February 10, 2017

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-___
November 2016 Informational Report
Energy Imbalance Market – Transition Period Report – Puget Sound Energy

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its report on the transition period of Puget Sound Energy during its first six months of participation in the Energy Imbalance Market (EIM) for November 2016. The Commission also directed the Department of Market Monitoring to submit an independent assessment of the CAISO's report, which the CAISO 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 reporting period.

Please contact the undersigned with any questions.

Respectfully submitted

By: *s/ Anna A. McKenna*

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Energy Imbalance Market
November 1 – November 30, 2016

Transition Period Report
Puget Sound Energy Entity

January 19, 2017

California ISO Department of Market Quality and Renewable Integration

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] Puget Sound Energy (PSE) entered the EIM on October 1, 2016, and the transition period will apply to their balancing authority area until April 1, 2017.

During the six-month transition period, the pricing of energy in the balancing authority area of a new EIM entity 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 balancing authority area between $0 and $0.01, but only when the power balance or transmission constraints are relaxed in the relevant EIM balancing authority area. 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 PSE 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 so soon after the end of the applicable month, depending on the market performance each month, and because of the need to coordinate with the EIM entity, the CAISO has not been able to submit the report at regular monthly intervals for the months of November and December. The CAISO expects to catch up its reporting for the months of December and January and then 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. In addition, because the DMM must review the CAISO's report before completing its own independent assessment, the DMM will file its report approximately 15 business days after the CAISO files its report.

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

II. Highlights

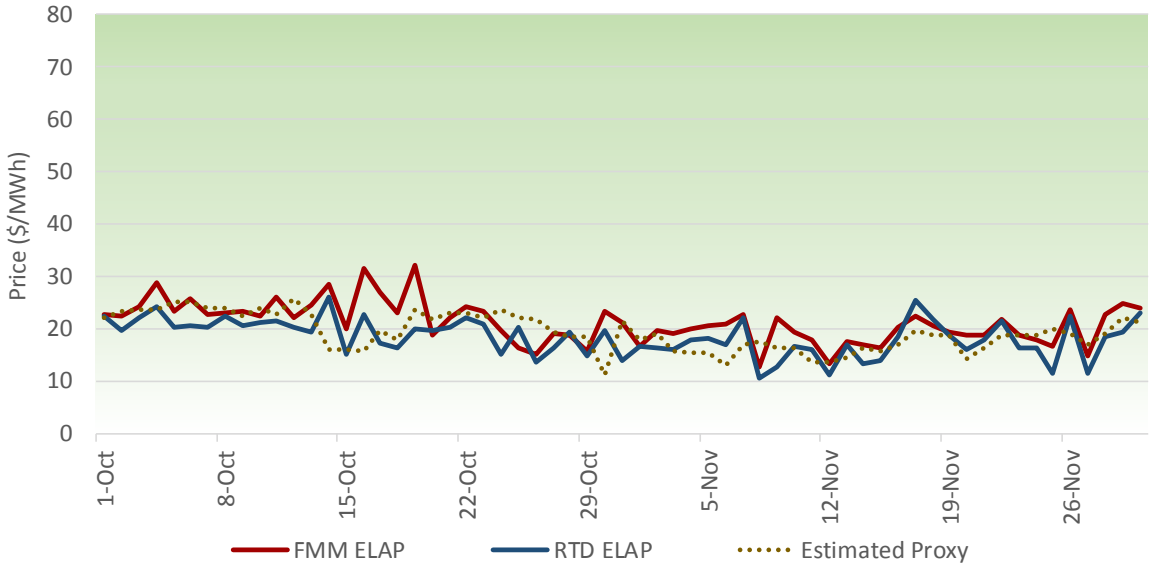
- Average prices in the PSE balancing authority area were $19.3 and $17.1/MWh in the Fifteen-Minute Market (FMM) and Real-Time Dispatch (RTD), respectively.
- Power balance constraint infeasibilities for under-supply conditions in the PSE balancing authority area were 0.03% and 0.1% of the total intervals in the FMM and RTD, respectively.
- PSE passed over 97.91 percent of its balancing tests during the month of November.
- PSE passed over 99.62 percent of its flexible ramping sufficiency tests during the month of November.
- With the low frequency of power balance constraint infeasibilities experienced in the month of November in the PSE balancing authority area, the transitional period pricing had little impact on the EIM prices.
- PSE observed flexible ramp product relaxations in 1.56 percent of the intervals for upward capacity in the FMM.

