August 21, 2018

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-___
June 2018 Informational Report
Energy Imbalance Market – Transition Period Report – Idaho Power Company

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its report on the transition period of Idaho Power Company during its first six months of participation in the Energy Imbalance Market (EIM) for June 2018. 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.

The CAISO will continue filing such reports, consistent with the Commission's order, through the six month transition period.

Please contact the undersigned with any questions.

Respectfully submitted

By: *Anna A. McKenna*

Roger E. Collanton
General Counsel
Anna A. McKenna
Assistant 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
amckenna@caiso.com

Energy Imbalance Market

June 1 – June 30, 2018

Transition Period Report

Idaho Power Company EIM Entity

August 21, 2018

Table of Contents

I. Background and Information

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] Idaho Power Company (IPCO) entered the EIM on April 4, 2018, and the transition period will apply to the IPCO balancing authority area (BAA) until October 4, 2018.

During the six-month transition period, the pricing 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 IPCO 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 of 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, the IPCO BAA's transition into the EIM was smooth and uneventful, with the exception of some data issues observed at the beginning of the transition. The market performance highlights for June are as follows:

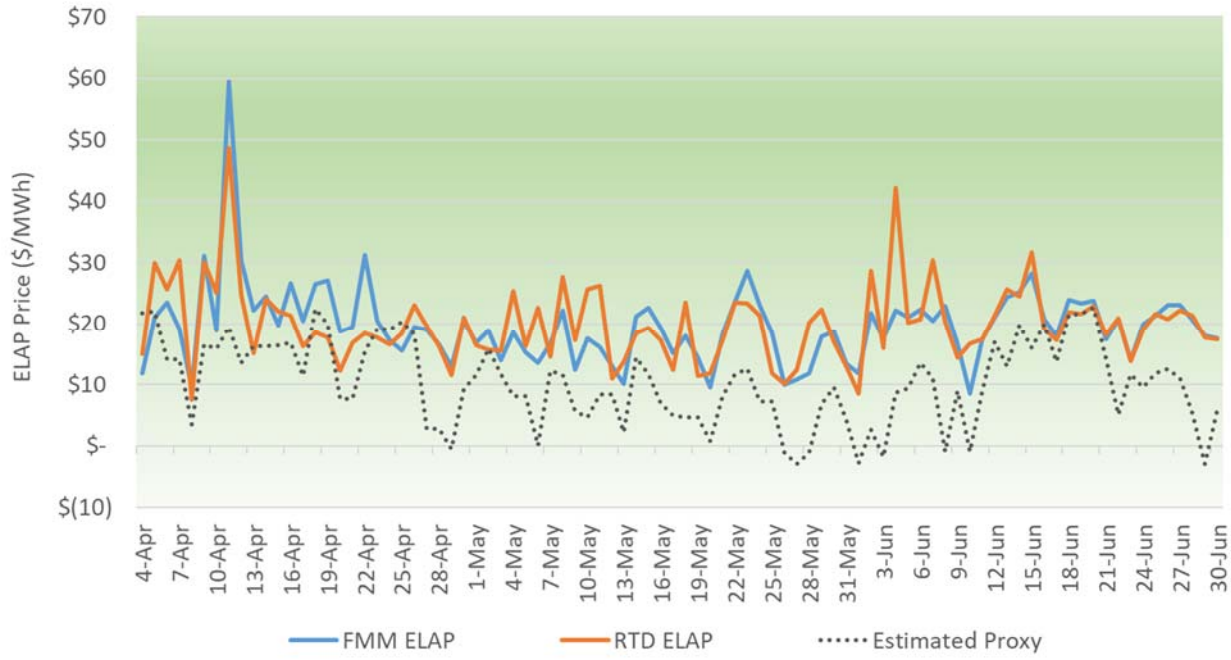
- Prices were stable and within reasonable ranges, with the monthly average prices being $20.23/MWh in the fifteen-minute market (FMM) and $21.16/MWh in the real-time dispatch (RTD) for the IPCO BAA.
- There were no power balance constraint infeasibilities for under-supply conditions in the FMM. About 0.07 percent of the total intervals in the RTD experienced power balance constraint infeasibilities.
- As part of the resource sufficiency test performed for each EIM entity prior to the real-time markets, the IPCO BAA passed 97.92 percent of its balancing tests.
- Also as part of the resource sufficiency test, the IPCO BAA passed 98.89 percent of its upward flexible ramping sufficiency tests.
- The price for upward flexible ramping capacity in the FMM for the IPCO BAA averaged $0.14/MWh, while prices for the downward flexible ramping product were $0.06/MWh.

