August 13, 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: ER15-2565-__
Independent Assessment by the Department of Market Monitoring
June 2021 Energy Imbalance Market Transition Period Report for Los Angeles Department of Water and Power

Dear Secretary Bose:

The Department of Market Monitoring (DMM) hereby submits its independent assessment on the transition period of Lost Angeles Department of Water and Power (LADWP) during its first six months of participation in the Energy Imbalance Market (EIM) for June 2021, as LADWP joined the EIM on April 1, 2021.

Please contact the undersigned directly with any questions or concerns regarding the foregoing.

Respectfully submitted,

By: *_/s/ Eric Hildebrandt_*

Eric Hildebrandt
Director of Market Monitoring
California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel: (916) 608-7123
Fax: (916) 608-7222
ehildebrandt@caiso.com

California Independent System Operator

California ISO

Report on energy imbalance market issues and performance: Los Angeles Department of Water and Power for June 2021

August 13, 2021

Prepared by: Department of Market Monitoring

Executive summary

Pursuant to the Commission's October 29, 2015 Order on the ISO's energy imbalance market (EIM), the ISO filed a report on July 29, 2021 covering the period from June 1 through June 30, 2021 (June report) for Los Angeles Department of Water and Power (LADWP) in the energy imbalance market.[1] LADWP joined the energy imbalance market on April 1, 2021.

This report provides a review by the Department of Market Monitoring (DMM) of energy imbalance market performance for the LADWP balancing authority area during the period covered in the ISO's June report. This is the third report for the transition period for the LADWP balancing authority area. Key findings in this report include the following:

- Prices in LADWP area tracked similarly prices in the ISO. In the LADWP area during the month, prices averaged $41.82/MWh in the 15-minute market and $40.03/MWh 5-minute market.
- The LADWP balancing authority area did not fail the upward sufficiency test during any interval in June; however, there were 10 intervals where LADWP failed the downward sufficiency test. The LADWP balancing authority failed the upward bid range capacity test during 2 intervals and the downward bid range capacity test during 2 intervals in June.
- The frequency of valid under-supply infeasibilities was lower in June, occurring during 1 intervals in the 5-minute market. There were no valid over-supply infeasibilities for the LADWP area during the month.
- On average for the month, transition period pricing increased 15-minute market prices in the LADWP area by $0.06/MWh, while it decreased 5-minute market prices by $0.11/MWh.

Section 1 of this report provides a description of prices and power balance constraint relaxations and section 2 discusses the flexible ramping sufficiency and bid range capacity tests.

[1] The ISO's June 2021 Report was filed at FERC and posted on the ISO website on July 29, 2021: http://www.caiso.com/Documents/Jul29-2021-EIM-TransitionPeriodReport-LosAngelesDepartment-Water-Power-Jun2021-ER15-2565.pdf

1 Energy imbalance market prices

Figure 1.1 and Figure 1.2 show hourly average 15-minute and 5-minute prices during June for LADWP compared with prices in the ISO at the Southern California Edison (SCE) default load aggregation point.

Prices in Los Angeles Department of Water and Power area tracked similarly prices at the Southern California Edison (SCE) default aggregation point within the ISO. Separation between the areas occurred primarily during peak net load hours. In the LADWP area during the month, prices averaged $41.82/MWh in the 15-minute market and $40.03/MWh 5-minute market.

Figure 1.1 Average hourly 15-minute price (June 2021)

