

April 1, 2016

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-\_\_\_\_  
February 2016 Informational Report  
Energy Imbalance Market – Transition Period Report – NV Energy**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its report on the transition period of Nevada Energy during its first six months of participation in the Energy Imbalance Market (EIM) for February 2016. The Commission also directed the Department of Market Monitoring to submit an independent assessment, which the CAISO will file in approximately 8 days.

The CAISO will continue filing such reports, consistent with the Commission's order, until June 1, 2016.

Please contact the undersigned with any questions.

Respectfully submitted

**By: /s/ Anna A. McKenna**

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# California ISO

**Energy Imbalance Market**  
**February 1 – February 29, 2016**  
**Transition Period Report - NV Energy**

April 1, 2016

## 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.<sup>1</sup> The provisions were made effective November 1, 2015, as requested. NV Energy entered the EIM on December 1, 2015, and is the first EIM entity to whom the transition period will apply until June 1, 2016.

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 area. This is necessary to allow the market software to determine the marginal energy bid price.

In its application for a transition period, the CAISO committed to prepare and file with the Commission reports during the transition period on the types, frequency, and nature of the issues experienced by the EIM entity. In the October 29 order, the Commission directed the CAISO and the CAISO's Department of Market Monitoring (DMM) to file informational reports, consistent with its previous reporting requirements associated with the waiver of the pricing parameters, at 30-day intervals during the six-month transition period for any new EIM entity. The CAISO provides this report for NV Energy consistent with the Commission's requirements in the October 29 order. The Commission noted that it expected that the first report would be filed 30 days from the commencement of financially binding operations for any new EIM entity. Because of the interceding holiday period with the commencement of the new EIM entity, and because the complete set of data is not available so soon after the end of the applicable month, the CAISO could not submit the report at that time. The CAISO will continue to file the monthly reports but expects that it will do so approximately 15 days after the start of each month in order to provide the prior full month's data. In addition, because the DMM must review the ISO's report before completing its

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<sup>1</sup> *California Indep. Sys. Operator Corp.*, 153 FERC ¶ 61,104 (2015) (October 29 order).

own, the DMM will file its report approximately eight days after the ISO files its report.

## II. Highlights

- In the month of February, prices in NV Energy decreased to an average of \$19.25/MWh and \$16.1/MWh, for the fifteen-minute market (FMM) and real-time dispatch (RTD), respectively.
- In its third month of EIM operations, NV Energy passed the 1) hourly balancing test more than 98 percent of the time and 2) the flexible ramping test one hundred percent of the time.
- There were no intervals of the FMM for the NVE Energy BAA in which the power balance constraint was relaxed. In the RTD, there were two such intervals (or 0.02 percent of the time).

## III. Report

### a. Prices

Figures 1 through 3 show that on average, prices in the NV Energy EIM Load Aggregation Point (NV ELAP)<sup>2</sup> were stable and on average \$19.25/MWh and \$16.1/MWh in the FMM and RTD markets, respectively. These represent sizeable decreases with respect to the \$25.8/MWh and \$25.4/MWh averages observed in January.

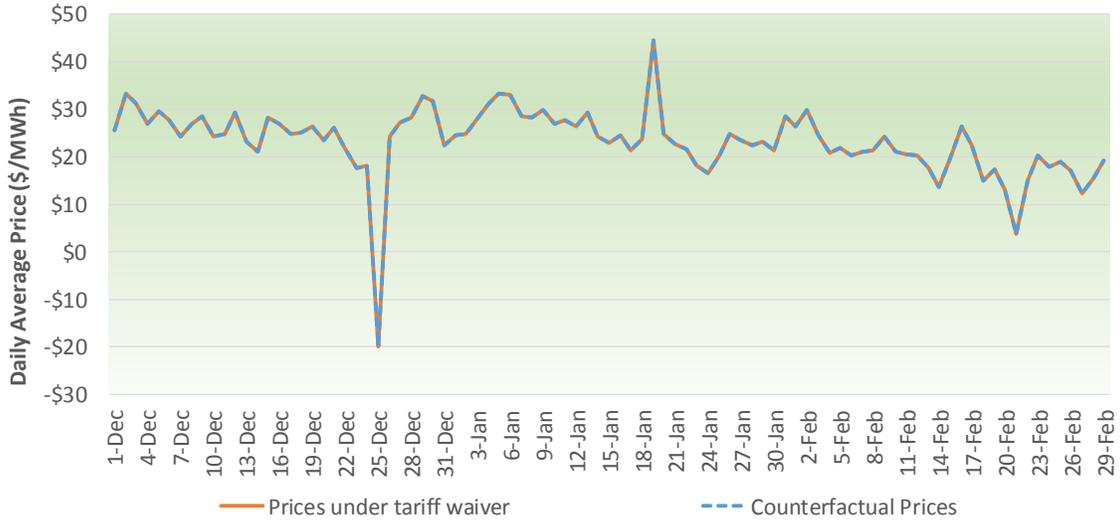
Under the CAISO's price correction authority in section 35 of its tariff, the CAISO may correct prices posted on its OASIS if it finds (1) that the prices were the product of an invalid market solution; or (2) the market solution produced an invalid price due to data input failures, hardware or software failures; or (3) a result that is inconsistent with the CAISO Tariff. The prices presented in Figures 1 through 3 include all prices produced by the CAISO consistent with its tariff requirements. 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; and 3) any prices the CAISO would have