III. Market Performance Related to the Transitional Period

A. Prices

Figure 1 shows the average prices in the IPCO BAA's EIM Load Aggregation Point (ELAP) for April 4, 2018, through June 30, 2018. In June, the monthly average price in the FMM was $21.23/MWh, and $21.16/MWh in the RTD. The grey dotted line in Figure 1 represents the proxy price for the IPCO BAA. In June, the daily average FMM ELAP locational marginal prices ranged between a minimum of $8.54/MWh and a maximum of $28.18/MWh. At the same time, the daily average RTD ELAP locational marginal prices ranged between a minimum of $8.48/MWh and a maximum of $42.13/MWh. The maximum daily average price in the five-minute market for the IPCO ELAP LMPs ranged between $21/MWh and $329/MWh, which occurred on June 4, 2018, between hours ending 18 and 20 was due to congestion on a transmission constraint in the California BAA. This congestion was mainly driven by fire in Southern California, which reduced the flow capacity on the constraint. The market application re-dispatched generation in the entire EIM footprint to manage this congestion.

Figure 1: Daily Average Prices for the IPCO BAA



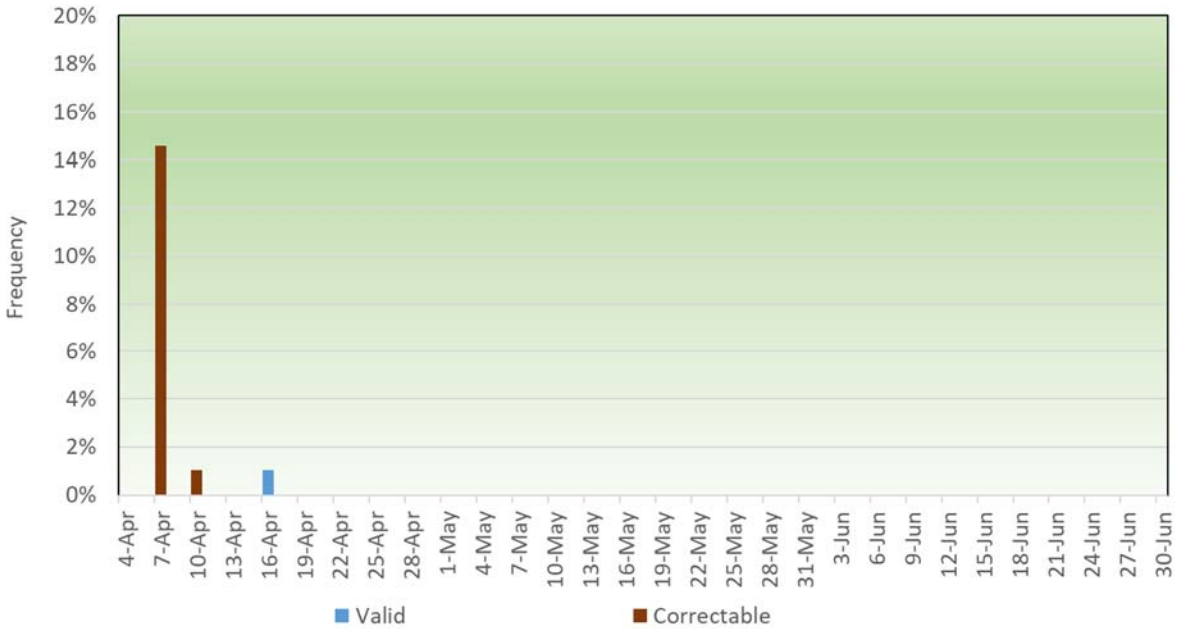
Under the CAISO's price correction authority in section 35 of the CAISO tariff, the CAISO may correct prices posted on its Open Access Same-Time Information System (OASIS) if it finds: (1) that the prices were the product of an invalid market solution; (2) the market solution produced an invalid price 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.[3] 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

