



May 28, 2021

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-____
April 2021 Informational Report
Energy Imbalance Market – Transition Period Report –
Los Angeles Department of Water & Power EIM Entity**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its report on the transition period of the Los Angeles Department of Water & Power EIM Entity during its first six months of participation in the Energy Imbalance Market (EIM) for April 2021. 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

Roger E. Collanton
General Counsel
John Anders
Assistant General Counsel
California Independent System
Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel: (916) 608-7182
Fax: (916) 608-7222
janders@caiso.com



California ISO

Energy Imbalance Market

April 1 – April 30, 2021

Transition Period Report

Los Angeles Department of Water and Power (LADWP) EIM Entity

May 28, 2021

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 Energy Imbalance Market (EIM) entities during the first six months of EIM participation, effective November 1, 2015.¹ Los Angeles Department of Water and Power (LADWP), the prospective EIM Entity entered the EIM on April 1, 2021, and the transition period will apply to the LADWP balancing authority area (BAA) until October 1, 2021.

During the six-month transition period, the price of energy in the new EIM 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 EIM entity's BAA between \$0 and \$0.01, but only when the power balance or transmission constraints are relaxed in the relevant EIM 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 EIM entity. The CAISO provides this report for LADWP 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,² and depending on the market performance each month, along with the need to coordinate with the EIM 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 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, LADWP's transition into the EIM was smooth and without significant issues. The first month's market performance highlights are as follows:

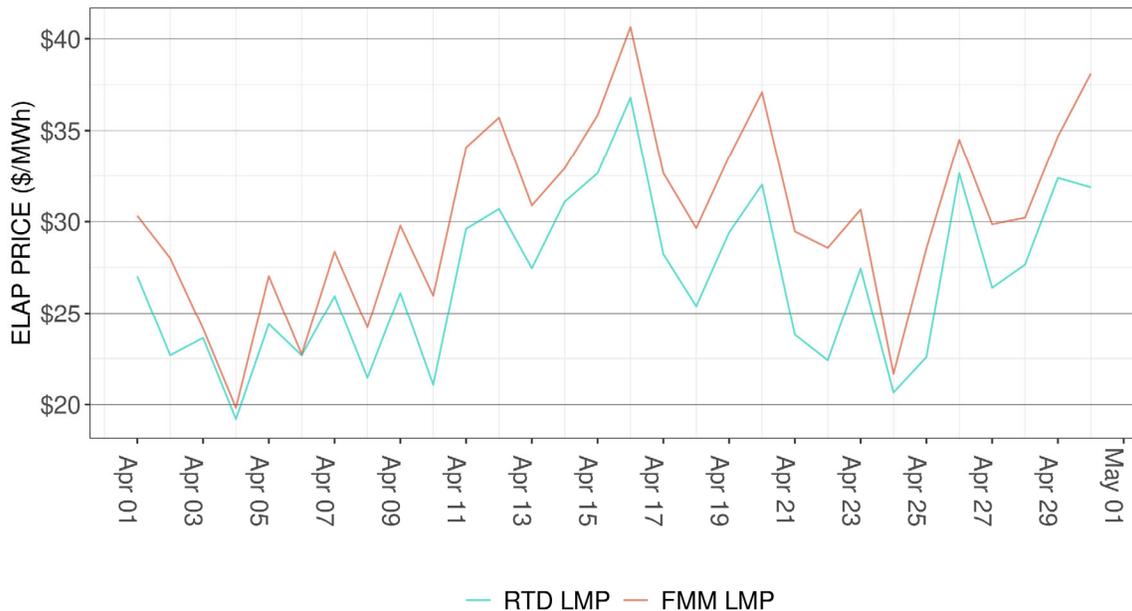
- As part of the resource sufficiency test performed for each EIM entity prior to the real-time markets, LADWP passed 98.47 percent of its balancing tests and 100 percent of its bid-range capacity tests.
- LADWP passed 99.97 percent of its upward flexible ramping sufficiency tests.
- Prices were stable and within reasonable ranges, with the monthly average LADWP BAA price at \$30.32/MWh in the fifteen-minute market (FMM) and \$26.85/MWh in the real-time dispatch (RTD).
- Power balance constraint infeasibilities for the under-supply conditions were minimal for the LADWP BAA with 0.104 percent of the total intervals in the FMM, and with 0.104 percent of the total intervals in the RTD.
- The price for upward flexible ramping capacity in FMM for the LADWP BAA averaged at \$0.033/MWh, while prices for the downward flexible ramping product were \$0.0025/MWh.

