Memorandum

To: ISO Board of Governors

From: Eric Hildebrandt, Director, Market Monitoring

Date: October 19, 2016

Re: Market Monitoring report

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides comments by the Department of Market Monitoring (DMM) on the reliability services initiative phase 2 being presented to the Board.

- DMM supports the ISO's effort to clarify and enhance the resource adequacy process through this second iteration of the reliability services initiative. Some stakeholders have raised concerns that the ISO's proposal could exacerbate market power in the bilateral resource adequacy market in local areas by allowing suppliers to sell all or a portion of their capacity only as system resource adequacy rather than local resource adequacy. DMM does not believe this is likely to increase the potential for local market power since several mechanisms are currently in place to mitigate potential market power in the local resource adequacy market. Specifically, the CPUC retains authority to limit prices paid for resource adequacy capacity, while the ISO has authority to procure capacity in the event resource adequacy requirements are not met by capacity procured by load serving entities. DMM has also submitted detailed comments on other issues and enhancements that were deferred for a future phase of the reliability services initiative.

This memo also provides an update on performance of the ISO market this summer.

- The overall impact of the limited availability of Aliso Canyon on both gas and electricity market prices has been relatively limited so far – particularly given expectations about the potential impacts that might occur going into this summer. DMM believes this is largely due to a combination of two factors. First, system conditions turned out to be fairly favorable with no major contingencies or other factors that can create stressed system conditions. Second, many participants appear to have taken steps to avoid and manage risks, such as scheduling abundant supplies of energy in the day-ahead market and scheduling sufficient gas to meet potential real-time demand for electricity.

RELIABILITY SERVICES INITIATIVE PHASE 2

DMM supports the ISO's proposal to allow resources located in local areas to sell a system resource adequacy capacity product with system resource adequacy substitution requirements. This will allow resources located in local areas to participate in two markets, local and system resource adequacy, rather than being forced to sell a single bundled product. Under the ISO's proposal, sellers of system capacity in local areas would no longer seek to recover the expected cost of replacement with local resources in system resource adequacy prices.

PG&E has submitted comments raising a concern that the ISO's proposal would exacerbate the potential for market power in the bilateral resource adequacy market in local areas by allowing suppliers to sell all or a portion of their capacity as system resource adequacy rather than local resource adequacy. DMM concurs with the position -- noted by several other stakeholders-- that the ISO's proposal does not alter the supply of capacity available to be offered in bilateral resource adequacy market in local areas. The proposed change does offer suppliers an alternative market -- system resource adequacy – in which to sell their capacity.

The bilateral resource adequacy capacity market for both system and local resource adequacy procurement by most load serving entities is overseen by the California Public Utilities Commission. The CPUC maintains jurisdiction over prices paid for capacity in both markets.

In addition, the ISO's tariff includes provisions allowing the ISO to procure any resources needed if capacity procured by load-serving entities under the resource adequacy program is not sufficient to meet system-wide and local capacity requirements. These provisions include both reliability must-run contracts and the capacity procurement mechanism.

The replacement capacity procurement mechanism, currently scheduled for implementation on November 1, 2016, allows resources to submit bids for capacity, but these bids are capped by a soft offer cap. This cap – which had been accepted by the parties involved as just and reasonable -- serves as an additional tool to mitigate the exercise of market power within the capacity procurement mechanism market operated by the ISO.

Although DMM supports the ISO's proposal as a step forward, DMM has submitted detailed comments on other issues and enhancements that were deferred for a future phase of the reliability services initiative.[1]

[1] *Reliability Services Initiative – Phase 2 Second Revised Draft Final Proposal*, Comments by Department of Market Monitoring, October 4, 2016, http://www.caiso.com/Documents/DMMComments-ReliabilityServicesInitiativePhase2-SecondRevisedDraftFinalProposal.pdf

MARKET PERFORMANCE

Average system electricity prices were relatively stable during the third quarter and remained highly competitive. As shown in Figure 1, prices rose starting in June with the seasonal increase in loads and gas prices. Prices in the day-ahead and real-time markets remained close, with day-ahead prices continuing be slightly higher than 15-minute prices through August.

