December 31, 2014

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

RE: California Independent System Operator Corp.
Docket No. ER14-480-000
Informational Filing

Dear Ms. Bose:

The California Independent System Operator Corporation (CAISO) submits this informational filing, pursuant to the March 20, 2014, order issued by the Federal Energy Regulatory Commission approving the CAISO's tariff revisions to align its market structure with certain reforms mandated in the Commission's Order No. 764 and implement additional market enhancements. The document included as Attachment 1 to this filing contains information responsive to the separate reporting requirements of PP 58 & 103 of the March 20 order.

Please contact the undersigned if you have any questions about this submittal.

Respectfully submitted,
By: */s/ Anna A. McKenna*
Roger E. Collanton
General Counsel
Anna A. McKenna
Assistant General Counsel
David S. Zlotlow
Counsel
California Independent System
Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel.: (916) 608-7182
Fax: (916) 608-7222
amckenna@caiso.com

Counsel for the California Independent
System Operator Corporation

December 31, 2014

Re: California Independent System Operator Corp.
Docket No. ER14-480-000

Informational Filing on Market Data Required 120 Days in Advance of Reinstating Convergence Bidding at the Interties

Filed December 31, 2014

Attachment 1

Informational Reports on Market Data Submitted 120 Days in Advance of Reinstating Convergence Bidding at the Interties

December 31, 2014

ISO Market Quality and Renewable Integration

I. Introduction and Background

In November 2013, the California Independent System Operator Corp. (CAISO) filed with the Federal Energy Regulatory Commission (Commission) a proposed new fifteen-minute market structure, to be effective May 1, 2014. The CAISO proposed its new market to align the CAISO's overall market design with reforms mandated in the Commission's Order No. 764, as well as to implement additional market enhancements. One of those additional enhancements was reinstatement of convergence bidding at the interties, to be effective twelve months after initial implementation of the fifteen-minute market (*i.e.*, May 1, 2015). In a March 20, 2014, order, the Commission approved the CAISO proposal but required the CAISO to submit several additional informational reports.[1]

The CAISO suspended intertie convergence bidding because of excess uplift payments incurred due to differences in how internal transactions were settled as compared to intertie transactions and because this resulted in convergence bidding not providing the expected benefit of converging day ahead and real time prices. Accordingly, the Commission conditioned reinstatement of intertie convergence bidding on the CAISO filing a report to demonstrate that the new market structure is providing the expected price convergence between day-ahead and real-time (*i.e.*, the markets in which virtual bids are placed and liquidated, respectively) and that the prior issues that resulted in the suspension of intertie convergence bidding have been resolved.[2] The Commission stated that this "report should demonstrate that the new market design is working to reduce systemic price divergence and should also discuss whether the anticipated benefits of intertie convergence bidding outweigh any expected market inefficiencies, including any risk of market manipulation." The Commission required the CAISO to submit this report no later than 120 days prior to the scheduled reinstatement date of May 1, 2015, and to incorporate as much data as possible based on experience with the new market structure.[3]

The Commission also directed the CAISO to submit a report that includes at least six months of data that would provide additional transparency regarding the success of the new market structure at discouraging implicit virtual bidding or deliberate non-performance based on price differentials within the real-time

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1 *California Indep. Sys. Operator Corp.,* 146 FERC ¶ 61,204 (2014) (*March 20 Order*).

2 *March 20 Order*, at P 103.

3 The Commission also directed the CAISO to file a follow-up report within 30 days after 12 months of operation that details the performance of intertie convergence bidding, including the associated uplift costs and a measure of the market benefits provided, and any market inefficiencies. *Id*.

market (*i.e.*, between the fifteen-minute and five-minute prices). The Commission stated that this "report should analyze whether and to what degree the new market design has resulted in the anticipated price convergence, and whether CAISO has seen any evidence of market participants attempting to exploit any remaining price bias through implicit virtual bidding or deliberate non-performance."[4] The Commission further noted that this data could be included in the report required 120 days in advance of reinstituting intertie convergence bidding.

Consistent with these requirements the CAISO hereby submits the required reports based on information it has available to date. The data in this report do not present a basis for not moving forwarding with reinstating intertie convergence bidding on May 1, 2015. If new data becomes available suggesting otherwise, then the CAISO will take appropriate actions to address those issues.