III. Market Performance during the Transitional Period

a. Prices

Figure 1 shows the daily average Fifteen-Minute Market (FMM) and Real-Time Dispatch (RTD) prices in the LADWP EIM Load Aggregation Point (ELAP) for April 1, 2021 through April 30, 2021. The April’s monthly average price in FMM was \$30.32/MWh and \$26.85/MWh in the RTD.

Figure 1: Daily average prices for the LADWP 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

Figures 2 and 3 show the frequency of intervals in which the power balance constraint was relaxed for under-supply conditions in the LADWP BAA for the FMM and RTD, respectively. The under-supply infeasibilities are classified into three categories: Valid, Corrected and Would-Be-Corrected. Some of the under-supply infeasibilities affected by either data input failures or software failures were corrected under the price correction authority in 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.

Figure 2: Frequency of FMM under-supply infeasibilities in the LADWP BAA.

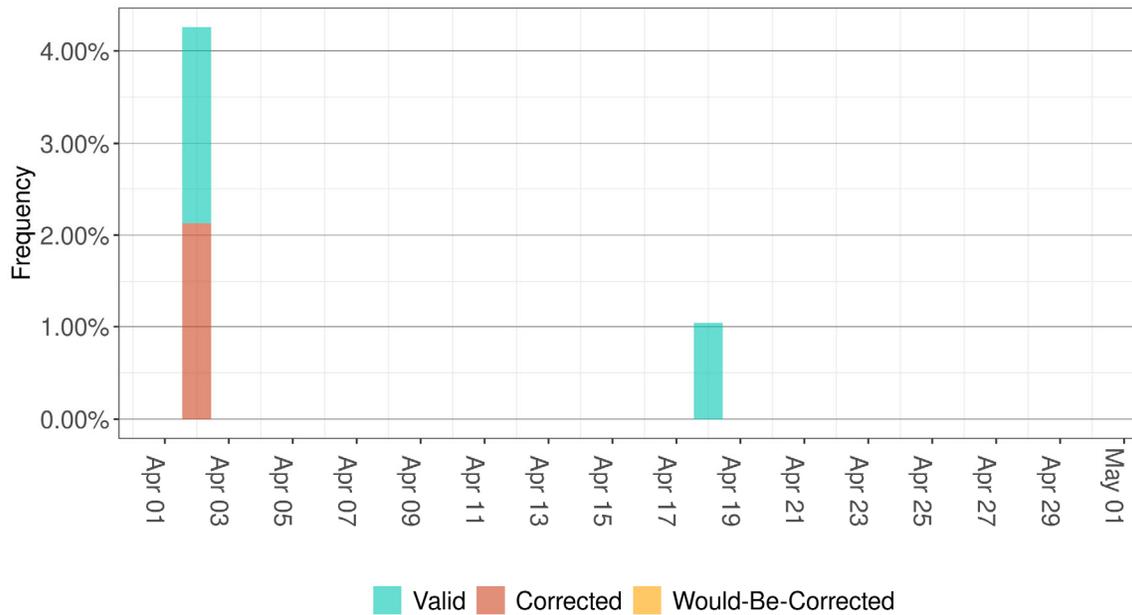
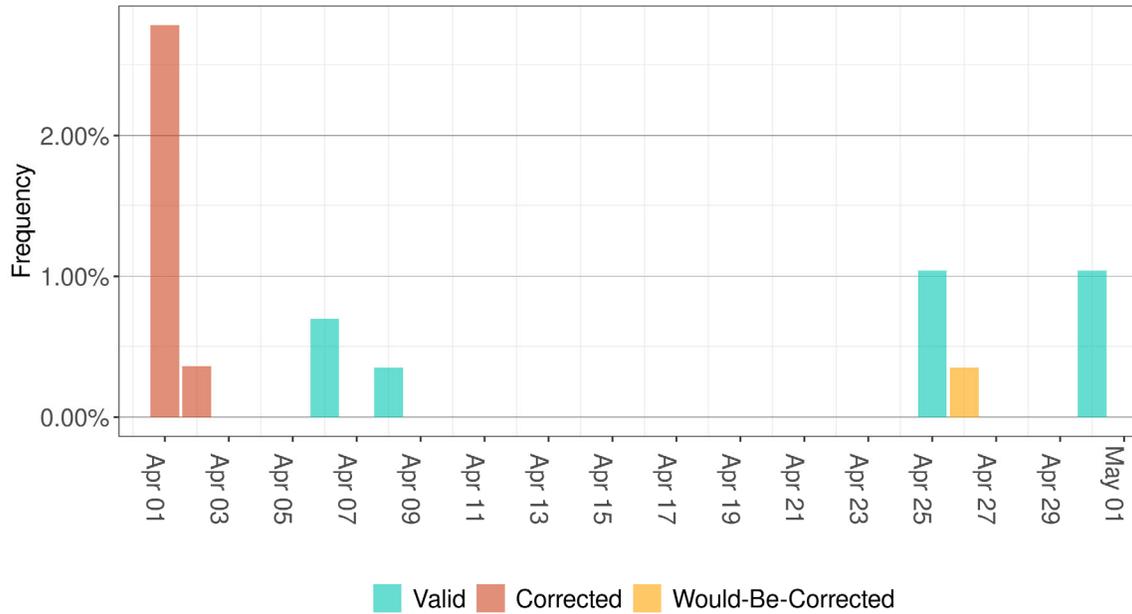