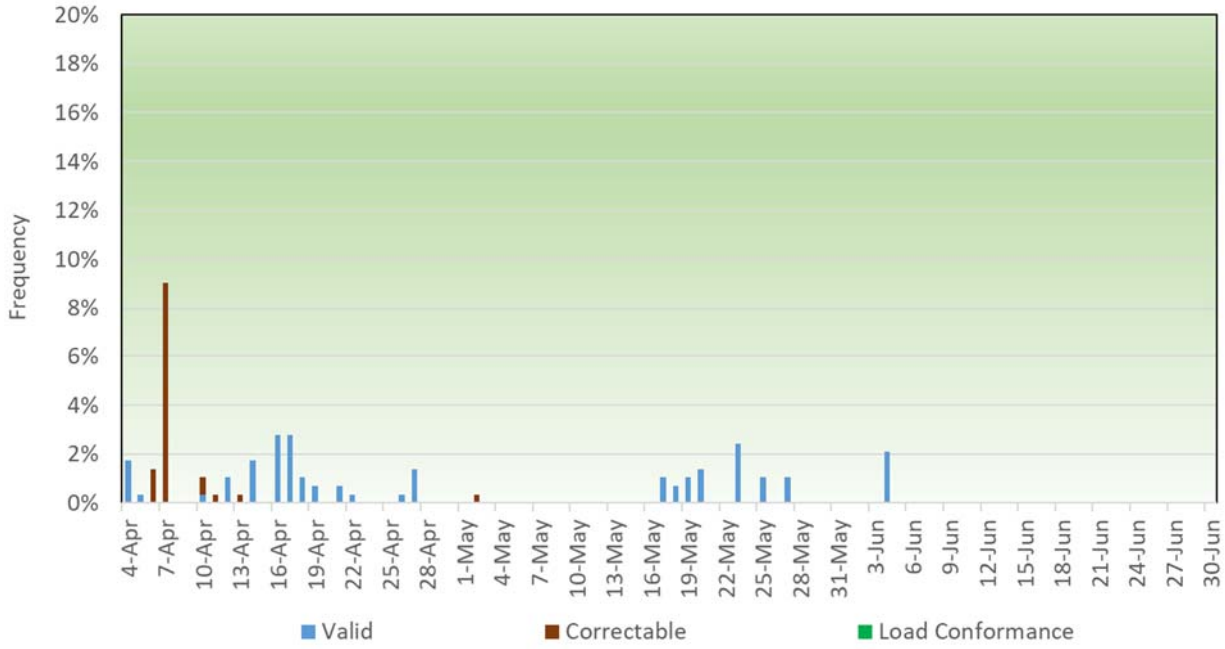
Figures 2 and 3 show the frequency of intervals in which the power balance constraint was relaxed for under-supply conditions in the IPCO BAA for the FMM and RTD, respectively. The under-supply infeasibilities are categorized into "valid," "load conformance," and "correctable" instances. Prices for the intervals that fell in the "valid" category are instances with under-supply infeasibilities that were not in error and are subject to the transitional period pricing. Instances labeled as "load conformance" are the valid infeasibilities observed when a load conformance was in place for that market interval. Whereas the infeasibilities that fell in the "correctable" category had a correction based on the provisions of Section 35 of the CAISO tariff due to either a software or a data error.

Figure 2: Frequency of FMM Under-Supply Power Balance Infeasibilities for the IPCO BAA



[3] Figure 1 also provides an estimated proxy price, which for IPCO is MID C hub price.

Figure 3: Frequency of RTD Under-Supply Power Balance Infeasibilities for the IPCO BAA



In the IPCO BAA, there were no under-supply infeasibilities in the FMM, however, there were six (0.07 percent of the time) valid under-supply infeasibilities in the RTD. Table 1 lists the RTD intervals with infeasibilities observed in June, including the amount of load conformance to reflect the instances in which the load conformance limiter would have been triggered and offset the infeasibility.