As shown in Figure 2, average hourly system energy prices in the third quarter continued to reflect hourly net load. Lower prices during the middle of the day correspond to periods when low-priced solar generation is greatest, and thus net demand is low. As shown in Figure 2, average prices in the 15-minute market were very close to day-ahead prices during most hours of the day, with the greatest difference occuring during the morning hours when solar generation is ramping up.

SoCal gas markets

The price of gas is a major driver of electric prices in the ISO market. The overall impact of the limited availability of Aliso Canyon on both gas and electricity market prices has been relatively limited so far – particularly given expectations about the potential impacts that might occur going into this summer. DMM believes this is due in large part to a combination of two factors. First, system conditions turned out to be fairly favorable with no major contingencies or other factors that can create stressed system conditions. Second, many participants appear to have taken steps to avoid and manage risks, such as by scheduling abundant supplies of energy in the day-ahead market and scheduling sufficient gas to meet potential real-time demand for electricity.

Despite the lack of storage and potential for imbalance penalties due to outages at the Aliso Canyon gas storage facility, prices for gas in southern California were actually down and prices in the same day market tended to track next day prices closely on most days. From June through September, prices for next day gas at the SoCal Citygate Hub dropped about 5 percent compared to last year. By comparison, next day gas prices for the PG&E Citygate were down about 3 percent and prices at the Henry Hub increased by over 1 percent.

From June through September, electric prices in the ISO's southern zone (SP15) dropped about 6 percent in the day-ahead market and about 8 percent in the real-time market compared to these same months last year. Over these same months, prices for next day gas at the SoCal Citygate Hub dropped about 5 percent compared to last year. Thus, both gas and electric marker prices have dropped by a similar amount.