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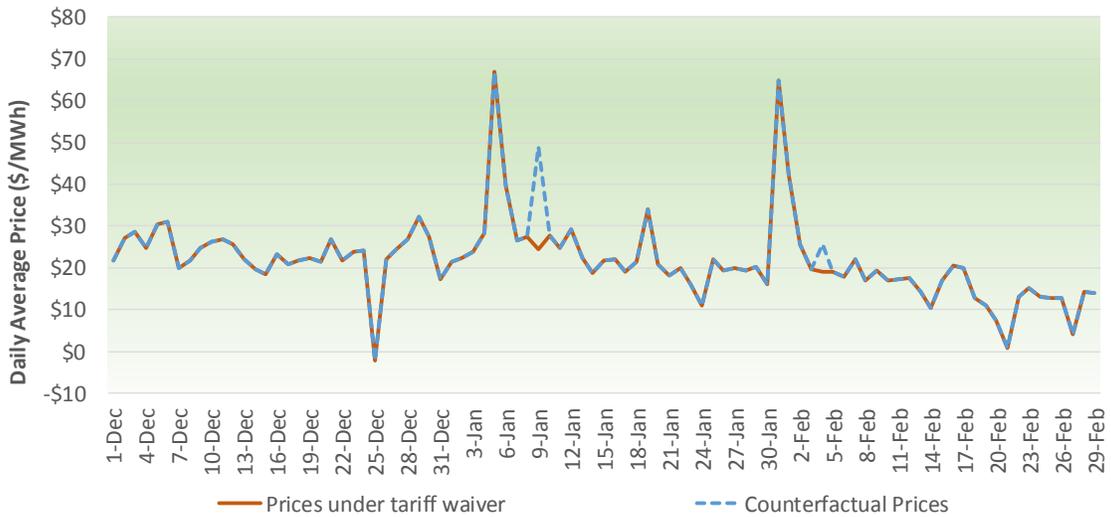
<sup>2</sup> The ELAP provides aggregate prices that are representative of pricing in the overall area of NV Energy.

adjusted pursuant to transition period pricing reflected in section 29.27. For the month of February, there were no instances of intervals with power balance constraint relaxations that required any price corrections.