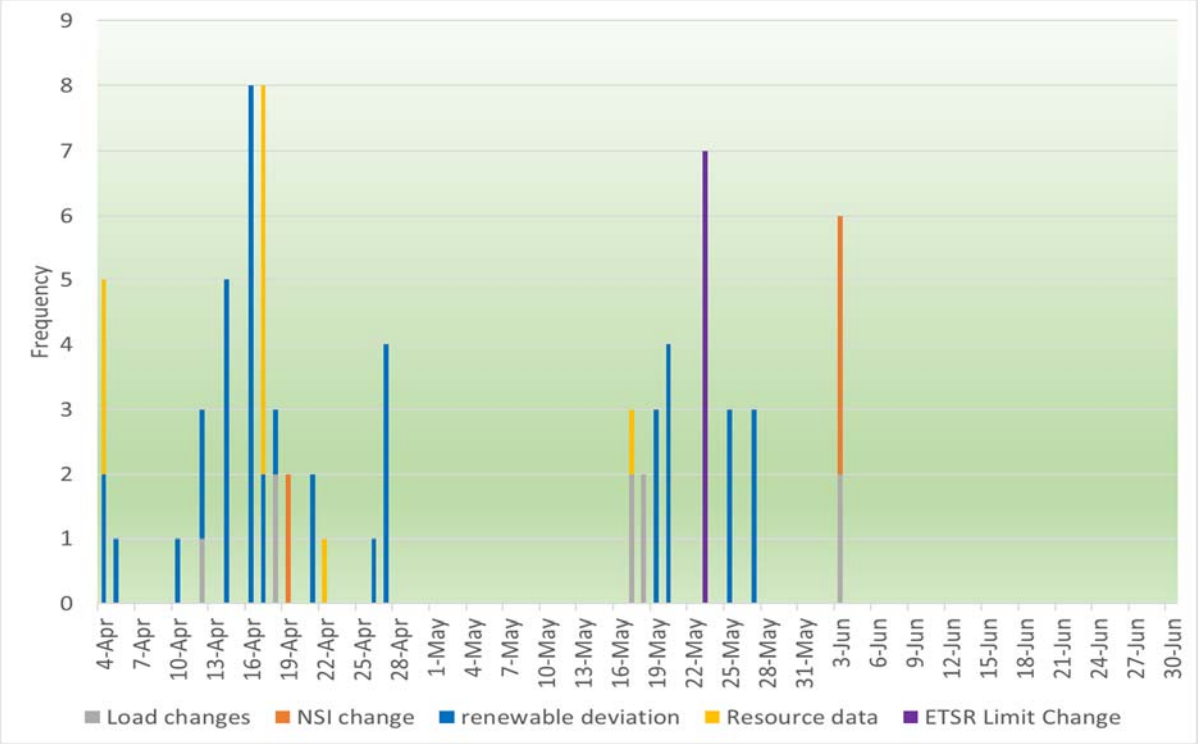
Table 1: List of Valid RTD Under-Supply Infeasibilities in the IPCO BAA

Trade Date	Trade Hour	Trade Interval	MW Infeasibility	Load Conformance
4-Jun-18	11	1	3.77	-32
4-Jun-18	11	4	11.48	0
4-Jun-18	20	1	16.38	-32
4-Jun-18	20	2	14.29	-32
4-Jun-18	20	3	5.96	-32
4-Jun-18	20	4	1.94	-32

Figure 4 displays the frequency of the RTD under-supply power balance infeasibilities by reason for the IPCO BAA from April 4, 2018, through June 2018. There were 6 under-supply power balance infeasibilities. Of these six infeasibilities, instances were driven by changes in the Net Scheduled Interchange (NSI); and load changes drove the remaining two infeasibilities.

For those reasons listed as the “renewable deviation,” the resource forecast for the renewable resources reduced after completion of the FMM and the IPCO BAA was ramp limited, which resulted in under-supply infeasibility in the five-minute market. The intervals captured under “resource data” were impacted by a slow response to the increase in resource dispatch operating target (DOT); as a result, the IPCO BAA was unable to meet its power balance requirement for a few intervals. Once the resource output caught up with the DOT, the IPCO BAA power balance constraint was no longer infeasible. The infeasibilities classified as “load changes” captured those intervals in which the five-minute market requirements, which is comprised of load forecast and imbalance conformance, increased above the FMM requirements such that the IPCO BAA was short of the ramp to meet the increase in requirement. Similar to the instance related to load changes, for intervals listed under “NSI change,” the IPCO BAA was short of the ramp to meet the increase in imbalance requirement due to reduction in net-imports after the completion of the FMM.