Figure 3: Frequency of RTD under-supply feasibilities in the LADWP BAA.



Tables 1 and 2 list the FMM and RTD intervals with infeasibilities observed in April. There were three valid under-supply infeasibility in the FMM and nine valid under-supply infeasibility in the RTD. The FMM under-supply infeasibility on April 2 was because several generating resources did not follow startup instruction. The FMM under-supply infeasibility on April 18 was related to an infeasible manual dispatch of a Multi-Stage Generating (MSG) resource in a configuration which was on outage. The RTD under-supply infeasibility on April 6 was driven by a resource shutdown because LADWP did not submit base schedules for future hours. The RTD under-supply infeasibility on April 8 was a sub-optimal solution given the time allowed to find a solution and the existing parameters for solving a large-scale optimization problem in RTD. The RTD under-supply infeasibility on April 25 was impacted by lower forecast of Variable Energy Resource (VER) in RTD compared to FMM and reduced EIM transfer limit submitted by LADWP. The RTD under-supply infeasibility on April 30 was driven by higher load conformance entered by LADWP in RTD compared to FMM and reduced EIM transfer limit submitted by LADWP.

Table 1: List of valid FMM under-supply infeasibilities in the LADWP BAA.

Trade Date	Trade Hour	Trade Interval	MW Infeasibility
Apr-2-21	18	3	241.73
Apr-2-21	18	4	35.29
Apr-18-21	21	1	222.45

Table 2: List of valid RTD under-supply infeasibilities in the LADWP BAA.