III. Report

a. Prices

Figure 1 shows that average prices in the PSE EIM Load Aggregation Point (PSE ELAP)[2] were $19.3/MWh in the FMM and $17.1/MWh in the RTD in November, lower than the $22.89 and $19.56 prices observed in October Prices in the PSE balancing authority area were stable during the first two months of operation and tracked closely between markets.

Figure 1: Daily average prices for the PSE balancing authority area.



Under the CAISO's price correction authority in Section 35 of its tariff, the CAISO may correct prices posted on its 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 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 of the CAISO tariff; and (3) any prices the CAISO

[2] The ELAP provides aggregate prices that are representative of pricing in the overall PSE balancing authority area.

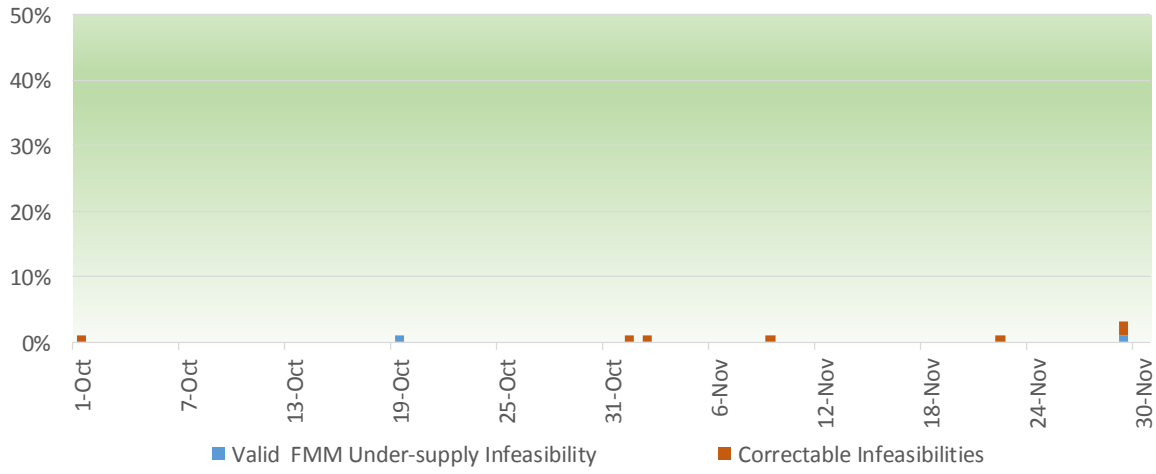
[3] Figure 1 also provides an estimated proxy price, which for PSE is the Mid C hub price taken from the Intercontinental Exchange (ICE).

adjusted pursuant to transition period pricing reflected in Section 29.27 of the CAISO tariff. For the month of November, there were 6 instances in the FMM and 20 instances in the RTD that required a price correction for PSE balancing authority area prices under the CAISO's price correction authority provided in Section 35 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 PSE balancing authority area for the FMM and RTD, respectively. The under-supply infeasibilities are grouped into "valid" and "correctable" instances. Prices for the intervals that fell in the "valid" category are instances with under-supply infeasibilities not in error and that are subject to the transitional period pricing, whereas those that fell in the "correctable" category were corrected 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 in the PSE balancing authority area.



In the PSE balancing authority area, there was only 1 (0.03% of the time) valid under-supply infeasibility in the FMM and 9 (0.1% of the time) valid under-supply infeasibilities in the RTD. The reasons for these infeasibilities were:

i) November 29, FMM. Manual dispatch of two units in the PSE balancing authority area were dispatched in addition to the derate of another resource.

ii) November 15, RTD. Resource deviation in addition to the derate of a resource carrying base schedules in the PSE balancing authority area.

iii) November 16, RTD. Deviation of renewable resources in the PSE balancing authority area.

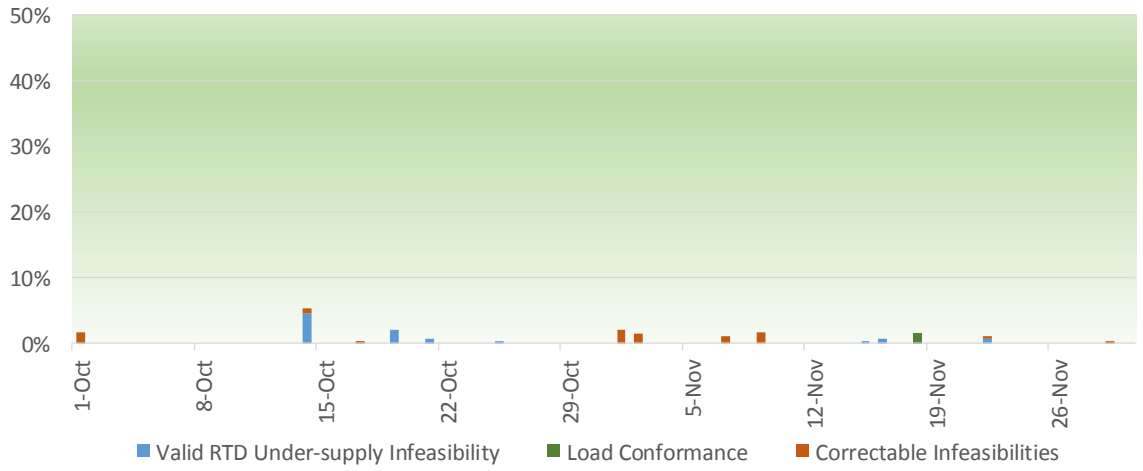
iv) November 18, RTD. Load changes and net schedule interchange coming lower than base schedules. The load conformance limiter covered these instances; meaning that if the price discovery were not in effect, the load bias limiter would have been triggered.

