

April 6, 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. ER15-402____
Independent Assessment – Department of Market Monitoring
Report on Energy Imbalance Market Issues and Performance**

Dear Secretary Bose:

The Department of Market Monitoring hereby submits its independent assessment on the causes and solutions identified by the California Independent System Operator Corporation in its report on the performance of the Energy Imbalance Market for February 1, 2016 through February 29, 2016.¹

Please contact the undersigned with any questions.

Respectfully submitted,

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¹ The CAISO submits this report pursuant to *California Independent System Operator Corp.*, 149 FERC ¶ 61,194 (2014).

California ISO

Report on energy imbalance market issues and performance: PacifiCorp balancing authority areas

April 5, 2016

Prepared by: Department of Market Monitoring

Executive summary

Pursuant to the Commission's March 16, 2015, Order on the ISO Energy Imbalance Market (EIM), the ISO filed a report on March 28, 2016, covering the period from February 1 through February 29, 2016, (February Report) for the PacifiCorp balancing areas.¹ The red-line portion of the ISO's February Report shows that it contains updated graphs and figures from the ISO's January report.

This report provides a review by the Department of Market Monitoring (DMM) of EIM performance during the period covered in the ISO's February Report. Key findings of DMM's review of EIM performance in the PacifiCorp balancing areas during February 2016 include the following:

- Prices used to settle load deviations in PacifiCorp East averaged about \$17/MWh during February, while prices in PacifiCorp West averaged about \$15.50/MWh. The load settlement price is calculated as an average of prices in the 15-minute and 5-minute markets, weighted by forecast load imbalance in each respective market. Average settlement prices in both areas tracked closely with bilateral trading hub prices, and continue to remain below the average price for the PG&E load aggregation area in the ISO.
- The percentage of intervals continued to be low during February where either the flexible ramping constraint or energy power balance constraint were relaxed to allow the market software to balance modeled supply and demand. Thus, overall impact on prices from both constraints was minimal and market performance was good during the month.
- In both PacifiCorp areas, the power balance constraint did not need to be relaxed in the 15-minute market during February. Prices in EIM continued to be subject to mitigation under special price discovery provisions that prevent prices from being set by the \$1,000/MWh penalty price for energy power balance shortages that would otherwise be utilized to set final market prices. However, because there were no power balance constraint relaxations, 15-minute prices with and without the price discovery mechanism were identical.
- The power balance constraint was relaxed relatively infrequently in the 5-minute market as well, in significantly less than 1 percent of all intervals in both PacifiCorp areas. Prices in the 5-minute market in PacifiCorp East were about equal to prices without price discovery provisions in place, while 5-minute prices in PacifiCorp West were about \$3/MWh below prices without the price discovery mechanism. However, even without the price discovery provision, 5-minute prices in both PacifiCorp areas continue to remain below the bilateral trading hub prices.
- In both PacifiCorp areas, there continued to be a relatively small percentage of intervals when the flexible ramping constraint was relaxed in the 15-minute market but price discovery provisions were not triggered due to relaxation of the energy power balance constraint.² The additional \$60/MWh impact on prices that occurs during these intervals increased overall monthly averages by less than \$1/MWh in both areas. This is a significant drop since September through November 2015, when the price impacts of flexible ramping constraint relaxation were significantly higher. As noted in

¹ The ISO's February Report was filed at FERC on March 28 and posted on the ISO website on March 29, 2016: http://www.caiso.com/Documents/Mar28_2016_February2016_EIMPriceWaiverReport_ER15-402.pdf.

² When price discovery provisions are triggered by relaxation of the energy power balance constraint, the penalty price for the flexible ramping constraint is changed from \$60/MWh to \$0/MWh in the pricing run, so that the shadow price of this constraint is \$0/MWh.

prior reports, DMM attributes much of this improvement in performance to a reduction in generator outages and the additional transfer capacity that was added when EIM was implemented in the NV Energy area in December 2015.

