any new WEIM entity. The CAISO provides this report for TEPC to comply with the Commission's requirements in the October 29 Order. The CAISO anticipates filing these reports on a monthly basis. However, because the complete set of data is not available immediately at the end of the applicable month,³ and depending on the market performance each month, along with the need to coordinate with the WEIM entity, the CAISO expects to continue to file the monthly reports approximately 25 days after the end of each month in order to provide the prior full month's data.

¹ *California Indep. Sys. Operator Corp.*, 153 FERC ¶ 61,104 (2015) (October 29 Order).

² This follows from the application of CAISO Tariff section 27(b)(1), which refers to a number of months rather than a number of days.

³ The earliest the CAISO can start gathering the data is 10 business days after the last day for the reporting month since this is when the price correction window expires.

II. Highlights

Overall, TEPC's transition into the WEIM was smooth and without significant issues. The market performance highlights for May are as follows:

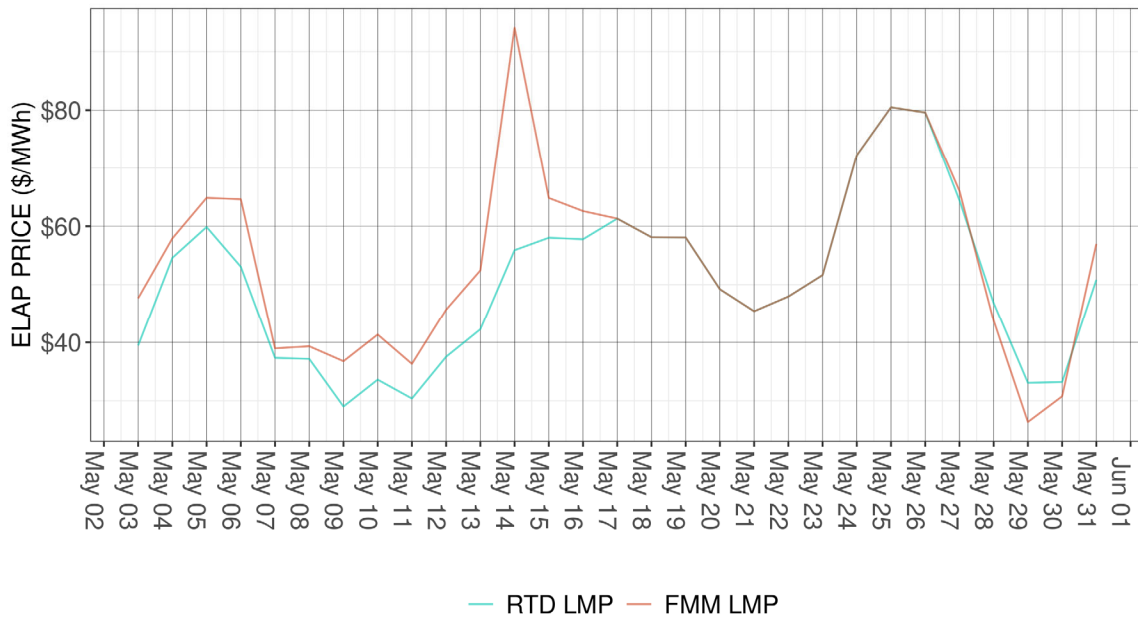
- Prices were stable and within reasonable ranges for TEPC BAA, with a monthly average price of \$54.32/MWh in the fifteen-minute market (FMM) and \$50.29/MWh in the real-time dispatch (RTD).
- TEPC BAA observed 0 infeasibilities for undersupply in the fifteen-minute and 30 infeasibilities in the five-minute market.
- As part of the resource sufficiency test performed for each WEIM entity prior to the real-time markets, TEPC successfully passed over 97.13 percent of its balancing tests and 100 percent of its bid-range capacity tests.
- As part of the resource sufficiency test, TEPC passed successfully 99.93 percent of its upward flexible ramping sufficiency.
- The price for upward flexible ramping capacity in the FMM for the TEPC BAA averaged at \$0.09/MWh, while prices for the downward flexible ramping product averaged \$0.00/MWh.