**Figure 1: Daily average price for NV Energy ELAP – Fifteen-minute market**



**Figure 2: Daily average price for NV Energy ELAP – Five-minute market**

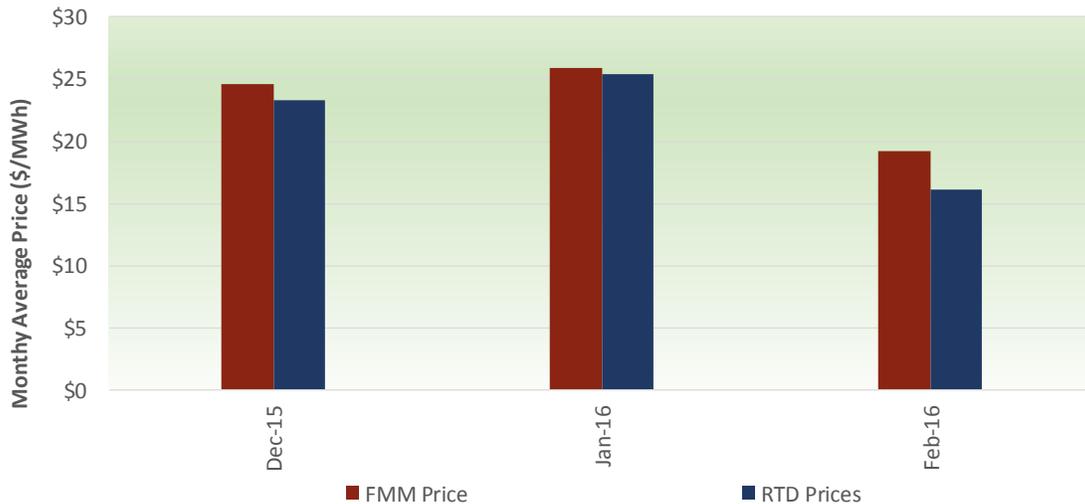


The 5-minute prices obtained under transition period pricing are represented with lines in red while the prices the NV area would have

experienced without the transition period pricing are represented with dotted lines in blue.<sup>3</sup>

In the month of February 2016, the power balance constraint was relaxed in only two 5-minute intervals. Consequently, prices under the tariff waiver and those estimated as counterfactual prices without the transition period pricing were essentially the same for most of the intervals. The two intervals in which transition period pricing applied occurred on February 4. In those intervals, prices would have been \$6.7/MWh higher than the price made effective under the authority of the transition period pricing (see Figure 2). On this day, there were two consecutive RTD infeasibilities in hour ending 20 when a resource in NV Energy area tripped offline and led to the loss of over 400 MWs of capacity.

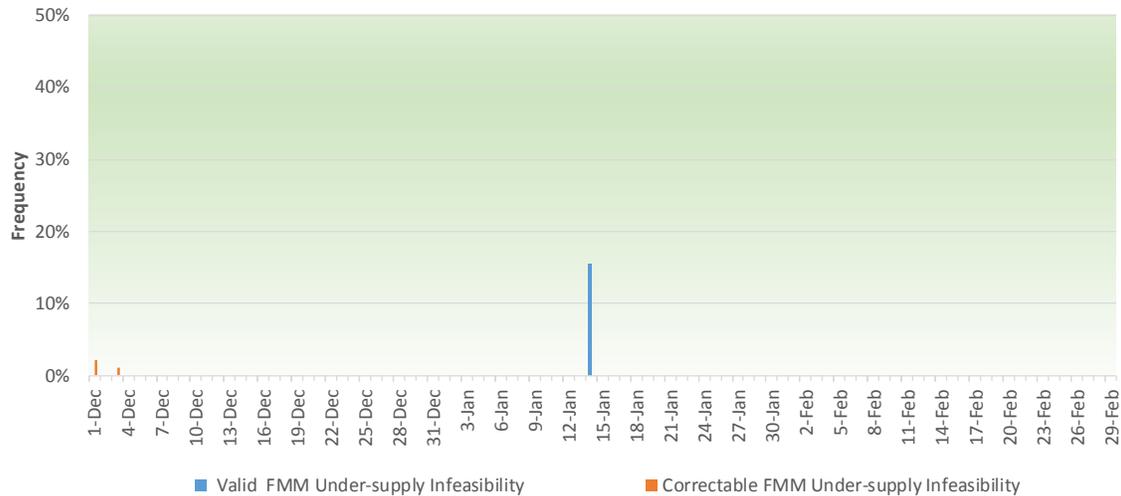
**Figure 3: Monthly average prices for NV Energy ELAP**



**b. Frequency of Power Balance Constraint Infeasibilities**

Figures 4 and 5 show the frequency of intervals in which the power balance constraint was relaxed for under-supply conditions in the NV Energy area for the FMM and RTD markets, respectively.

<sup>3</sup> In Docket ER15-402, the ISO reported on prices based on the price discovery mechanism in effect during the term of the Commission’s waiver granted in that docket and the prices as they would be if the waiver was not in effect, i.e., what prices would have been had they been on the penalty prices in the ISO tariff. Because pricing under the waiver pricing is based on the last economic bid price signal, these prices are a proxy of what the prices would have been absent the seven category of learning curve type issues experienced in that market. The difference between the counterfactual pricing and the price in effect during the term of the reports in that docket illustrated the market impact of the waiver pricing.