Trade Date	Trade Hour	Trade Interval	MW Infeasibility
Apr-6-21	1	4	21.15
Apr-6-21	1	5	113.07
Apr-8-21	24	6	3.9
Apr-25-21	16	4	26.07
Apr-25-21	16	5	14.93
Apr-25-21	16	6	15.3
Apr-30-21	2	1	3.83
Apr-30-21	13	2	22.79
Apr-30-21	13	3	59.47

c. Balancing and Sufficiency Test Failures

The EIM provides an opportunity to various BAAs to serve its load while realizing the benefits of increased resource diversity. Since the EIM 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 with its own generating resources. 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 4 shows the trend of balancing test outcomes for the period of April 1, 2021, through April 30, 2021, and Figure 5 shows the pattern of bid-range capacity test outcomes for the period of April 1, 2021, through April 30, 2021.³ If a balancing test or the bid-range capacity test is impacted by data input failures or software failures, those test results are shown as correctable events. In April, the LADWP BAA passed the balancing test in 98.47 percent of the intervals, which is within the acceptable range of balancing test failures. On April 2, LADWP failed one balancing test due to decrease of generation base schedule. On April 5, LADWP failed three balancing tests due to change of Net Schedule Interchange (NSI) and manual dispatch of some resources which was

³ The CAISO performs resource sufficiency tests pursuant to Section 29.34(k) of the CAISO tariff.

not compensated by the base schedule adjustment of other resources. On April 7 and April 8, LADWP incorrectly failed eight balancing tests due to a data issue in the setup of a mirror resource in the market. The issue was resolved on April 8. On April 10, LADWP incorrectly failed one balancing test because the test did not receive the latest hourly load forecast due to a data transfer issue. On April 11, LADWP failed one balancing test due to change of NSI. On April 12 and April 13, LADWP failed balancing tests due to increase of generation base schedule. On April 20, LADWP failed one balancing test due to change of NSI. On April 21, LADWP failed one balancing test due to manual dispatch of some resources, which was not compensated by the base schedule adjustment of other resources. On April 28, LADWP failed one balancing test due to decrease of generation base schedule. On April 30, LADWP failed one balancing test due to change of NSI. The LADWP BAA passed the bid-range capacity test in 100% percent of the intervals as shown with no records of failure in Figure 5.

Figure 4: Frequency of Balancing test failures in the LADWP BAA.