II. Price Convergence and Issues that led to Suspending Intertie Convergence Bidding

The new market structure is providing the expected price convergence and the issues that resulted in the suspension of intertie convergence bidding have been resolved. The introduction of convergence bidding in 2011 exacerbated the difference between prices in the hour-ahead scheduling process (HASP) and real-time dispatch (RTD) as formulated at the time. This differential resulted in a substantial increase in real-time offset charges. As previously explained by the CAISO, this was due to the bifurcated settlement structure, under which virtual supply bids at the interties were settled at the HASP price, while internal virtual demand bids were settled based on the RTD price.[5]

The CAISO concluded, and the Commission agreed, that discontinuing convergence bidding on the interties was justified, at least until a more comprehensive market redesign initiative could be undertaken to address the issues surrounding the underlying design of the HASP and the real-time market.[6]

The day-ahead to real-time pricing data presented below do not reflect significant divergence of prices between the day-ahead and real-time prices. Also, the implementation of the fifteen-minute market since May 1, 2014, has significantly reduced the offset issues that were the basis for suspending intertie convergence bidding in 2013.

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4 *Id*. at P 58.

5 *Id*. at P 4.

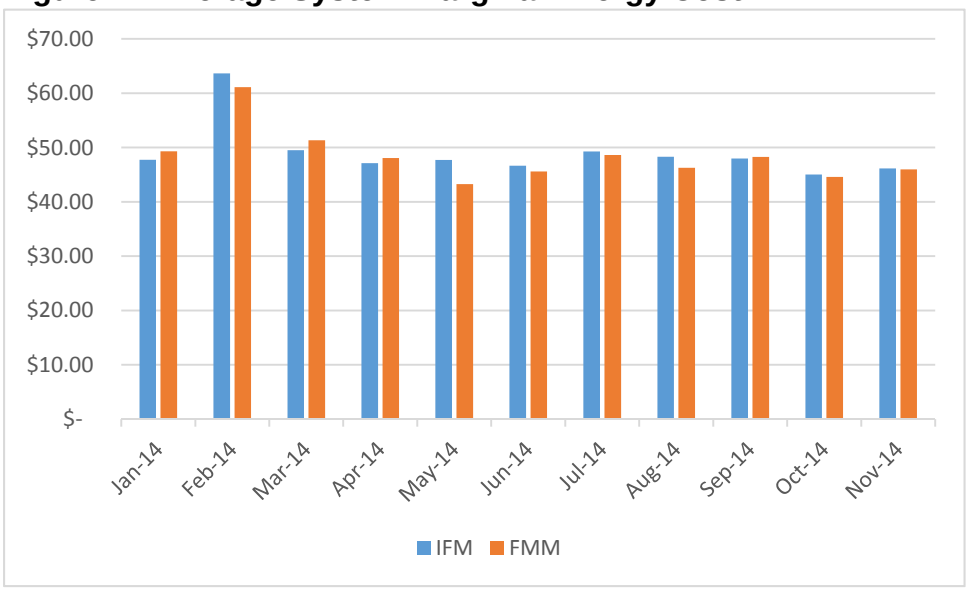
6 *California Indep. Sys. Operator Corp.*, 143 FERC ¶ 61,087 (2013) (*May 2013 Order*).

a. Price Convergence Between the Integrated Forward Market in the Day-Ahead and the Fifteen-Minute Market in the Real-Time

In the day-ahead, the CAISO executes the Integrated Forward Market (IFM) in which it clears bids for supply and demand of energy and procures all ancillary services required based on demand forecast. Imbalance energy from day-ahead schedules is settled based on the fifteen-minute market, which is cleared based on supply bids submitted in the real-time market and demand forecast in the real-time.

Figures 1 through 3 show that after working through the initial start-up issues in implementing the new market enhancements on May 1, 2014, average system marginal energy cost prices between the IFM and FMM consistently have converged.[7] This is especially true for the months after September for the on-peak hours. Figure 3 shows that price convergence during the off-peak hours has also been consistently high since May 1.

Figure 1. Average System Marginal Energy Cost



[7] Consistent with prior reporting on this issue, the CAISO here relies on divergences between average system marginal energy cost prices to investigate price convergence issues. Additionally, prices reported for the FMM prior to May 2014 reflect advisory RTPD prices.