Figure 4: Count of RTD Under-Supply Power Balance Infeasibilities by Reason

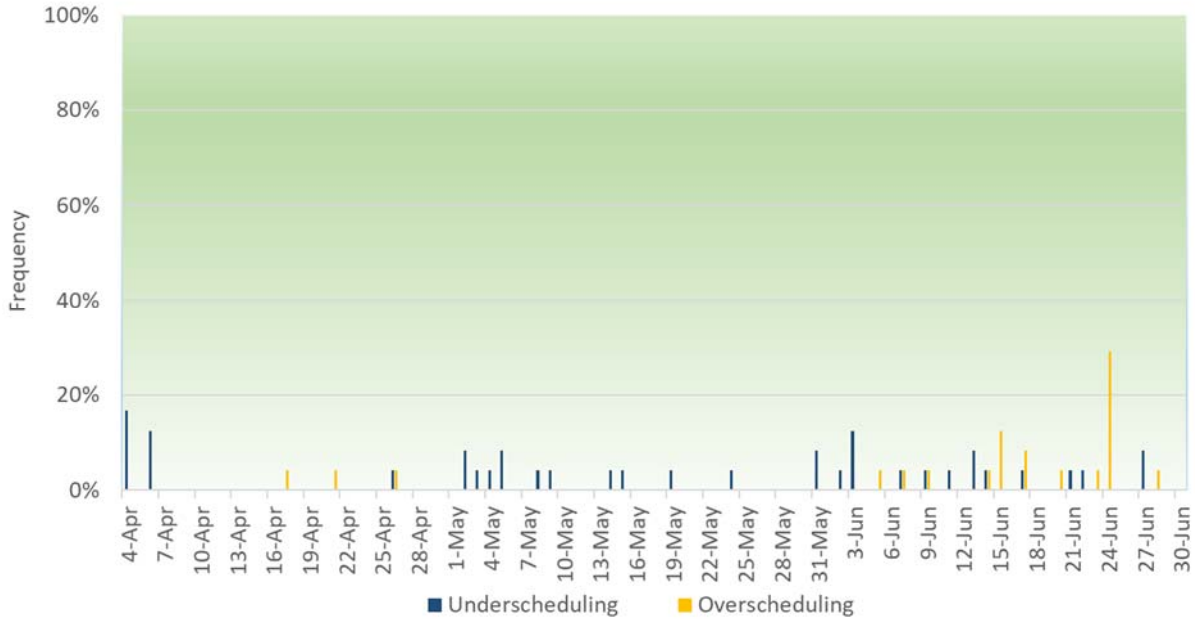


C. Balancing and Sufficiency Test Failures

The EIM provides an opportunity to various BAAs to serve their 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 prior to 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 5 shows the trend of balancing test outcomes for the period of April 4, 2018, through June 30, 2018.[4] The IPCO BAA passed the balancing test in 97.92 percent of the intervals in June, which is within expected performance tolerance ranges for balancing tests.

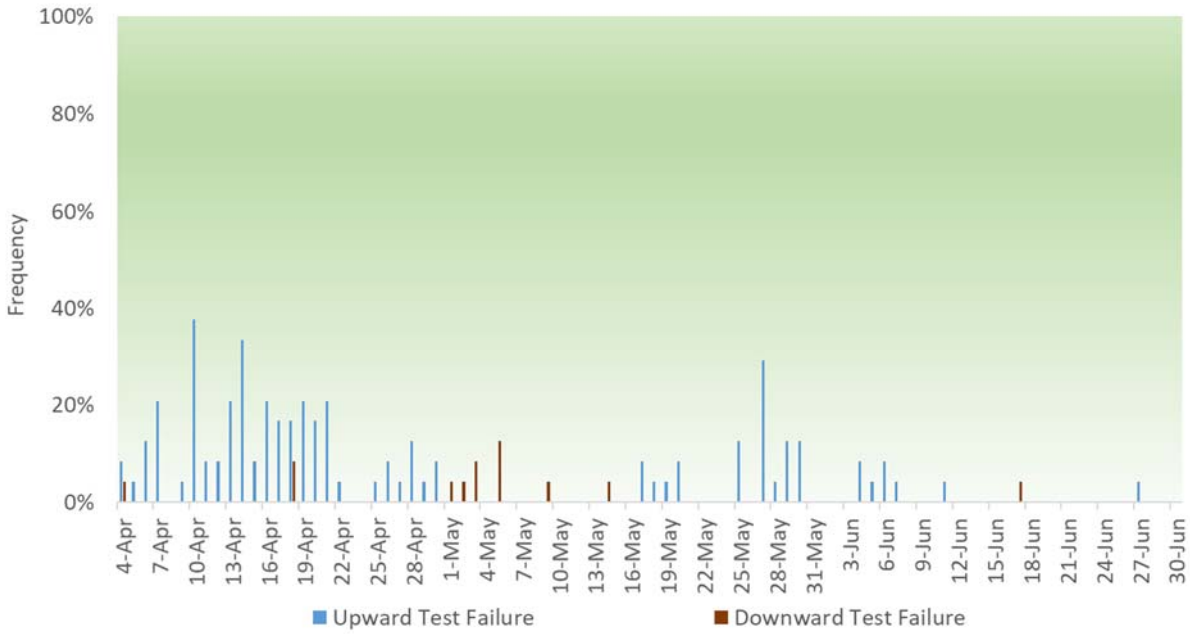
Figure 5: Frequency of Balancing Test Failures in the IPCO BAA