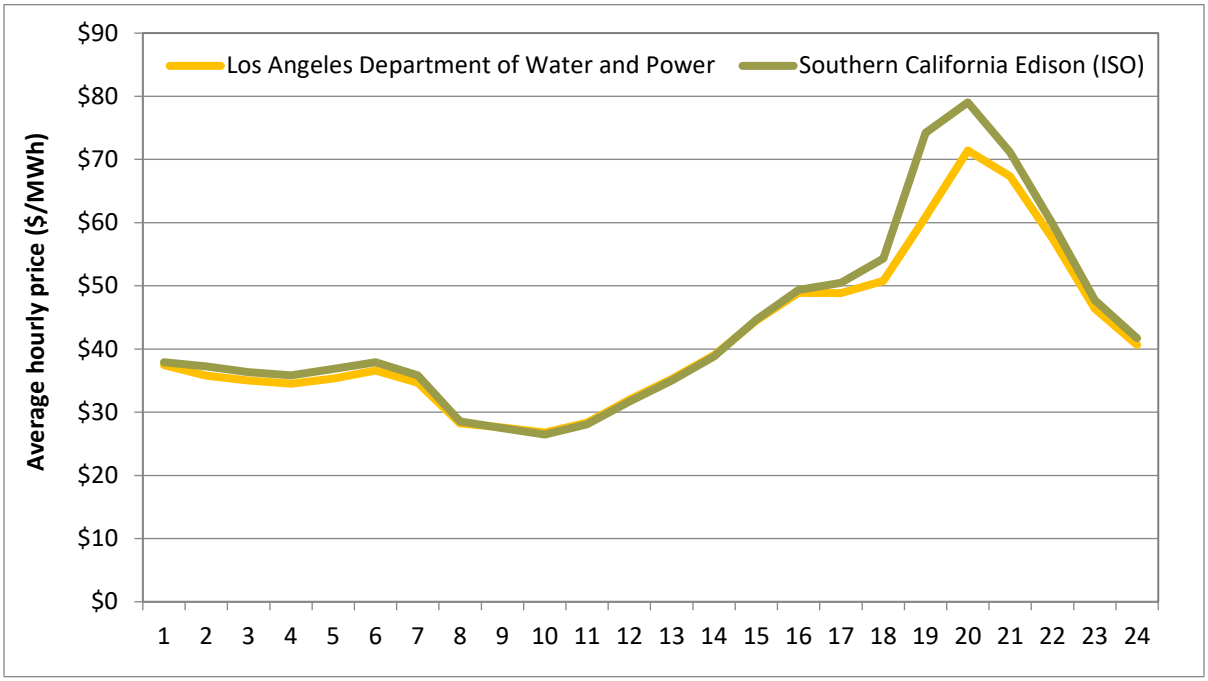
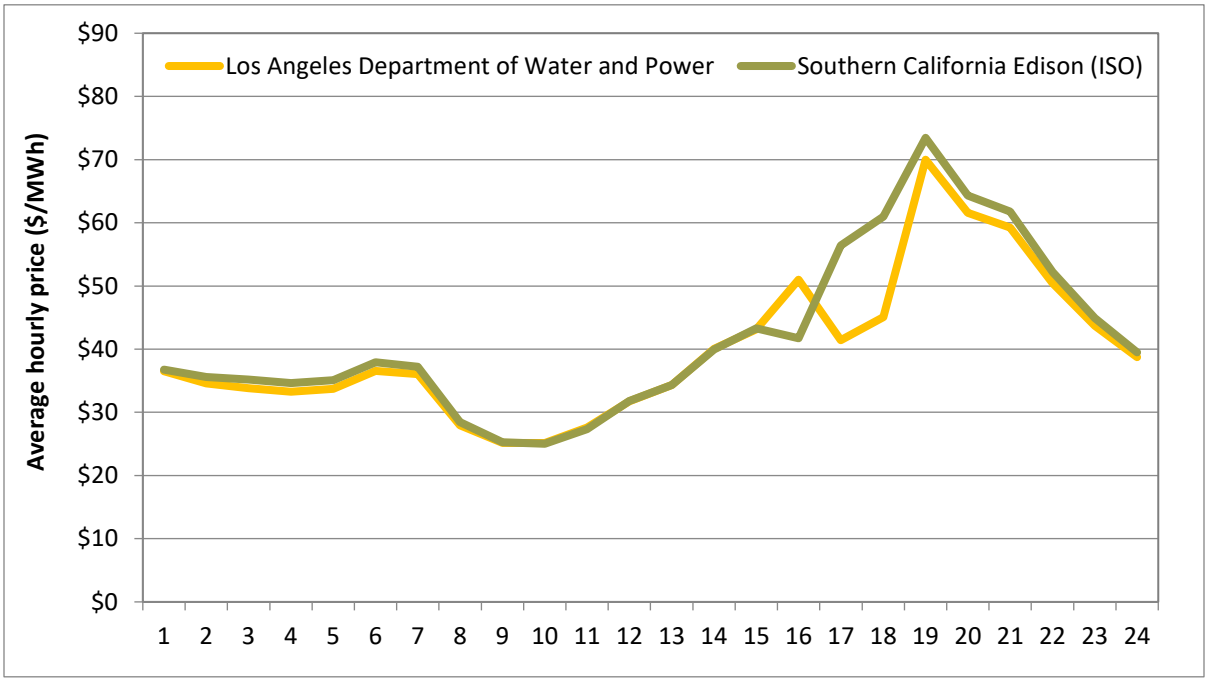