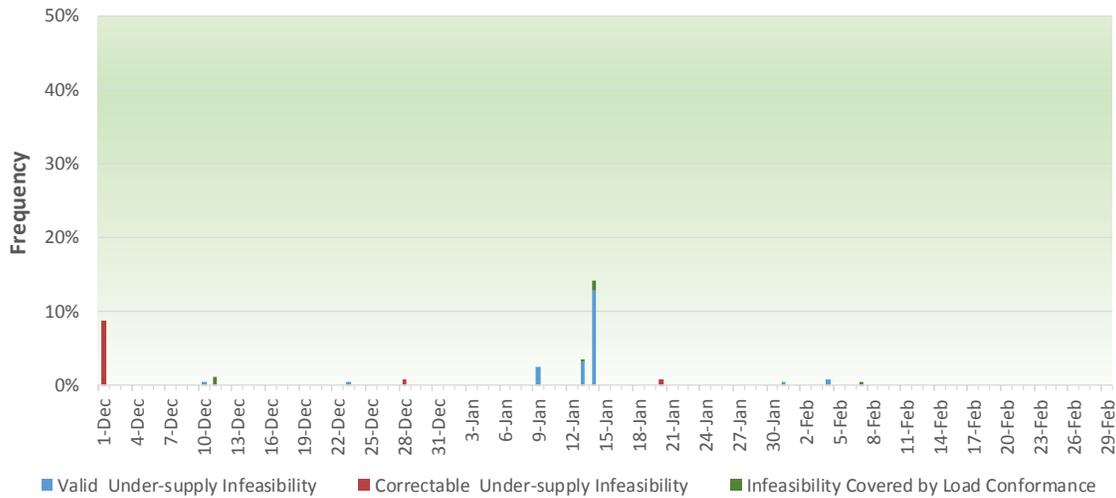
**Figure 4: Frequency of fifteen-minute undersupply power balance in feasibilities.**

In the month of February, there were no intervals in the FMM, which required relaxation of the power balance constraint, while three RTD intervals observed power balance constraint infeasibility. As described above, two infeasibilities occurred on February 4 when a resource tripped offline in the NEV Energy area and this resulted in the loss of over 400 MW of capacity. That infeasibilities as a result of the unit trip occurred in only two 5-minute intervals demonstrates both operator competency and a well-functioning market that was able to quickly resolve a resource loss through effective market communications and 5-minute dispatch.

A third infeasibility occurred on February 7, which coincided with load conformance used appropriately to adjust for a forecasting error. The CAISO uses a load conformance limiter in the CAISO balancing authority area to prevent such an over-adjustment 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 feasibility. 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 operations rather than because of real supply issues. For the month of

February, there was one interval in which transition pricing applied that otherwise would have triggered the load conformance limiter.

**Figure 5: Frequency of 5-minute undersupply power balance in feasibilities.**



There were no power balance constraint infeasibilities in the fifteen-minute market. Table 1 lists the three intervals with infeasibilities observed in the 5-minute markets.

**Table 1: List of valid five-minute infeasibilities**

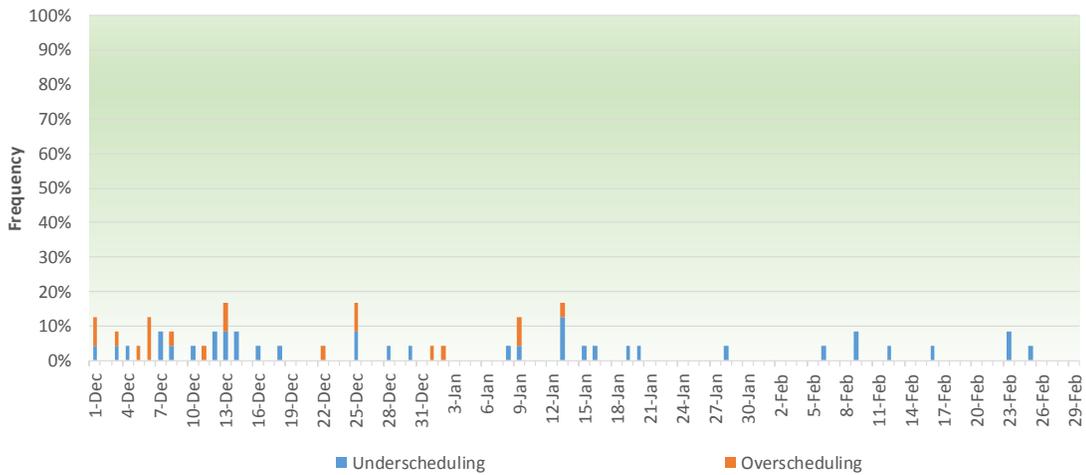
Trade date	Trade Hour	Trade Interval	MW Infeasibility	Load Conformance
4-Feb-16	20	2	56.68	-200
4-Feb-16	20	3	18.54	-200
7-Feb-16	21	3	62.42	100