The 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 up and down tests for the period of April 4, 2018, through June 31, 2018. In June, the IPCO BAA passed the upward flexible ramping test in 98.89 percent of the intervals and passed the downward flexible ramping test in 99.86 percent of the intervals.

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

Figure 6: Frequency of Flexible Ramping Sufficiency Test Failures in the IPCO BAA



D. Flexible Ramping Product

Figure 7 shows the daily average of the upward flexible ramping constraint requirement, procurement, and prices in the FMM. Figure 8 shows the daily average of the downward flexible ramping constraint requirement, procurement, and prices in the FMM. With the implementation of the flexible ramping product on November 1, 2016, the CAISO calculates the flexibility requirement based on historical data for uncertainty, netting import/export capability or credit. This effectively reduces the amount of flexible ramping the IPCO 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 IPCO BAA capacity towards meeting the overall EIM-system-wide area requirement. This is the main reason why the individual IPCO BAA procurement may generally fall below or be above the individual IPCO BAA requirement.

In addition, the price trend provided in Figure 7 and Figure 8 is the nested price determined by the summation of the shadow price of the individual IPCO BAA, plus the shadow price of the EIM system-wide area. In June, the average upward flexible ramping capacity price was $0.14 /MWh and the average downward flexible ramping capacity price was $0.06/MWh. The maximum daily average downward flexible ramping capacity price occurred on June 10, 2018, which was driven by over-supply conditions observed between hour ending 8 and hour ending 17 mainly due to lower loads observed on the weekend driven by mild temperatures. For these hours, solar resources are generally producing output at their full capacity. During over-supply conditions, energy prices dipped below zero and generating resources were dispatched

above economic levels to provide downward ramp. The downward flexible ramping capacity price is set by lost opportunity cost of the marginal resource.

Figure 7: Daily Average Requirement, Procurement, and Price of Upward Flexible Ramping in the FMM in the IPCO BAA