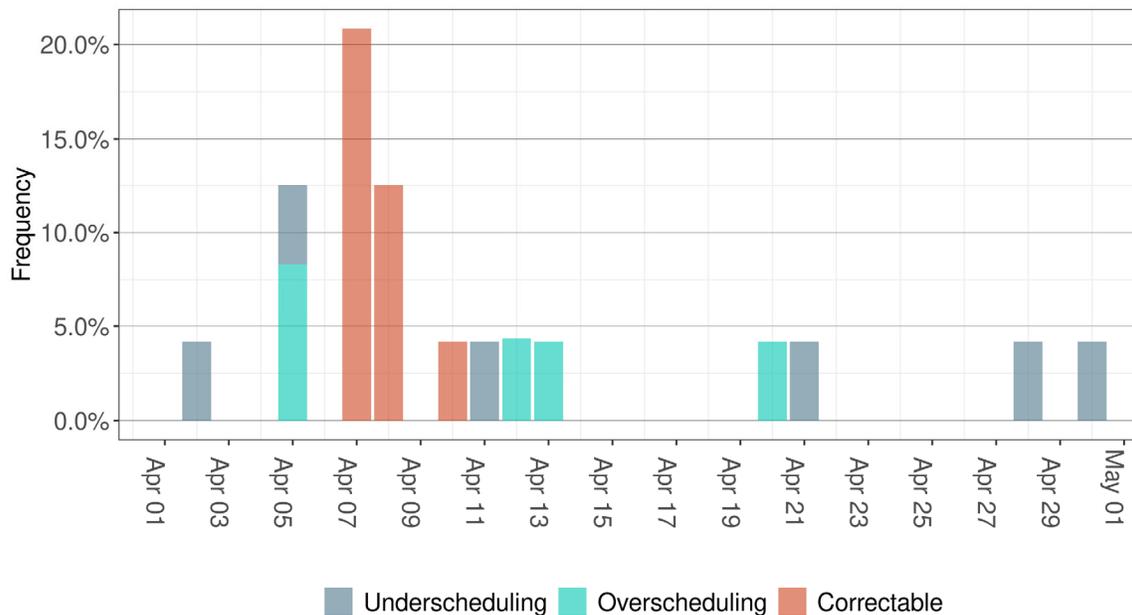
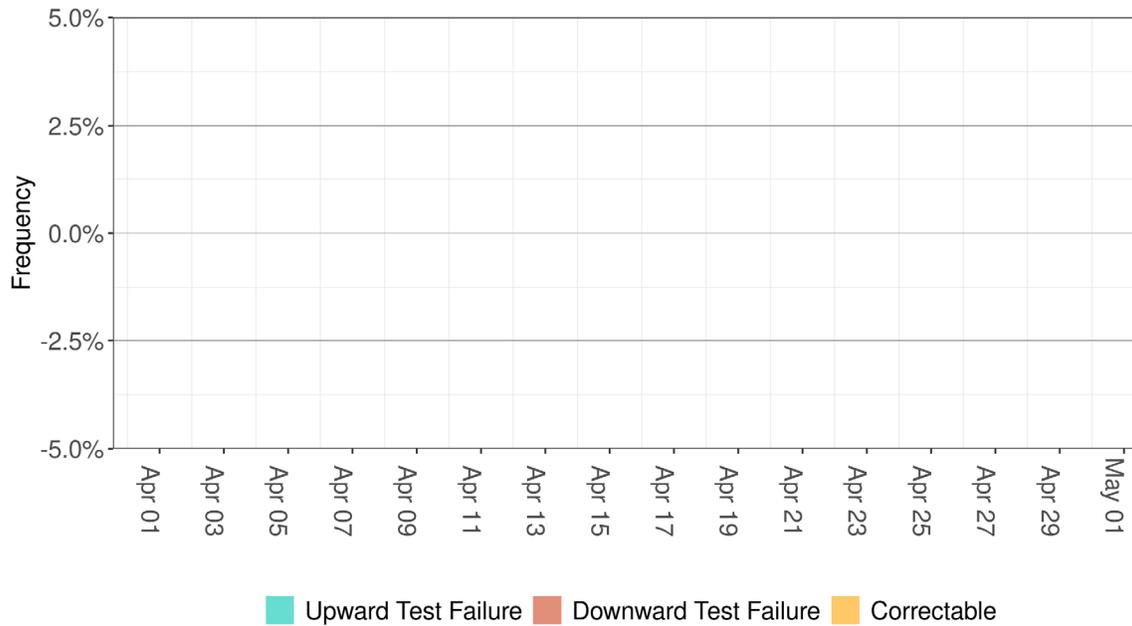
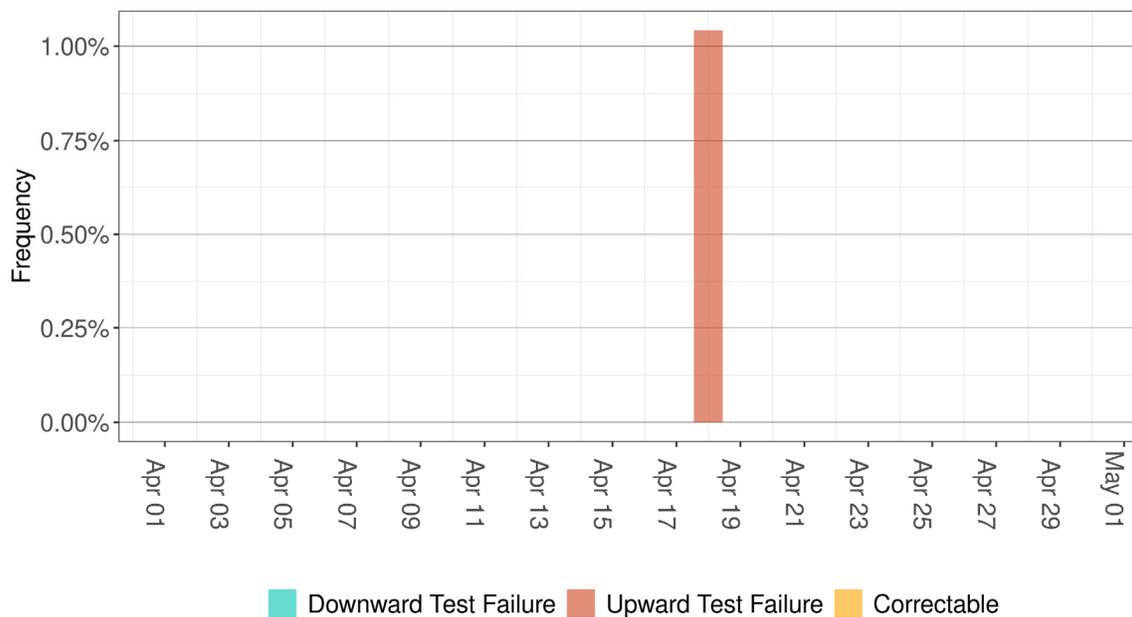