Figure 1. Average monthly prices (all hours) – system marginal energy price

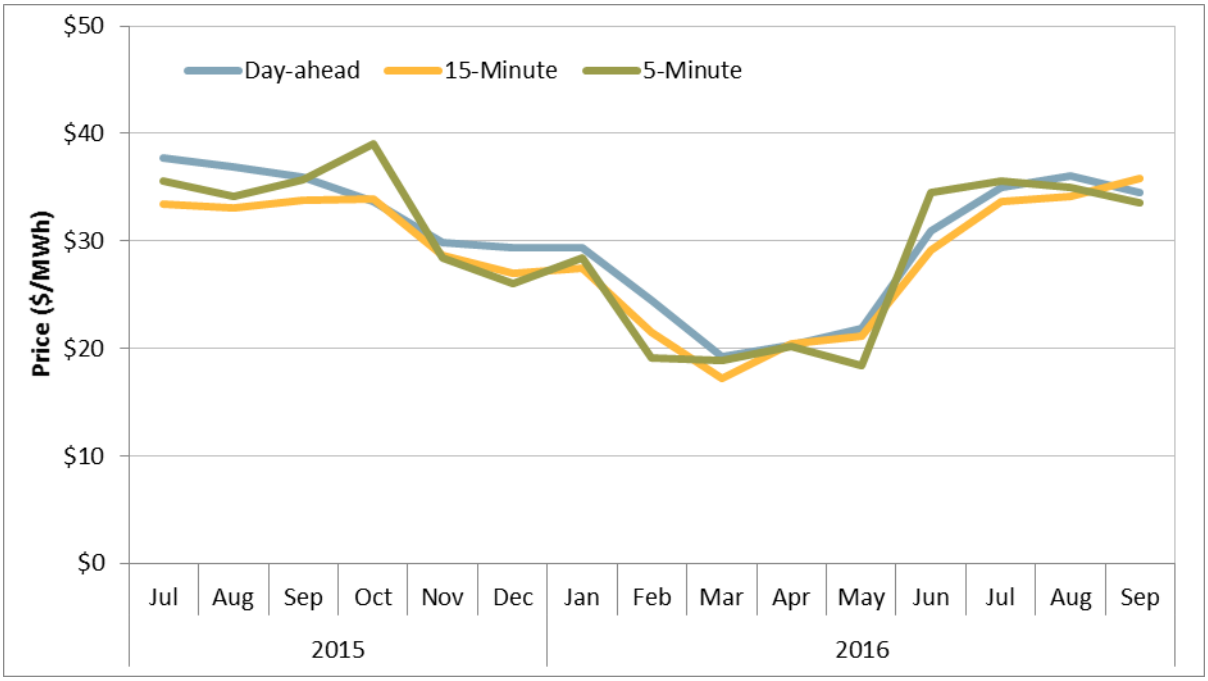