Figure 1.2 Average hourly 5-minute price (June 2021)



All power balance constraint relaxations that occurred in May were subject to the six-month transition period pricing that expires on October 1, 2021. The transition period pricing mechanism sets prices at the highest cost supply bid dispatched to meet demand rather than at the $2,000/MWh penalty parameter while relaxing the constraint for shortages, or the -$155/MWh penalty parameter while relaxing the constraint for excess energy.[2] [3] Power balance constraint relaxations can be grouped in the following categories:

- **Valid under-supply infeasibility** (power balance constraint shortage). These occurred when the power balance constraint was relaxed because load exceeded available generation. The ISO validated that ISO software was working appropriately during these instances.
- **Valid over-supply infeasibility** (power balance constraint excess). These occurred when the power balance constraint was relaxed because generation exceeded load. The ISO validated that ISO software was working appropriately during these instances.
- **Load conformance limiter would have resolved infeasibility.** The load conformance limiter automatically reduces the size of an operator load adjustment and sets prices at the last economic

[2] When transition period pricing provisions are triggered by relaxation of the power balance constraint, any shadow price associated with the flexible ramping product is set to $0/MWh to allow the market software to use the last economic bid dispatched.

[3] The penalty parameter while relaxing the constraint for shortages rose from $1,000/MWh to $2,000/MWh, effective March 21, 2021, per FERC Order 831. https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Operations

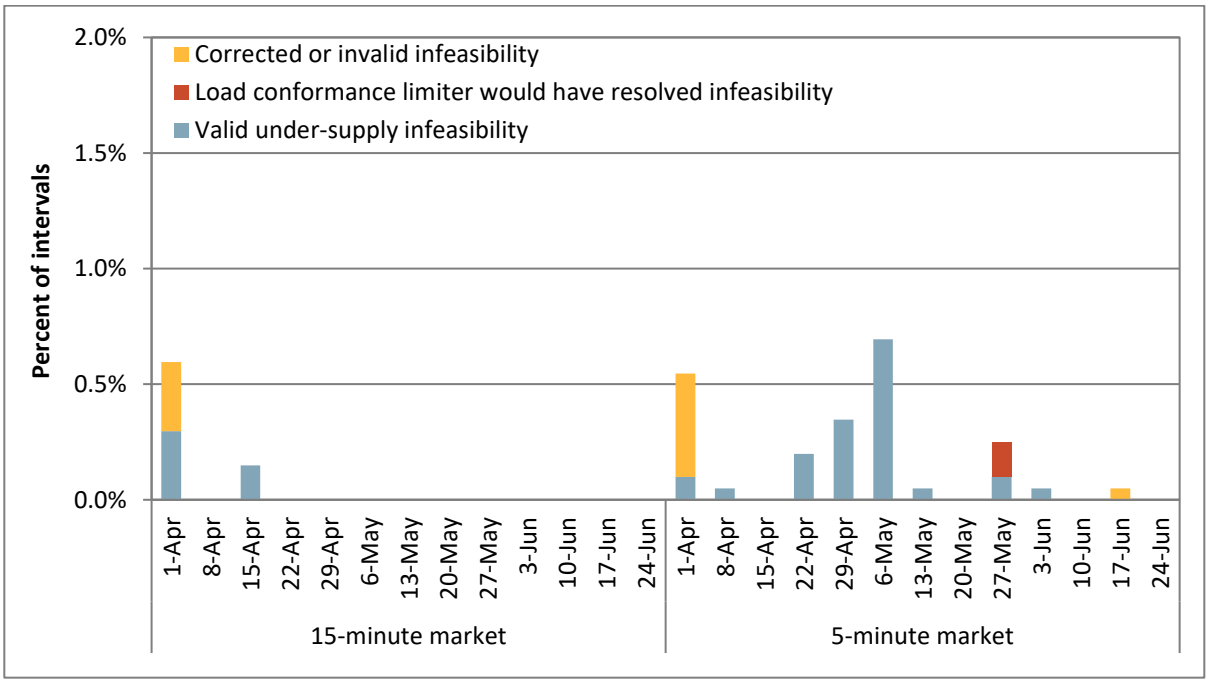
signal when the conditions for the limiter are met.[4] During the transition period, the limiter does not change price outcomes because transition period pricing is applied during these intervals instead. However, in these cases, the load conformance limiter *would have resolved the infeasibility* had transition period pricing not been in effect.