Figure 2. Average Peak System Marginal Energy Cost

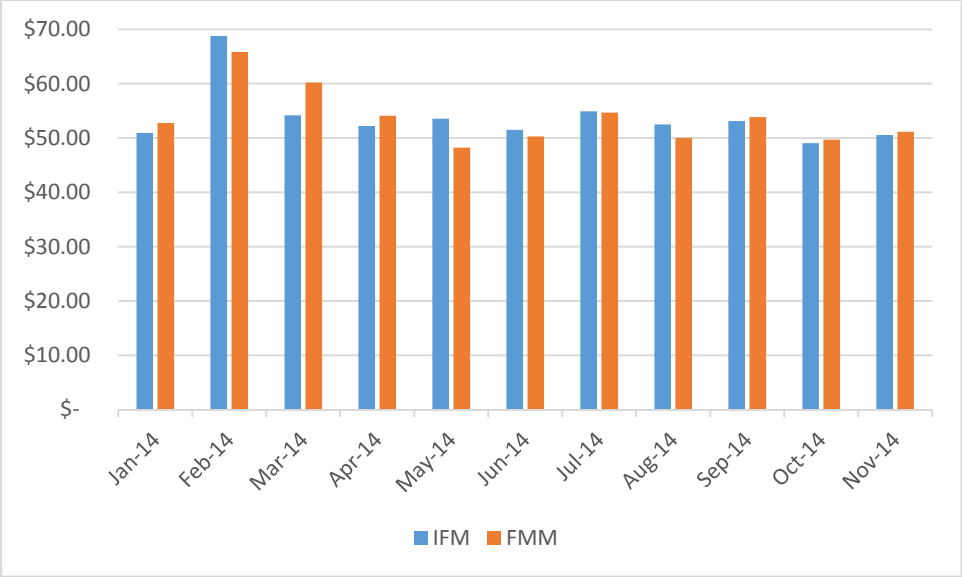
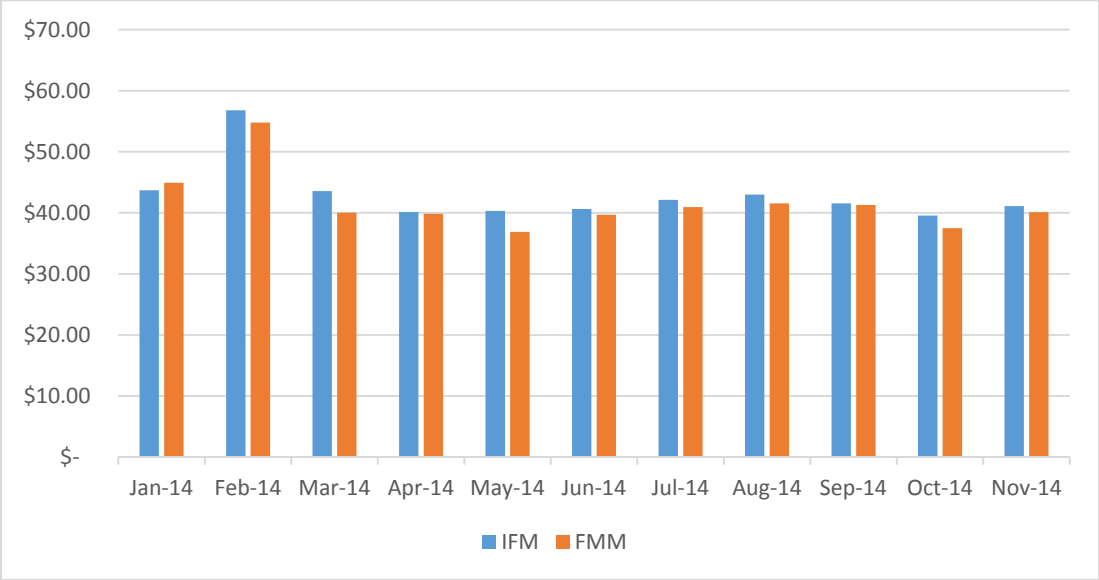