**c. Balancing and Sufficiency Test Failures**

Figure 6 shows the trend of balancing test failures for the month of February, which the CAISO performs pursuant to Section 29.34 (k) of the CAISO

Tariff. NV Energy passed the balancing test 98.85 percent of the time in February, an improvement with respect to the 97.9 percent of the hours in January. The 1.14 percent of the hourly intervals in which it did not pass the balancing test reflects under-scheduling – a normal incidence of the forecasting and balancing process – at a frequency that is well within expected performance tolerances.

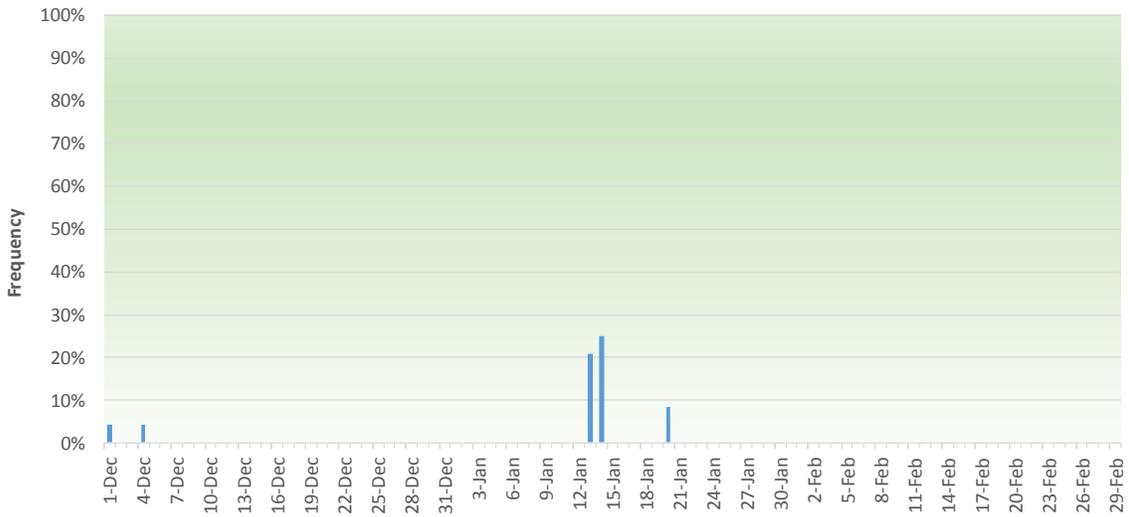
**Figure 6: Frequency of Balancing test failures for NV Energy area.**



The CAISO also performs the ramping sufficiency test as specified in section 29.34(m) of the CAISO tariff. NV Energy passed one hundred percent of the intervals in February.

Figure 7 shows the trend of the test failures for flexible ramping for the first 3 months of operations.

**Figure 7: Frequency of flexible ramp sufficiency test failures in NV Energy 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 NV Energy balancing authority area.

During the month of February, the flexible ramping constraint in the NV Energy EIM area was infeasible, on a daily average, in 2.8 percent of the FMM intervals, a modest increase from the 2.5 percent of January. As in prior months, these infeasibilities are mainly driven by the economics of flex ramp and its opportunity cost. Because the market co-optimizes the procurement of energy and flexible ramp capacity, resources in the NV Energy area may be incrementally dispatched to provide economic transfers to the CAISO area rather than to provide flexible ramping capacity for the NV Energy area. Consequently, these economics sometimes cause flexible ramping scarcity that causes the constraint to bind in the NV Energy BAA. This circumstance is not unusual. There were no unusual circumstances in February driving the small increase in the relaxation of this constraint.