III. Market Performance Related to the Transitional Period

a. Prices

Figure 1 shows the daily average Fifteen-Minute Market (FMM) and Real-Time Dispatch (RTD) prices in the TEPC WEIM Load Aggregation Point (ELAP) for May 03, 2022 to May 31, 2022. May’s monthly average price in the FMM was \$54.32/MWh and \$50.29/MWh in the RTD.

Figure 1: Daily average prices for the TEPC BAA



Under the CAISO’s price correction authority in Section 35 of the CAISO tariff, the CAISO may correct prices posted on its Open Access Same-Time Information System (OASIS) if it finds: (1) that the prices were the product of an invalid market solution; (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 Figure 1 include all prices produced by the CAISO consistent with its tariff requirements. That is, the trends represent: (1) prices as produced in the market that the CAISO deemed valid; (2) prices that the CAISO could, and did, correct pursuant to Section 35 of the CAISO tariff; and (3) any prices the CAISO adjusted pursuant to the transition period pricing reflected in Section 29.27 of the CAISO tariff.

b. Frequency of Power Balance Constraint Infeasibilities

Figure 2 shows the frequency of intervals in which the power balance constraint was relaxed for under-supply conditions in the TEPC BAA for the RTD. The under-supply infeasibilities are classified into three categories: Valid, Corrected and Would-Be-Corrected. Those under-supply infeasibilities, which are impacted by either data input failures or software failures where the ISO performed price correction pursuant to Section 35 of the CAISO tariff, are classified as Corrected. There are other under-supply infeasibilities that were impacted by data input failures or software failures; and which would be subject to price correction, but were not corrected because the price after correction would be the same price as that obtained by the transition period pricing. These instances are classified as Would-Be-Corrected. All remaining under-supply infeasibilities, which were driven by system conditions, are classified as Valid. In May 2022, the TEPC BAA had no under-supply power balance infeasibilities in FMM and 30 in RTD.