Figure 3. Average Off-Peak System Marginal Energy Cost



b. Real-time Imbalance Energy Offset Improvements

One of the reasons for suspending convergence bidding at the interties was the high uplift payments arising from allocating the real-time imbalance energy offset. The real-time imbalance energy offset account is a neutrality accounting through which the CAISO reconciles all market revenue imbalances and unaccounted for energy amounts and allocates those amounts (positive or

negative) to measured demand, which includes metered load and exports. When the CAISO previously permitted intertie virtual bidding there was no fifteen-minute market. Intertie transactions, whether physical or virtual, were settled at the HASP hourly price, while internal transactions, whether physical or virtual, were settled at the five-minute RTD price. The practice of settling intertie convergence bids at the hourly price but internal convergence bids at the five-minute price led to unacceptably high real-time imbalance energy offset allocations. With adoption of the fifteen-minute market, both internal and intertie transactions have a fifteen-minute market settlement price. This now allows the CAISO to settle all virtual transactions based on the same market optimization.

Since the start of the new market, the CAISO's Department of Market Monitoring (DMM) and the department of Market Quality and Renewable Integration have worked closely together to analyze and evaluate performance of the real-time imbalance energy offset, whose unanticipated growth led to the suspension of convergence bidding at the interties. The results of this effort were published in a DMM Report on November 26, 2014.[8]

In that real-time imbalance energy offset report, DMM reviewed the potential causes of the real-time imbalance energy offset charges since the start of the new market design on May 1, 2014. The analysis conducted by DMM and the CAISO consisted of a decomposition of real-time imbalance energy offset account into core conceptual components.

The data in Figures 4 and 5 below show that due to the market rule changes adopted on May 1, 2014, settlement differences between load, generation, imports and exports has resulted in a small credit in real-time imbalance energy offset since May 1.

It is important to consider the various elements of the offset account in evaluating how the offset has fared under the new market design. Figure 4 shows that the actual account, which serves as a catch-all neutrality account for all imbalance charges not otherwise accounted for, is made up of various components. For example the actual account includes: 1) the transmission loss paybacks the CAISO must allocated to market participants as specified in Section 27.1.1.2 of the CAISO tariff, 2) unaccounted for energy due to meter data differences; and 3) unscheduled interchange. In order to evaluate the impact of pricing differentials, these categories must be netted out.

[8] The report is available at http://www.caiso.com/Documents/Review-Real-TimeImbalanceEnergyOffset-DMMWhitePaper_Revised.pdf .

Figure 4: Summary of Real-time Imbalance Energy Offset by Causes for the first Nine Months of 2014.

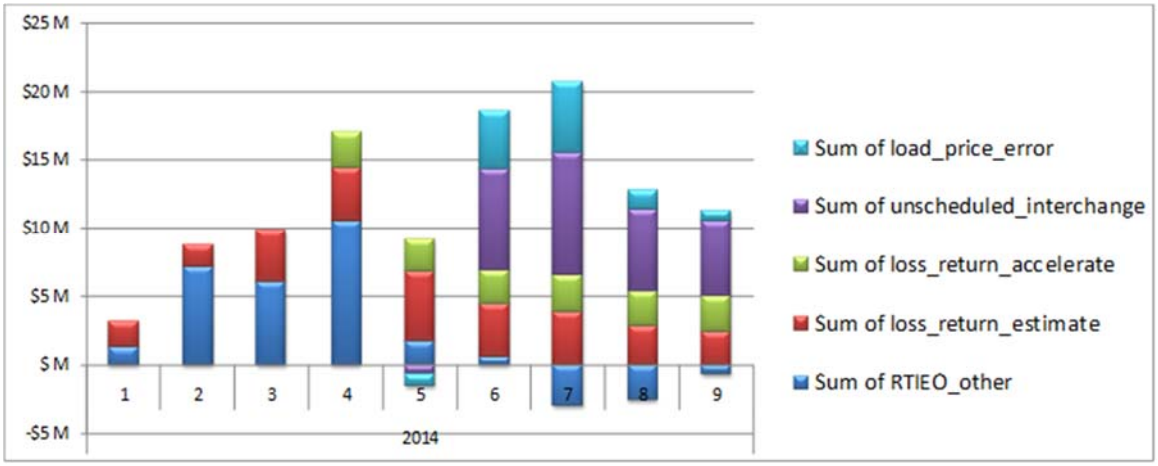
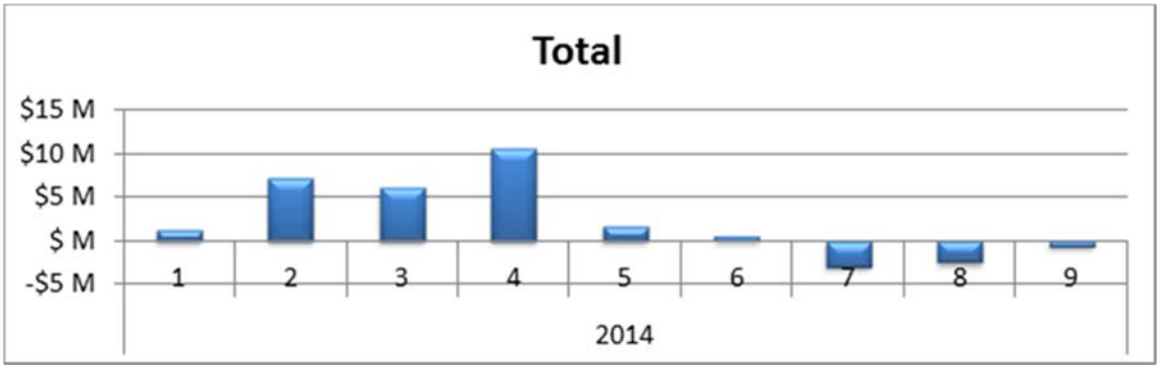