**Figure 8: Frequency of flexible ramp constraint infeasibilities.**

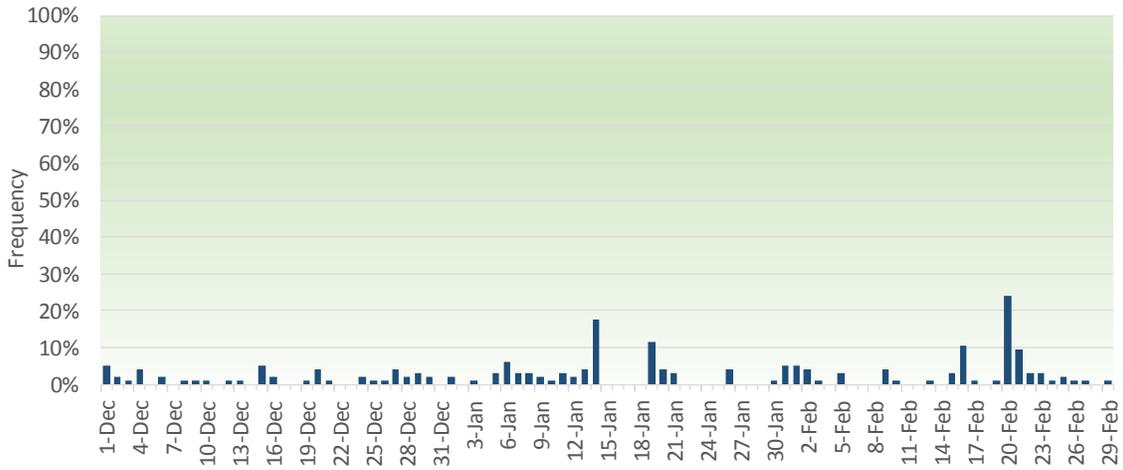
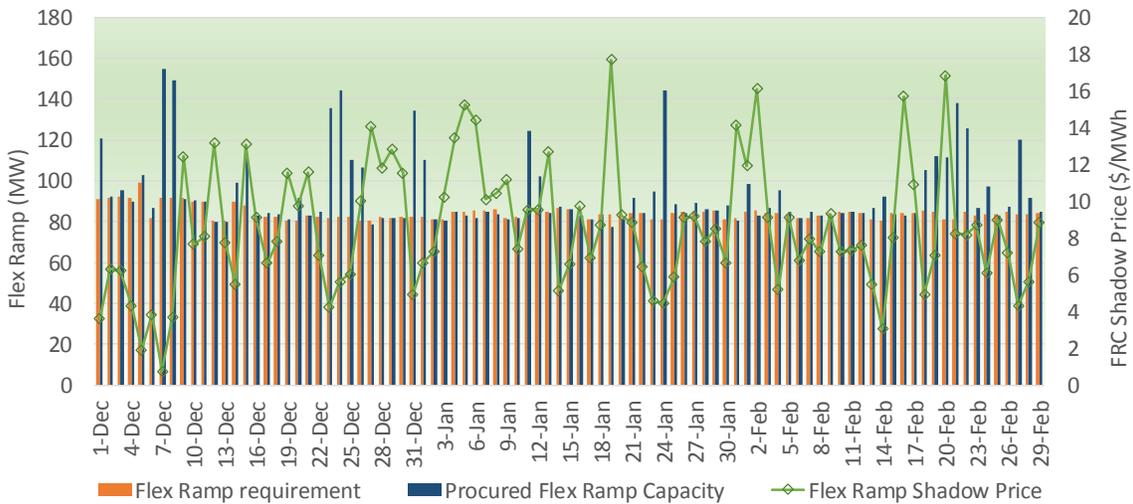


Figure 9 shows the daily average of the flexible ramp constraint requirement and procurement. In the vast majority of the hours, NV Energy is meeting its flexible ramping requirement. In addition, there is an excess of flexible ramp capacity in the NV Energy area during the midday hours. This plot also shows the daily average of the shadow price for the flexible ramp constraint in NV Energy area.

**Figure 9: Average requirement and procurement of flexible ramp in the fifteen-minute market.**



## 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 1<sup>st</sup> day of April 2016.

*Jennifer Rotz*

Jennifer Rotz