Figure 2: Frequency of RTD under-supply infeasibilities in the TEPC BAA

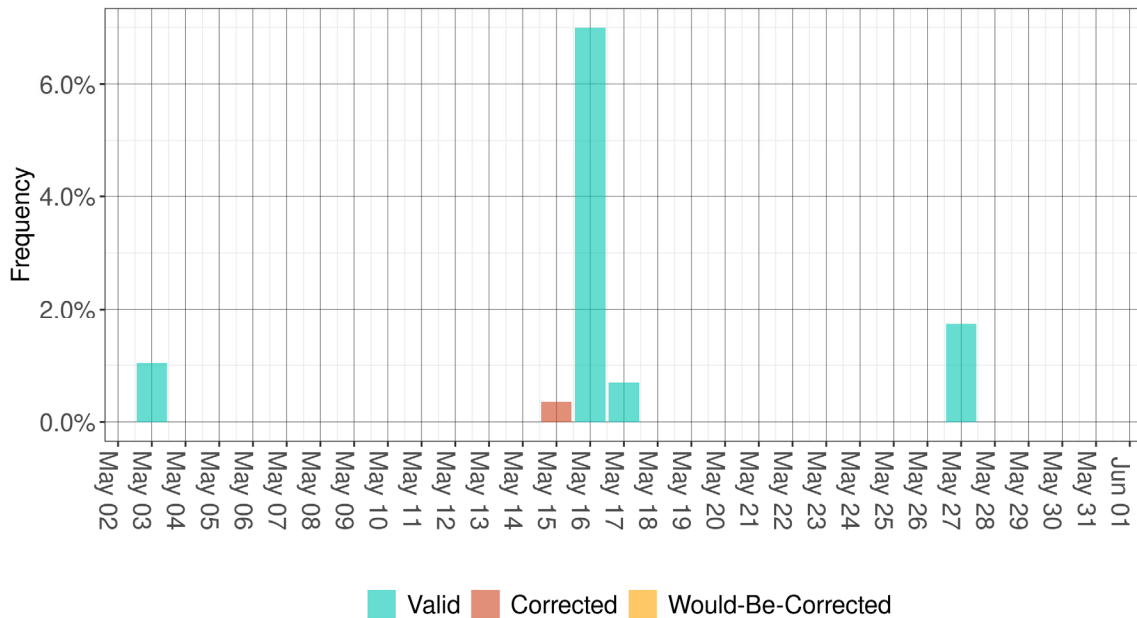


Table 1 lists the valid RTD intervals with infeasibilities observed in May. In general, under-supply infeasibilities for a BAA could be driven by various changes to either supply or demand in a market interval. The RTD under-supply infeasibility on May 3 was due to a TEPC certificate issue that impacted sending accurate VER forecasts. On May 16 and May 17, TEPC had limited import capability on the ITC that limits the total transfer within the area and the RTD

VER forecast was lower than the FMM forecast. On May 27, the transition times submitted for MSG resources were too low and did not accurately reflect how those resources could be dispatched.

Table 1: List of valid RTD under-supply infeasibilities in the TEPC BAA

Trade Date	Trade Hour	Trade Interval	MW Infeasibility
3-May-22	2	3	35.51
3-May-22	2	4	19.47
3-May-22	2	5	1.9
16-May-22	12	2	2.02
16-May-22	12	3	8.67
16-May-22	12	4	13.9
16-May-22	13	5	11.15
16-May-22	13	6	11.03
16-May-22	13	7	19.4
16-May-22	13	8	20.88
16-May-22	13	9	14.51
16-May-22	13	10	16.2
16-May-22	13	11	13.24
16-May-22	13	12	28.28
16-May-22	14	4	2.73
16-May-22	14	5	5.37
16-May-22	14	6	16.82
16-May-22	14	7	23.57
16-May-22	14	8	29.17
16-May-22	14	9	20.54
16-May-22	14	10	27.51
16-May-22	14	11	9.12
16-May-22	14	12	0.06
17-May-22	11	8	2.83
17-May-22	12	11	1.15
27-May-22	14	2	16.46
27-May-22	14	3	37.72
27-May-22	14	4	41.85
27-May-22	14	5	18.47
27-May-22	14	6	37.8

c. Balancing and Sufficiency Test Failures

The WEIM provides an opportunity for various BAAs to serve their load while realizing the benefits of increased resource diversity. Since the WEIM does not include resource adequacy requirements or obligations for resources to submit bids, the CAISO performs a series of resource sufficiency tests comprised of: (i) a balancing test; (ii) a capacity test; and (iii) a flexible ramping sufficiency test. These tests occur prior to the real-time market.

Performance of a balancing test before each trading hour ensures that each participating BAA submits a balanced base schedule of generation and a net schedule interchange to meet its demand. In addition, the participating BAA is required to submit bids with enough ramping capability to meet its net load forecast uncertainty and net load movement requirements. Figure 3 shows the trend of balancing test outcomes for the period of May 03, 2022, through May 31, 2022, and Figure 4 shows the pattern of bid-range capacity test outcomes for the same period.⁴ If a balancing test or the bid-range capacity test is affected by data input failures or a software failures, those test results are shown as correctable events. The TEPC BAA passed the balancing test in 97.13 percent of the intervals in May, which is within the acceptable range of balancing test failures.

There are two main reasons identified for TEPC BAA balancing test failures. First, TEPC uses vendor software to report outages to the ISO and there were some software issues creating lag in submitting outages or mismatches in outages between systems. Second, because outage reporting was challenging, TEPC used manual dispatch to manage de-rates and there were some issues with maintaining these manual dispatch amounts. The TEPC BAA passed the bid-range capacity test in 100 percent of intervals. The bid-range capacity test event noted was impacted by a data input failure so that test is shown as a correctable event.