- **Correctable infeasibility.** These occurred when the ISO software relaxed the power balance constraint concurrent with a software error or data error that resulted in a price correction or would have triggered a price correction if transition period pricing were not active.[5]

Figure 1.3 and Figure 1.4 show the weekly frequency of under-supply and over-supply infeasibilities, respectively, in the 15-minute and 5-minute markets. As shown in Figure 1.3, the frequency of valid under-supply infeasibilities was lower in June, occurring during 1 interval in the 5-minute market. As shown in Figure 1.4, there was one valid over-supply infeasibilities for the LADWP area during June.

There were no intervals in June when the load conformance limiter would have triggered for the LADWP balancing authority area had transition period pricing not been in effect.

Figure 1.3 Frequency of under-supply power balance infeasibilities by week
Los Angeles Department of Water and Power



[4] The ISO implemented an enhancement to the load conformance limiter, effective February 27, 2019. With the enhancement, the load conformance limiter triggers by a measure based on the change in load adjustment from one interval to the next, rather than the total level of load adjustment.

[5] Section 35 of the ISO tariff provides the ISO authority to correct prices if it detects an invalid market solution or issues due to a data input failure, occurrence of hardware or software failure, or a result that is inconsistent with the ISO tariff. During erroneous intervals, the ISO determined that prices resulting under transition period pricing were equivalent to prices that would result from a price correction, so no further price adjustment was appropriate. http://www.caiso.com/Documents/Section35_MarketValidationAndPriceCorrection_May1_2014.pdf.

Figure 1.4 Frequency of over-supply power balance infeasibilities by week Los Angeles Department of Water and Power