v) November 20, RTD. Resource deviation in the PSE balancing authority area.

vi) November 22, RTD. Load forecast increase with respect to base schedule, and lost capacity in one resource.

There were four valid RTD infeasibilities in the PSE balancing authority area that coincided with the use of load conformance. The CAISO uses a load conformance limiter in the CAISO balancing authority area and in each of the EIM balancing authority areas to prevent over-adjustments through use of the load conformance, and thus prevent an artificial infeasibility – that is, one that does not reflect actual scarcity. When the quantity of the infeasibility is less than the operator's adjustment, and the infeasibility is in the same direction as the adjustment, the load conformance limiter automatically limits the operator's adjustments to at or below the infeasibility. In the pricing run, the limiter will remove an infeasibility that is less than or equal to the operator's adjustment, *i.e.*, the load conformance. The limiter will not apply to infeasibilities greater than or in the opposite direction of the load conformance. Use of the load conformance limiter in the CAISO balancing authority area has avoided invalid constraints that arise through operational adjustments that do not reflect supply issues. During the transition period, the CAISO does not apply the load conformance limiter because it applies the transition period pricing, which obviates the need for the load conformance limiter. Therefore, Figure 3 illustrates the infeasibilities that would have been avoided by the load conformance limiter if it were in effect instead of the transition period pricing during the transition period in the PSE balancing authority area.

Figure 3: Frequency of RTD under-supply power balance in feasibilities in the PSE balancing authority area.



Tables 1 and 2 list the FMM and RTD intervals with infeasibilities observed in November, including the amount of load conformance to reflect the instances in which the load conformance limiter would have triggered and offset the infeasibility.

Table 1: List of valid FMM under-supply infeasibilities in the PSE balancing authority area.

Trade Date	Trade Hour	Trade Interval	MW Infeasibility	Load Conformance
29-Nov-16	9	1	1.18	0

Table 2: List of valid RTD under-supply infeasibilities in the PSE balancing authority area.

Trade Date	Trade Hour	Trade Interval	MW Under-supply	Load Conformance
15-Nov-16	20	8	12.5	0
16-Nov-16	12	8	8.2	0
16-Nov-16	12	9	6.4	0
18-Nov-16	7	8	17.3	130
18-Nov-16	7	9	24.4	130
18-Nov-16	7	10	21.7	130
18-Nov-16	7	11	11.5	130
22-Nov-16	24	1	3.5	0
22-Nov-16	24	2	2.0	0

c. Balancing and Sufficiency Test Failures

Figure 4 shows the trend of balancing test outcomes for the month of November, which the CAISO performs pursuant to Section 29.34(k) of the CAISO tariff. The PSE balancing authority area passed the balancing test in 97.1 percent of the intervals in November. The frequency of these failures is within the expected performance tolerances for balancing tests.

The CAISO also performs the 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 first two months of operations. The PSE balancing authority area passed the upward sufficiency test in 99.62 percent of the intervals in November; half of the test failures were for upward capacity tests.

Figure 4: Frequency of Balancing test failures in the PSE balancing authority area.