⁴ The CAISO performs resource sufficiency tests pursuant to Section 29.34(k) of the CAISO tariff.

Figure 3: Frequency of Balancing test failures in the TEPC BAA

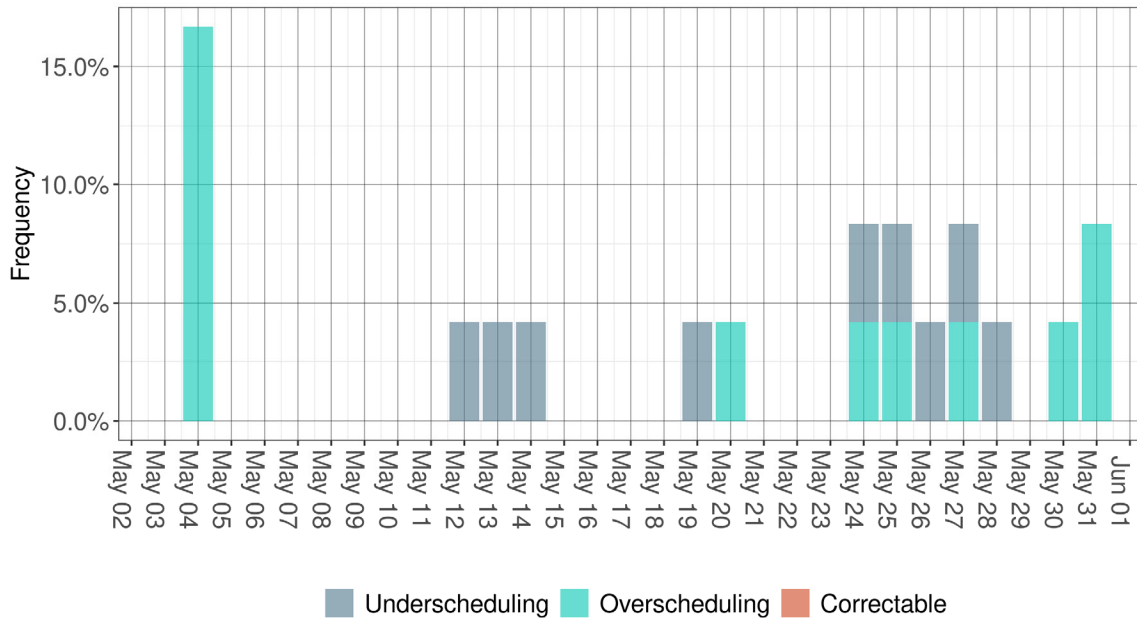
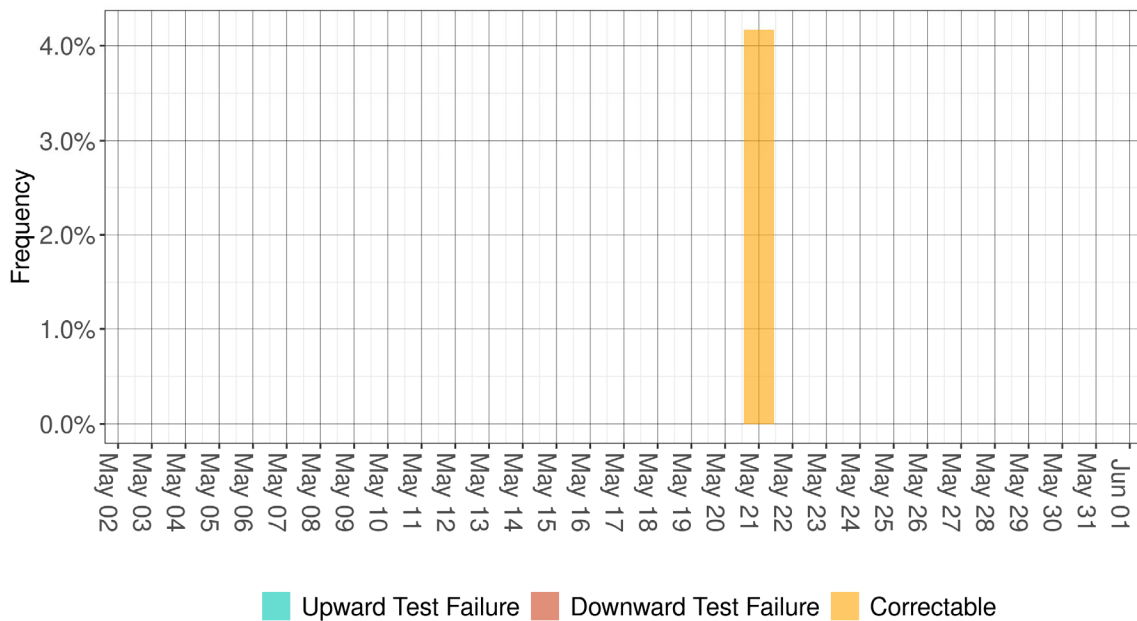