Figure 5: Total Real-time Imbalance Offset Accounting for Energy Imbalances Alone



The data summarized in Figures 4 and 5 demonstrate that the uplift cost due to settlement differences caused by different prices has not been observed since Order 764 has been implemented. As shown in Figure 5, after May, RTIEO has been either minimally positive or negative, in which case scheduling coordinators received a credit rather than a charge. This is largely due to the fact that under the new market structure both internal and intertie transactions – whether physical or virtual – have been settled at the FMM prices rather than having one set of transactions settled at a HASP price and another settled only at the RTD price. The CAISO has no reason to believe that reintroducing intertie convergence bidding would change this outcome.

The DMM report concluded that recent large causes of real-time imbalance energy offset are unrelated to FERC Order 764 market changes and that most of the offset in the summer 2014 does not represent uplift that is ultimately paid by load serving entities. Between May and August 2014,

transmission loss paybacks caused approximately $29 million of the $45 million of RTIEO over the period. However, most of this $29 million was previously paid as a credit to load. Therefore, its contribution to RTIEO does not represent uplift to load.

Approximately $19 million of RTIEO over this time period was caused by actual power flow exceeding the reported metered power flow into CAISO over a handful of interties. Similar to the transmission loss paybacks, this contribution to RTIEO does not represent uplift to load. This $19 million of RTIEO 'uplift' was previously paid as a credit to load through the unaccounted for energy settlement mechanism. The CAISO has resolved the intertie metering issue that resulted in this portion of RTIEO and Unaccounted for Energy. Revised settlements will reflect this change following the normal settlements timeline.

The remaining other causes of RTIEO such as differences in settlement prices for metered generation and metered load were small. The energy component of real-time revenue imbalance is an important indicator of potential inefficiencies in the overall market design.

III. Intra-Real-Time Price Convergence

As suggested in the Commission's March 20 order, persistent systemic price divergences between the FMM and RTD could create opportunities either for implicit virtual bidding or deliberate non-performance within the real-time market. The data summarized in Figure 6 and 7 provide a high-level view of how prices have converged between FMM and RTD since the FMM began on May 1, 2014.

Since implementation of the new market design DMM has monitored for systematic efforts to profit from whatever remaining intra-real-time price divergences that have remained. DMM has not observed any systematic efforts to profit in this way. It has, however, observed relatively isolated instances of deviations from schedules in a manner that has profited from price differences between FMM and RTD. These isolated instances, as well as the potential for wider use of such strategies, is a point of concern for DMM. Accordingly, DMM has recommended that the CAISO adopt a form of the settlement rule DMM described in its public comments on the Energy Imbalance Market Year 1 Enhancements Issue Paper and Straw Proposal.[9] The CAISO is evaluating this recommendation and will take appropriate actions to change its market rules, if appropriate.