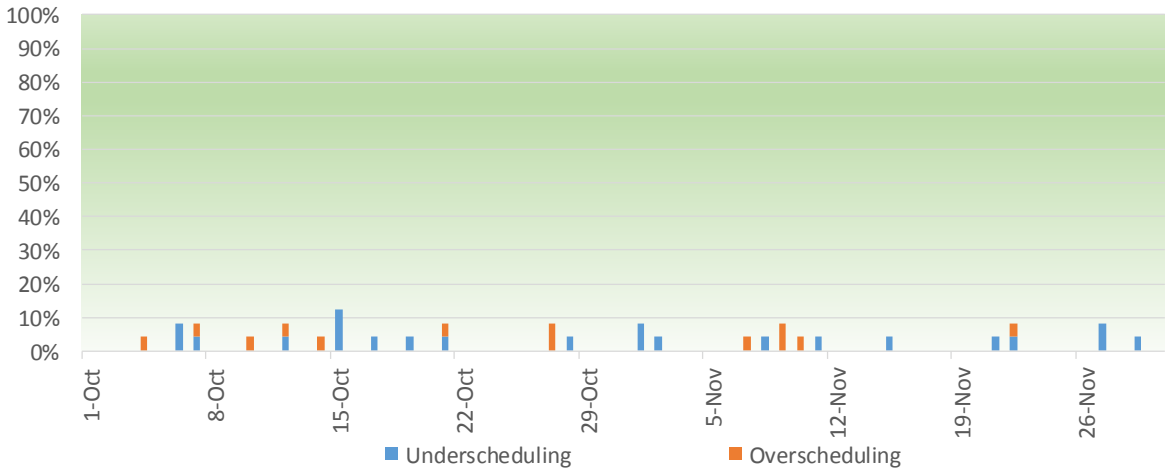
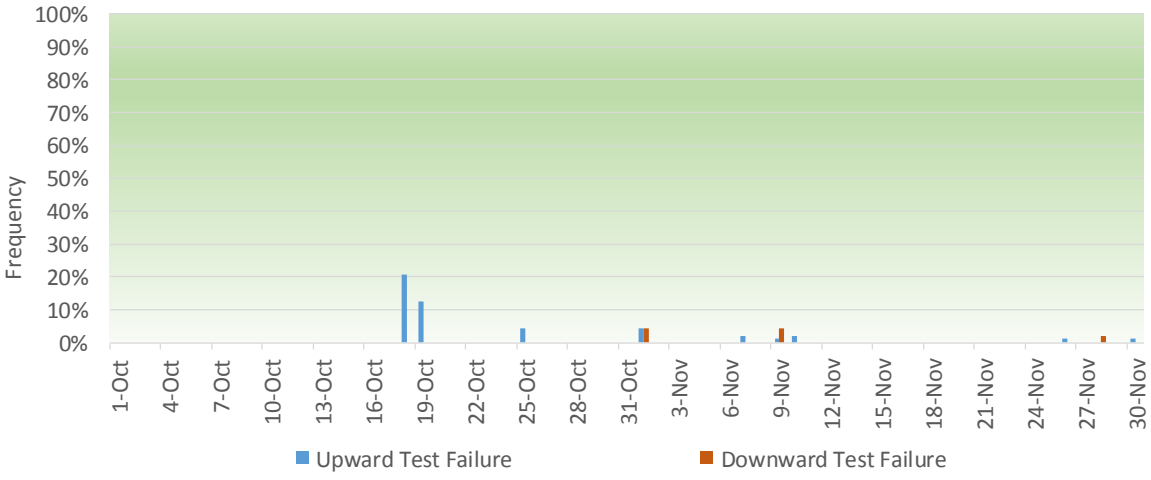


Figure 5: Frequency of flexible ramp sufficiency test failures in the PSE balancing authority area.



d. Flexible Ramping Constraint Infeasibilities

In this section, the CAISO discusses the frequency with which and the reasons why the flexible ramping constraint was binding in the PSE balancing authority area.

During the month of November, the flexible ramping requirement in the PSE balancing authority area was relaxed on a daily average in 1.56 percent and 0.66 percent of the FMM intervals for upward and downward capacity, respectively. This average is estimated by taking the total number of intervals with infeasibility in the month and dividing it by 30 days of the month. With the implementation of the flexible ramp product, the meaning of infeasibility or relaxation for flexible ramp has changed. Generally, the term of relaxation refers to the market outcome where the clearing of the flexible ramp product lies on a point of the price-responsive demand curve for flexible ramp rather than a traditional relaxation of the constraint. These infeasibilities were mainly driven by the economics of the flexible ramping constraint and opportunity cost with respect to energy. Because the CAISO market co-optimizes the procurement of energy and flexible ramping capacity, and given the fact that flexible ramping product also relies on a demand curve, the market clearing optimization may find that based on the overall economics of the system for energy and flexible ramping, that it is more economic to relax the flexible ramping constraint requirement by clearing at a price-responsive segment of the flex demand curve, instead of procuring more flexible ramping at a higher cost.

Figure 6: Frequency of flexible ramp constraint infeasibilities in the PSE balancing authority area.