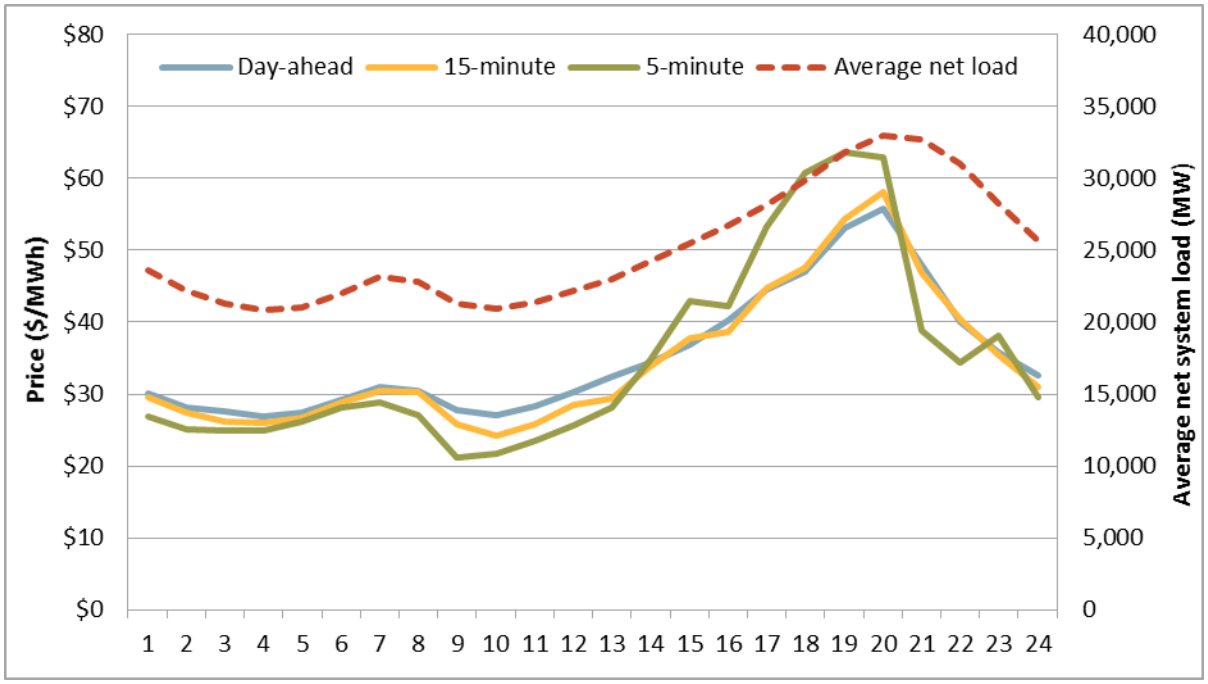
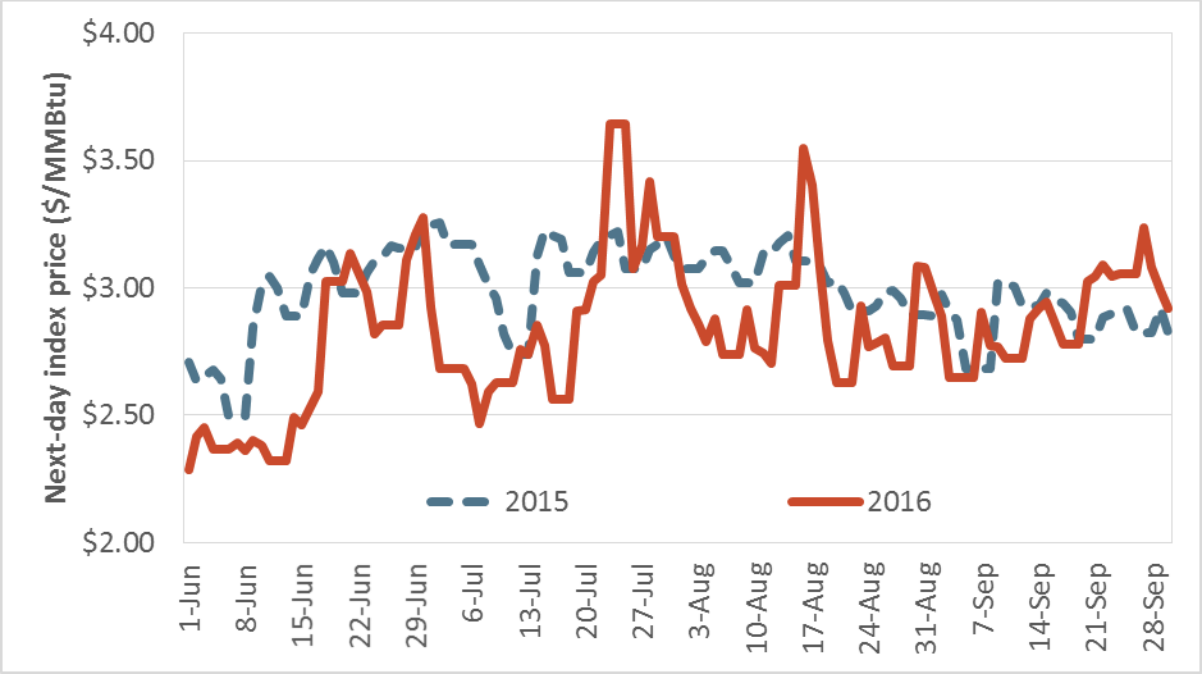