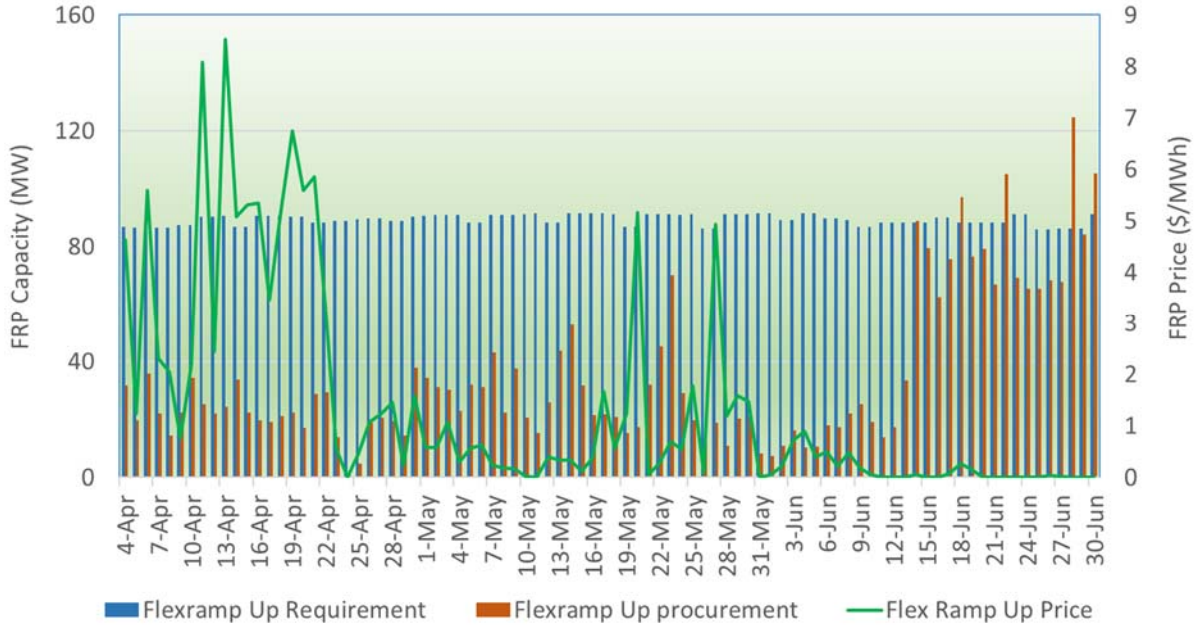
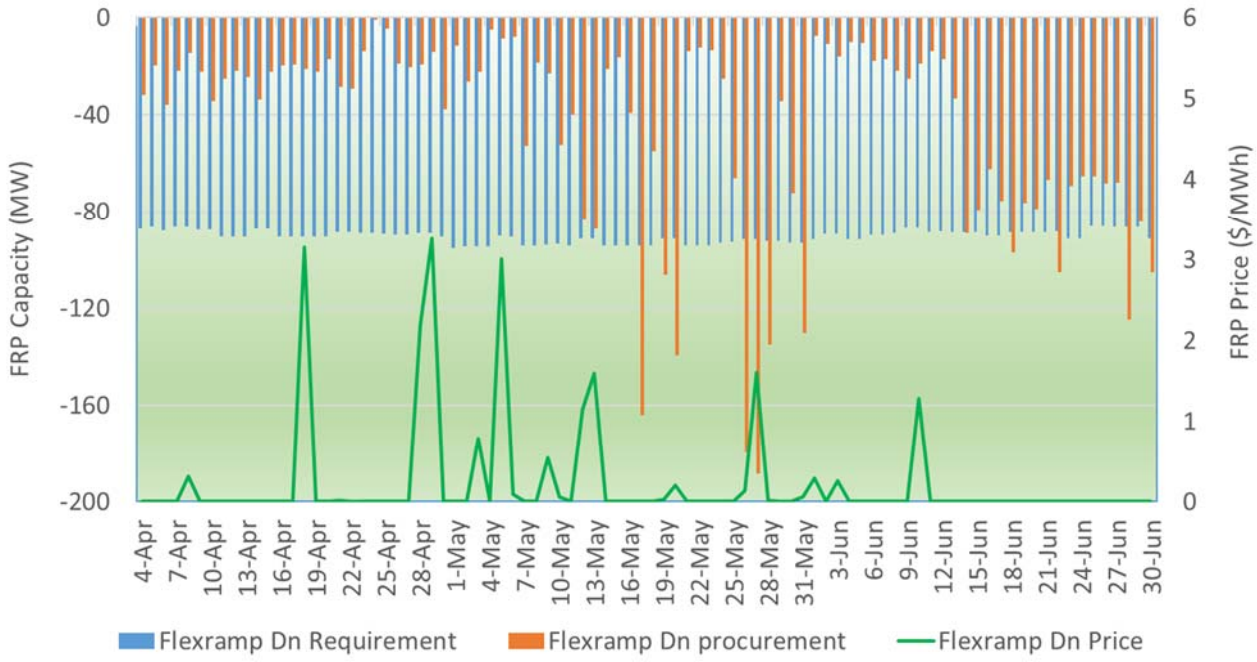


Figure 8: Daily Average Requirement, Procurement, and Price of Downward Flexible Ramping in the FMM in the IPCO BAA



For the majority of the time, the flexible ramping procurement was below the area requirements. Still, with the EIM area binding, the net price in the IPCO BAA may be greater than zero.

E. Impact on Non-EIM Nodes

With the implementation of the EIM with PacifiCorp's BAAs (PAC East and PAC West) with the first trading day on November 1, 2014, there was a price reporting issue for shared locations between the CAISO market and the EIM. These shared locations schedule energy for the CAISO BAA and are located in the EIM system-wide BAA, and have associated mirror resources. In late 2014, the CAISO worked on improving these shared locations' modelling, and reported its progress in the corresponding transitional period reports for the PAC East and PAC West BAAs. Since then there have not been any issues related to these types of locations.

The CAISO identified a software defect in July 2017 that affected these types of locations. The issue incorrectly added the congestion price of EIM transfers into the market price for schedules settled at the intertie locations; this may have affected schedules for imports and exports coming into the CAISO BAA, and not the transactions for EIM entities. The CAISO corrected this issue in March 2018. Currently, there are no issues affecting non-EIM nodes.

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 21st day of August, 2018.

/s/ Grace Clark
Grace Clark