Figure 5: Frequency of Bid Range Capacity test failures in the LADWP BAA.



CAISO also performs the flexible ramping sufficiency test as specified in Section 29.34(m) of the CAISO tariff. Figure 6 shows the trend of the test failures for flexible ramping for the period of April 1 through April 30. The LADWP BAA passed the flexible ramp down test in 100 percent of the intervals in April and passed the flexible ramp up test in 99.97 percent of the intervals. On April 18, LADWP failed the upward flexible ramp test for one fifteen-minute interval due to reduced bid capacity of a resource and decrease of net import.

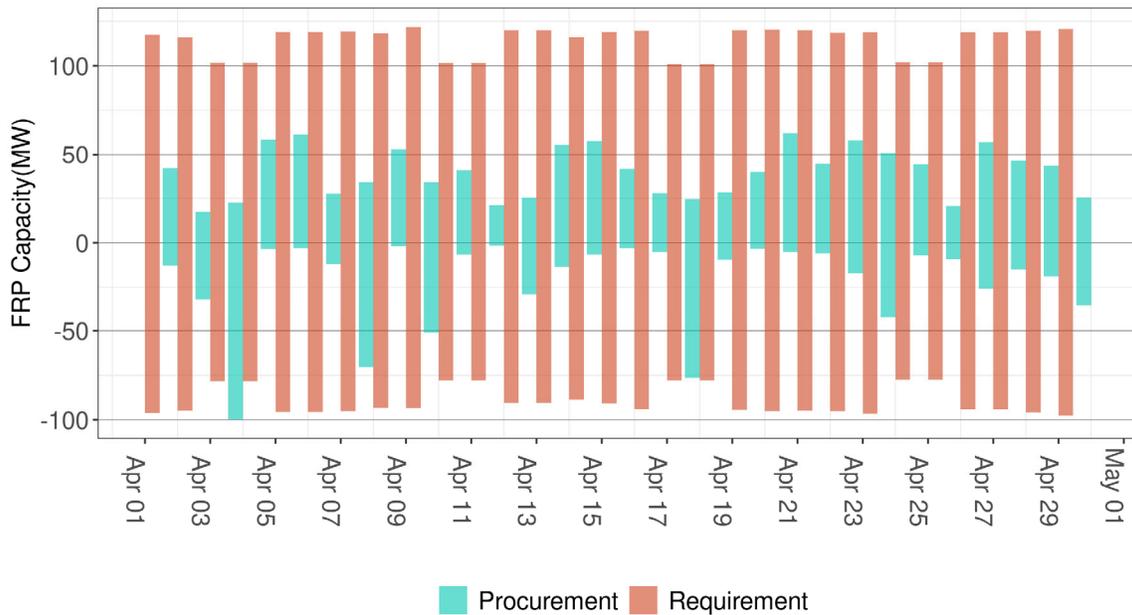
Figure 6: Frequency of flexible ramping sufficiency test failures in the LADWP BAA.