[9] http://www.caiso.com/Documents/DMMComments_EIMYear1EnhancementsIssuePaper-StrawProposal.pdf

Figure 6. Average Peak System Marginal Energy Cost

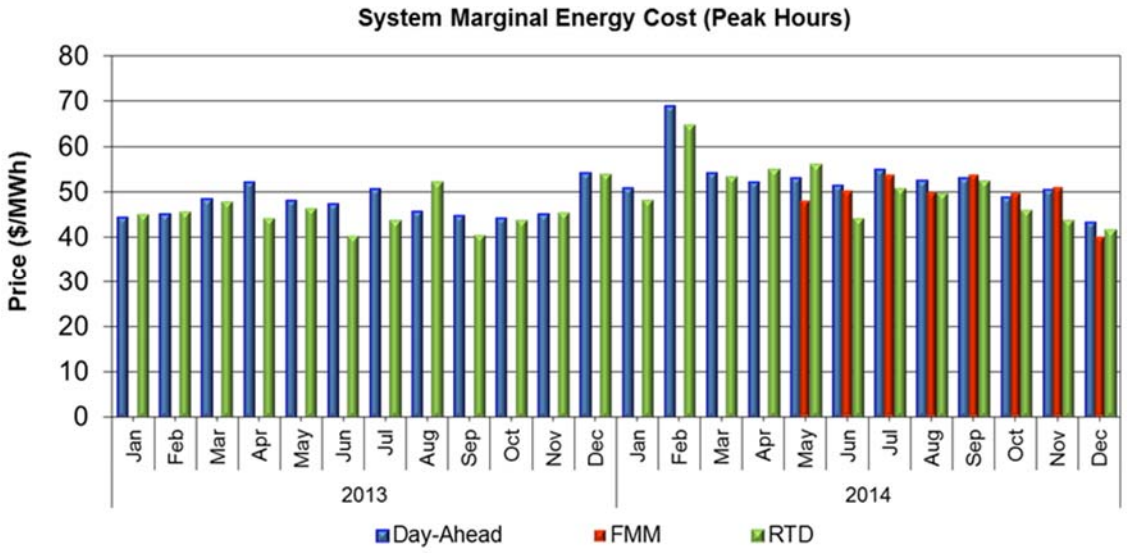
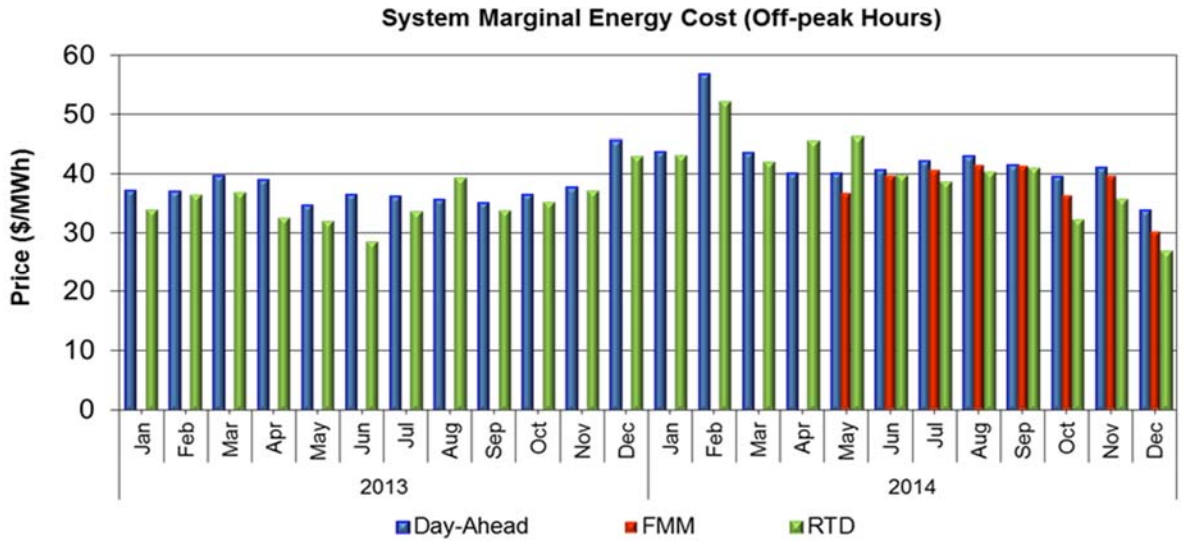


Figure 7. Average Off-Peak System Marginal Energy Cost



CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above-referenced 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 31st day of December 2014.

/s/ Anna Pascuzzo

Anna Pascuzzo