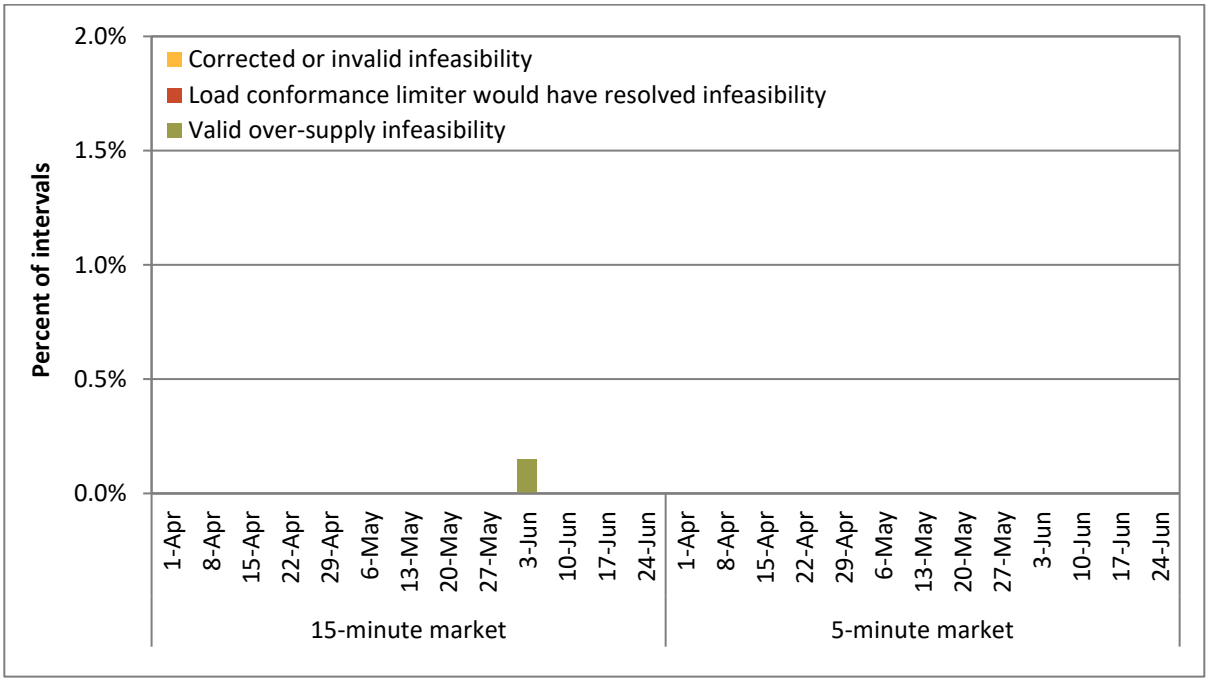


Figure 1.5 and Figure 1.6 show the average weekly prices in the 15-minute and 5-minute market *with* and *without* the special transition period pricing provisions applied to mitigate prices in the LADWP area during June.[6] On average for the month, transition period pricing increased 15-minute prices by $0.06/MWh, while it decreased 5-minute market prices in the LADWP area by $0.11/MWh.

[6] A detailed description of the methodology used to calculate these counterfactual prices that would result without transition period pricing was provided on p. 7 of the January 2017 report for Arizona Public Service from DMM: http://www.caiso.com/Documents/May1_2017_Department_MarketMonitoring_EIMTransitionPeriodReport_ArizonaPublicService_Jan2017_ER15-2565.pdf

Figure 1.5 Average prices by week – Los Angeles Department of Water and Power (LADWP) (15-minute market)

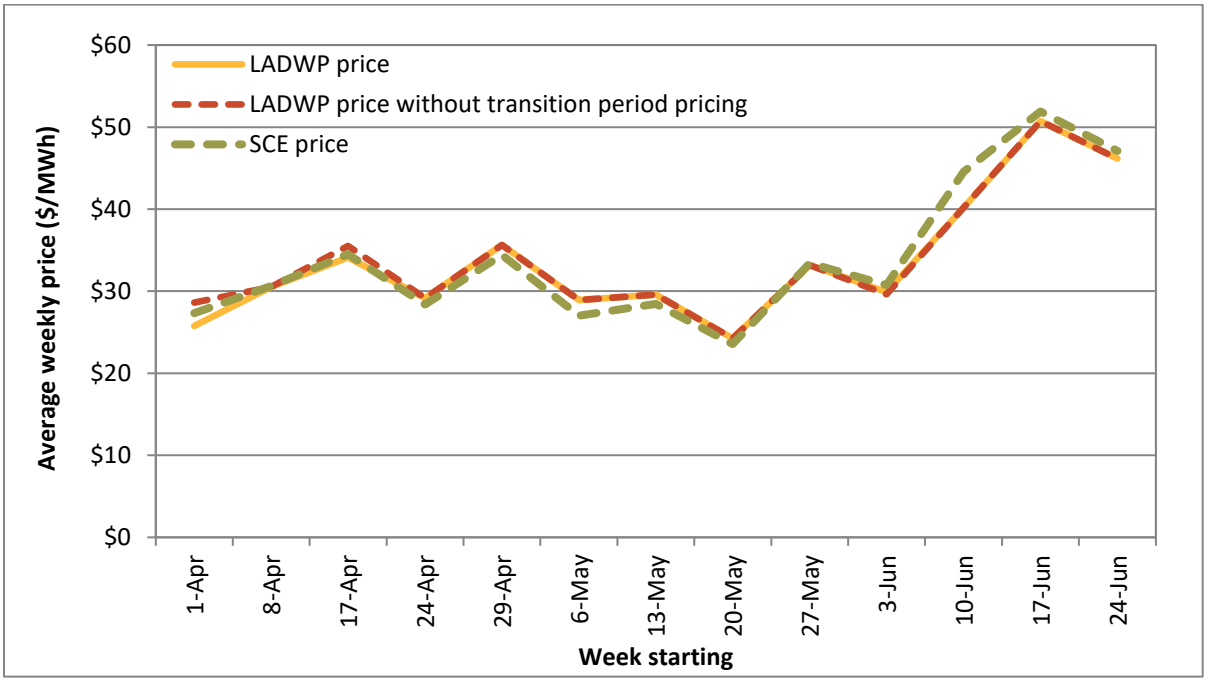
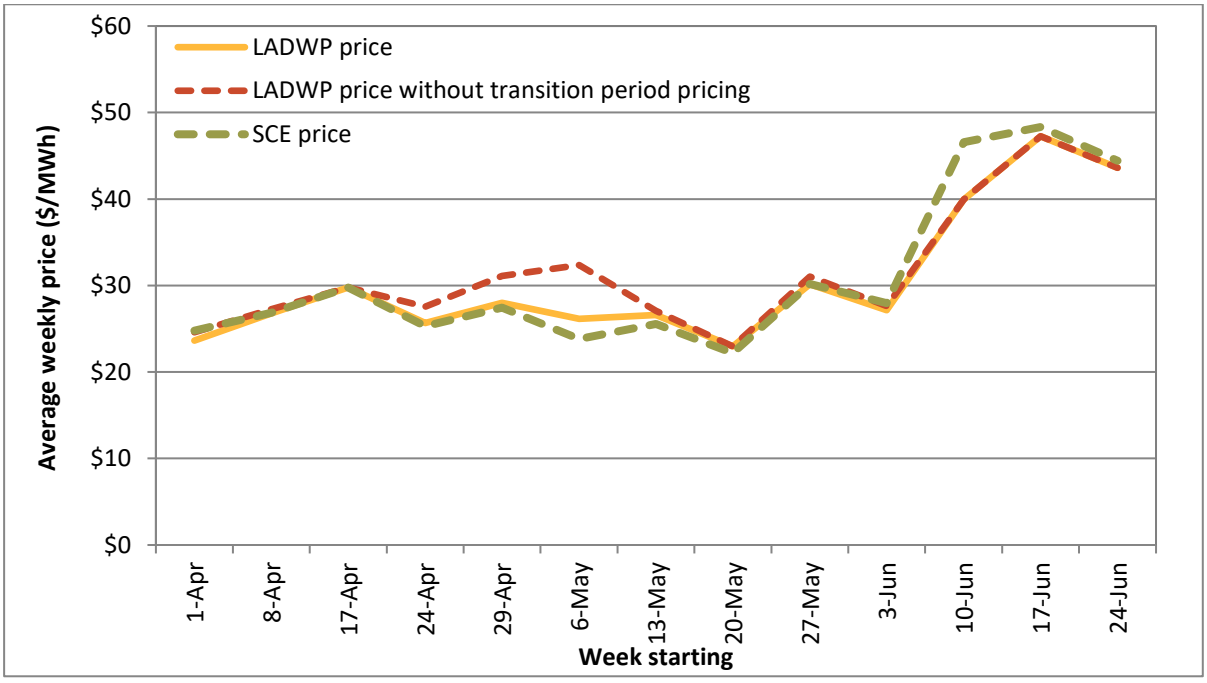