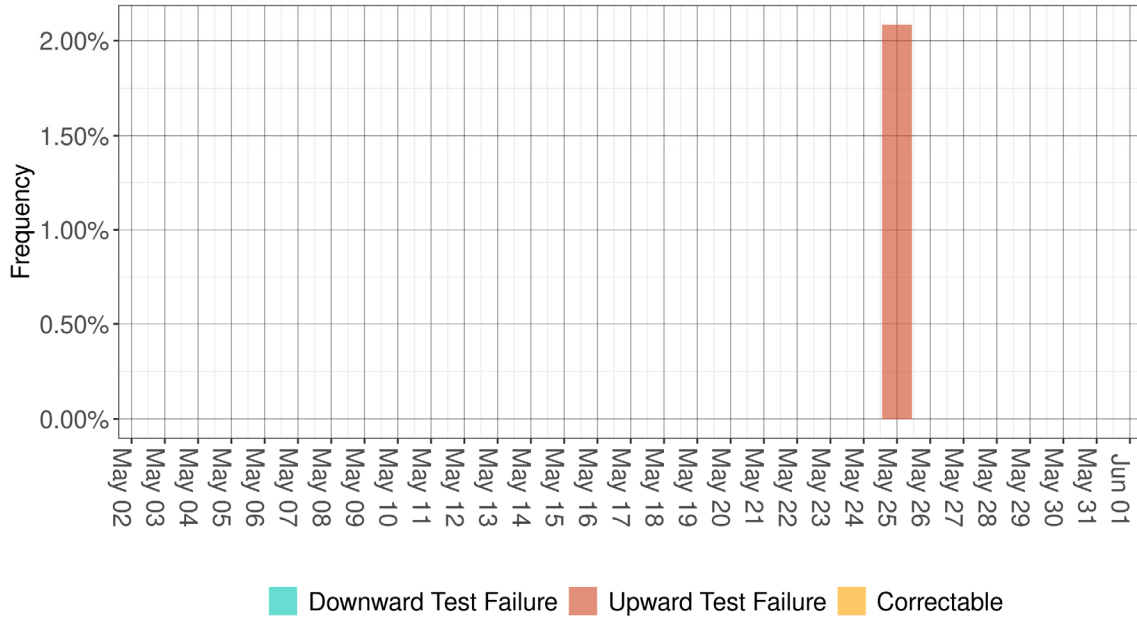
Figure 4: Frequency of Bid Range Capacity test failures in the TEPC BAA



The CAISO also performs the flexible ramping sufficiency test as specified in Section 29.34(m) of the CAISO tariff. Figure 5 shows the trend of the test failures for flexible ramping for the period of May 03, 2022 through May 31, 2022. The TEPC BAA passed the flexible ramp up and down tests in 99.93 percent of

the intervals in May. The event on May 25 for flexible ramp up test was due to a higher requirement level driven by reduction of exports.