d. Flexible Ramping Product

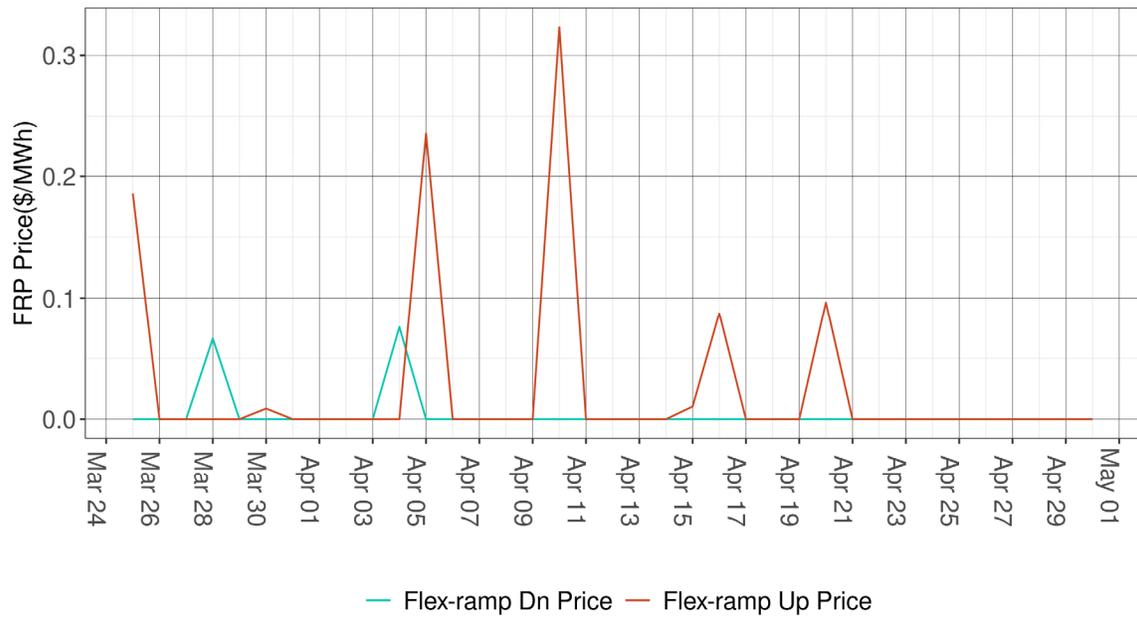
Figure 7 shows the daily average of the upward and downward flexible ramping constraint requirement and procurement in the FMM, the positive portion of a bar represents flexible ramp up and the negative portion of a bar represents flexible ramp down. Figure 8 shows the daily average of the upward and 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 LADWP BAA has to procure and, generally, the EIM system-wide area (which includes all the BAAs in the EIM, including the CAISO BAA) will drive the requirements. The market clearing process may result in procuring the LADWP BAA capacity towards meeting the overall EIM-system-wide area requirement. This is the main reason why the individual LADWP procurement may generally not match exactly the individual LADWP flex ramp requirement.

Figure 7: Daily Average flexible ramping Up and Down requirement and procurement in the FMM for the LADWP BAA.



In addition, the price trend provided in Figure 8 is the nested price determined by the summation of the shadow price of the individual LADWP BAA plus the shadow price of the EIM system-wide area. In April, the average upward flexible ramping capacity price was \$0.033/MWh and the average downward flexible ramping capacity price was \$0.0025/MWh.

Figure 8: Daily Average price of flexible ramping Up and Down in the FMM for LADWP BAA



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 28^h day of May 2021.

/s/ Anna Pascuzzo
Anna Pascuzzo