Figure 1.6 Average prices by week – Los Angeles Department of Water and Power (LADWP) (5-minute market)



2 Flexible ramping sufficiency and bid range capacity tests

As part of the energy imbalance market, each area including the California ISO is subject to a resource sufficiency evaluation. The evaluation is performed prior to each hour to ensure that generation in each area is sufficient without relying on transfers from other balancing areas. The evaluation includes two tests:

- **The bid range capacity test (capacity test)** requires that each area provide incremental bid-in capacity to meet the imbalance between load, intertie, and generation base schedules.
- **The flexible ramping sufficiency test (sufficiency test)** requires that each balancing area has enough ramping flexibility over an hour to meet the forecasted change in demand as well as uncertainty.

If an area fails either the bid range capacity test or flexible ramping sufficiency test, energy imbalance market transfers into that area cannot be increased.[7] Failures of the capacity and sufficiency test are important because these outcomes limit transfer capability. Constraining transfer capability may affect the efficiency of the EIM by limiting transfers into and out of a balancing area that could potentially provide benefits to other balancing areas. Reduced transfer capability also affects the ability for an area to balance load, since there is less availability to import-from or export-to neighboring areas. This can result in local prices being set at power balance constraint penalty parameters.

The LADWP balancing authority area did not fail the upward sufficiency test during any interval in June; however, there were 10 intervals where LADWP failed the downward sufficiency test. The LADWP balancing authority failed the upward bid range capacity test during 2 intervals and the downward bid range capacity test during 2 intervals in June.

[7] If an area fails either test in the upward direction, net EIM imports (negative) during the hour cannot exceed the lower of either the base transfer or optimal transfer from the last 15-minute interval prior to the hour.

CERTIFICATE OF SERVICE

I certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, 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 13th day of August, 2021.

/s/ Jennifer Shirk