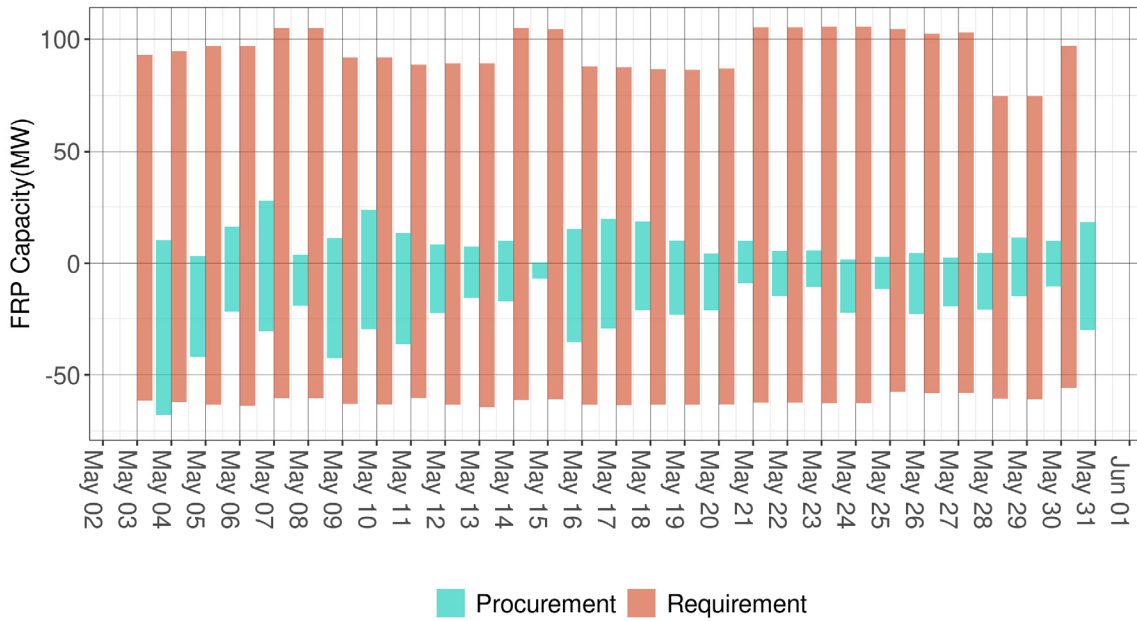
Figure 5: Frequency of Flexible Ramping Sufficiency test failures in the TEPC BAA



d. Flexible Ramping Product

Figure 6 shows the daily average of the upward and downward flexible ramping constraint requirement and procurement in the FMM. Figure 8 shows the daily average of the upward and downward flexible ramping constraint prices in the FMM. With the implementation of the flexible ramping product on November 1, 2016, calculation of the requirements consists of historical data for uncertainty with any applicable net import/export capability or credit. This effectively reduces the amount of flexible ramping the TEPC BAA has to procure and, generally, the WEIM system-wide area (which includes all the BAAs in the WEIM, including the CAISO BAA) will drive the requirements. The market clearing process may result in procuring the TEPC BAA capacity towards meeting the overall WEIM-system-wide area requirement. This is the main reason why the individual TEPC procurement may generally fall below or be above the individual TEPC flex ramp requirement.

Figure 6: Daily average requirement and procurement of upward and downward flexible ramping in FMM



In addition, the price trend provided in Figure 7 is the nested price determined by the summation of the shadow price of the individual TEPC BAA plus the shadow price of the WEIM system-wide area. In May, the average upward flexible ramping capacity price was \$0.09/MWh and the average downward flexible ramping capacity price was \$0/MWh.

Figure 7: Daily average price for upward and downward flexible ramping in FMM



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 28th day of June 2022.

Is/ Anna Pascuzzo
Anna Pascuzzo