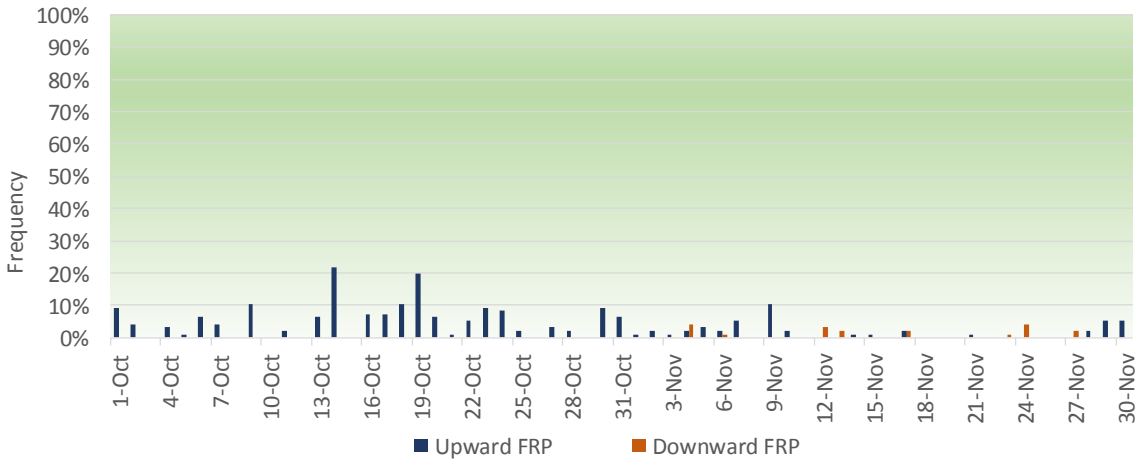
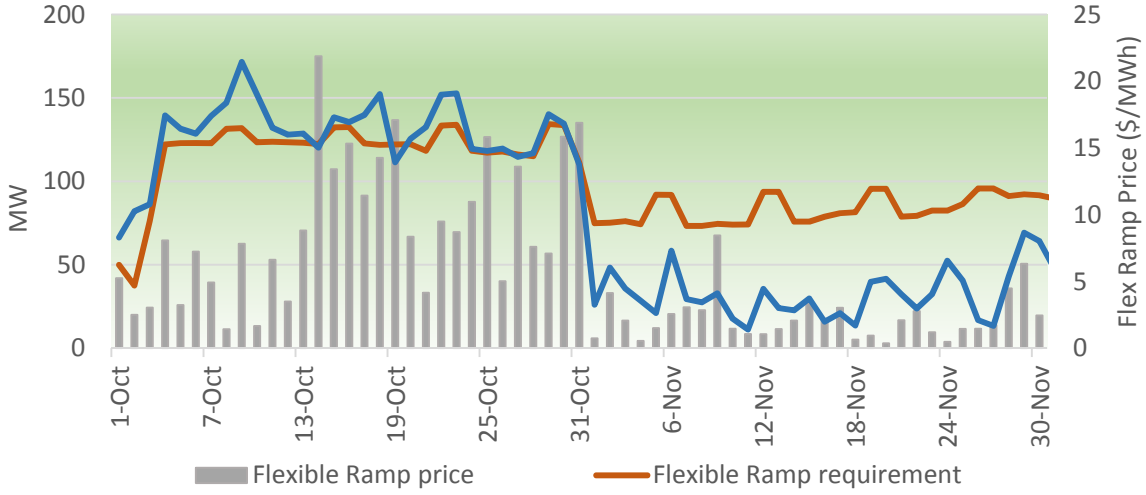


Figure 7 shows the daily average of the flexible ramp constraint requirement and procurement in the FMM. With the implementation of the flexible ramp product

on November 1, 2016, the requirements are calculated based on historical data for uncertainty and offset with any applicable net import/export capability or credit. This effectively reduces the amount of flexible ramp the PSE balancing authority area has to procure and, generally, the EIM system-wide area (which includes all the balancing authority areas in the EIM including the CAISO balancing authority area) will drive the requirements. The market clearing process may result in procuring the PSE balancing authority area capacity towards meeting the overall EIM-system-wide area requirement. This is the main reason why the individual PSE balancing authority area procurement may generally fall below the individual PSE balancing authority area requirement starting on November 1, 2016. In addition, the price trend provided in Figure 7 is the nested price determined by the summation of the shadow price of the individual PSE area plus the shadow price of the EIM system-wide area. On average, the price for upward flexible ramp went from $9 in October down to $2.26 in November.

Figure 7: Average requirement and procurement of flexible ramp in the FMM in the PSE balancing authority area.



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 10th day of February 2017.

/s/ Grace Clark
Grace Clark