Figure 2. Hourly system marginal energy prices (July – September)



However, the lack of storage capacity appears to have increased the day-to-day volatility of next day gas prices in terms of day-to-day swings in next day prices, as shown in Figure 3. Since natural gas is typically injected into the Aliso Canyon storage facility in the summer for use to meet winter demand, the Aliso Canyon limitations removed a significant source of natural gas demand this summer compared to last summer. This demand from gas injections tended to balance out variations in gas demand for electricity generation. In addition, the Aliso Canyon facility provided additional supply that can help the lower gas prices during days of high electric demand. Thus, the limitations on the Aliso Canyon facility affected both the demand and supply of gas this summer in a way that has contributed to the increase in day-to-day variability of the SoCal Citygate prices.

Figure 3. SoCal Citygate natural gas prices



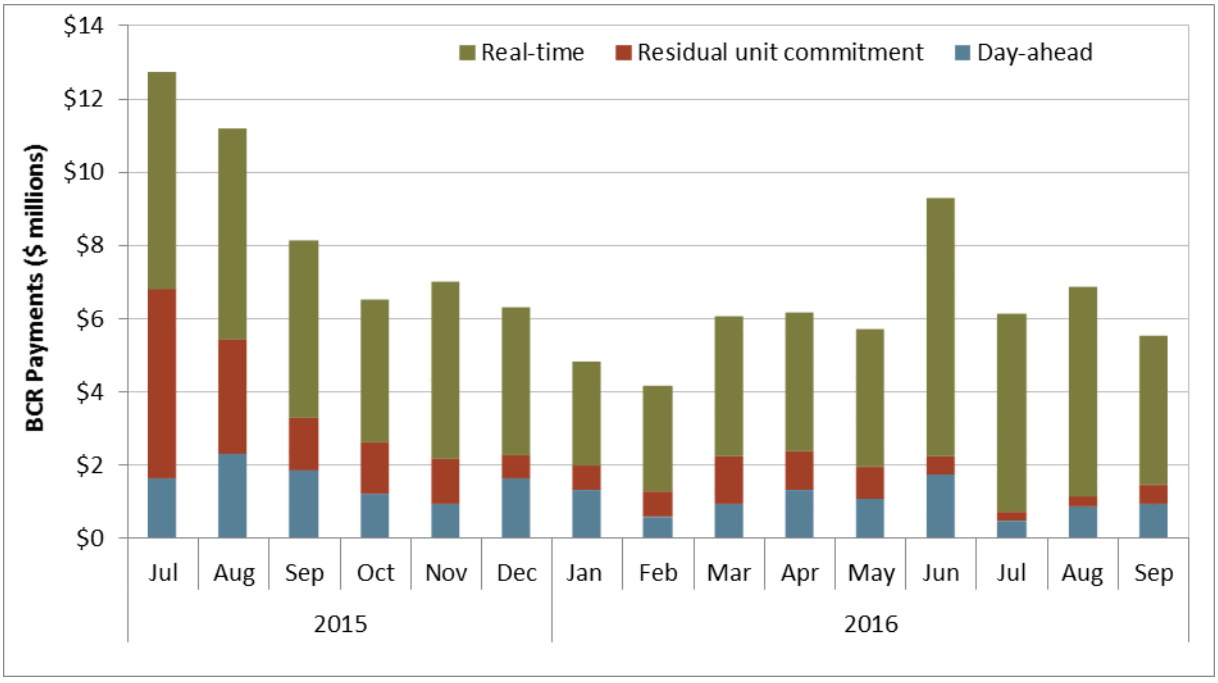
The special gas imbalance provisions put in place by SoCal Gas starting in June created some concern that prices for gas in the same day may be systematically higher than prices in the next day market which are currently used by the ISO to set bid caps in the real-time market. However, prices in the same day gas market have not been significantly higher or more volatile than prices in the same day market. Average prices in the same day market for gas at the SoCal Citygate Hub were only about 2.6 percent higher than average prices in the next day market from June through September, with most same day trades within 10 percent of the average next day price normally used by the ISO to calculate real-time bid caps.

Bid cost recovery

Estimated bid cost recovery payments for the third quarter totaled about $19 million. This is a significant decrease from about $32 million paid during the third quarter of 2015, and a decrease from $21 million paid during the second quarter of 2016. This drop in bid cost recovery payments was particularly noteworthy in light of the Aliso Canyon outage, which created the potential for higher bid cost recovery payments due to additional unit commitments in Southern California for reliability and much higher caps for commitment cost bids in the real-time market.

While special rules in effect during the Aliso Canyon outage allow some participants to increase commitment cost bids significantly above levels that appear to reflect actual costs, this had a relatively small impact on costs. DMM's analysis indicates that the increase in commitment cost bid caps caused by the 75 percent gas price adder may have resulted in just over $2 million of additional bid cost recovery payments above actual gas costs from early July through mid-September. Most of these additional costs occurred when additional capacity was committed by ISO operators after the day-ahead market through exceptional dispatches to protect against load forecast uncertainty on a few high load days.

Figure 4. Monthly bid cost recovery payments



Energy imbalance market

The energy imbalance market (EIM) continues to perform well and track real-time prices the overall ISO system prices closely. With the addition of NV Energy in December 2015, congestion occurs between the ISO and EIM areas on a relatively infrequent basis. When congestion does occur, prices are highly competitive since bids for all resources in the PacifiCorp and NV Energy areas continue to be about equal to marginal costs.

The EIM has continued to perform well since the addition of APS and Puget Sound Energy in October. DMM looks forward to providing analysis of the impact that this expansion has had in future reports.