- If price discovery provisions had not been in place in February, the load bias limiter feature would have been triggered infrequently. This is largely driven by the overall infrequent power balance constraint relaxations during the month. When triggered, the load bias limiter would have the same effect as the price discovery feature triggered by power balance constraint shortages, and would cause prices to be set by the last economic bid dispatched rather than the \$1,000/MWh penalty price for energy power balance shortages. The load bias limiter would have had no impact on prices in the PacifiCorp East markets, and would have impacted prices in both PacifiCorp West markets by less than \$1/MWh during February. Again, because of the low number of power balance constraint shortages in the PacifiCorp EIM markets, the load bias limiter would have had a minimal impact on market prices.

The remainder of this report is organized as follows. This summary section highlights key findings and trends occurring in February 2016. Section 1 provides a description of prices in the market and impacts from the power balance and flexible ramping market constraints. Section 2 provides information regarding the frequency of power balance and flexible ramping constraint relaxations, as well as additional background on the flexible ramping constraint and requirement. Section 3 provides details on the impact of the load bias limiter.

1 Energy imbalance market prices

Figure 1.1 shows monthly average prices used for settlement of loads in PacifiCorp East, PacifiCorp West, and the Pacific Gas & Electric (PG&E) area prices (Northern California), along with the range of bilateral trading hub prices DMM uses as an additional benchmark for EIM prices.

In February, settlement prices for both PacifiCorp East and PacifiCorp West continue to track with bilateral trading hub market prices, as observed in prior months. Prices in both markets were below bilateral trading hub prices, primarily driven by infrequent constraint relaxations in both markets, particularly in the 15-minute markets.

The average monthly settlement price in PacifiCorp East was about \$17/MWh, or 3 to 9 percent below the bilateral price range. The PacifiCorp West settlement price was about \$15.50/MWh, or 11 to 16 percent below the bilateral price range. Prices during February in both PacifiCorp areas remained significantly below the PG&E area settlement price, consistent with historical relationships.

The load settlement price in Figure 1.1 is an average of prices in the 15-minute market and the 5-minute market, weighted by forecast load imbalance in each respective market.³ Prices in the 15-minute market are weighted by the imbalance between base loads and forecast load in the 15-minute market. The 5-minute prices are weighted by the difference between forecast load in the 15-minute market and forecast load in the 5-minute market.

These load settlement prices track closely with 15-minute market prices since load settlement prices are weighted more heavily on prices in the 15-minute market and less heavily on prices in the 5-minute market. Data in Figure 1.1 begin in November, since this represents a period after the ISO made some corrections to their methodology for calculating EIM load settlement prices.

The bilateral trading hub price range in Figure 1.1 is calculated as the range between prices from the ICE and Powerdex indices. For each index, prices are calculated using weighted daily averages of four major western trading hubs (California Oregon Border, Mid-Columbia, Palo Verde, and Four Corners) and include both peak and off-peak prices.⁴

The PG&E load aggregation area price is used as a comparison with both PacifiCorp regions because much of the energy transfer between PacifiCorp and the ISO occurs via tie points in Northern California. Prior to EIM, PG&E settlement prices were consistently higher than those at the bilateral trading hub, but may still be used as a comparison as the two energy prices consistently moved together in the same direction and relative magnitude. As shown in Figure 1.1 this trend has persisted from November through February.

³ Business Process Manual Configuration Guide: Real-Time Price Pre-calculation, Settlements and Billing, October 29, 2015: https://bpmcm.caiso.com/BPM%20Document%20Library/Settlements%20and%20Billing/Configuration%20Guides/Pre-Calcs/BPM%20-%20CG%20PC%20Real%20Time%20Price_5.9.doc.

⁴ Prior to EIM implementation, DMM identified this to stakeholders and regulators as a benchmark DMM would use to assess the competitiveness and overall performance of EIM.

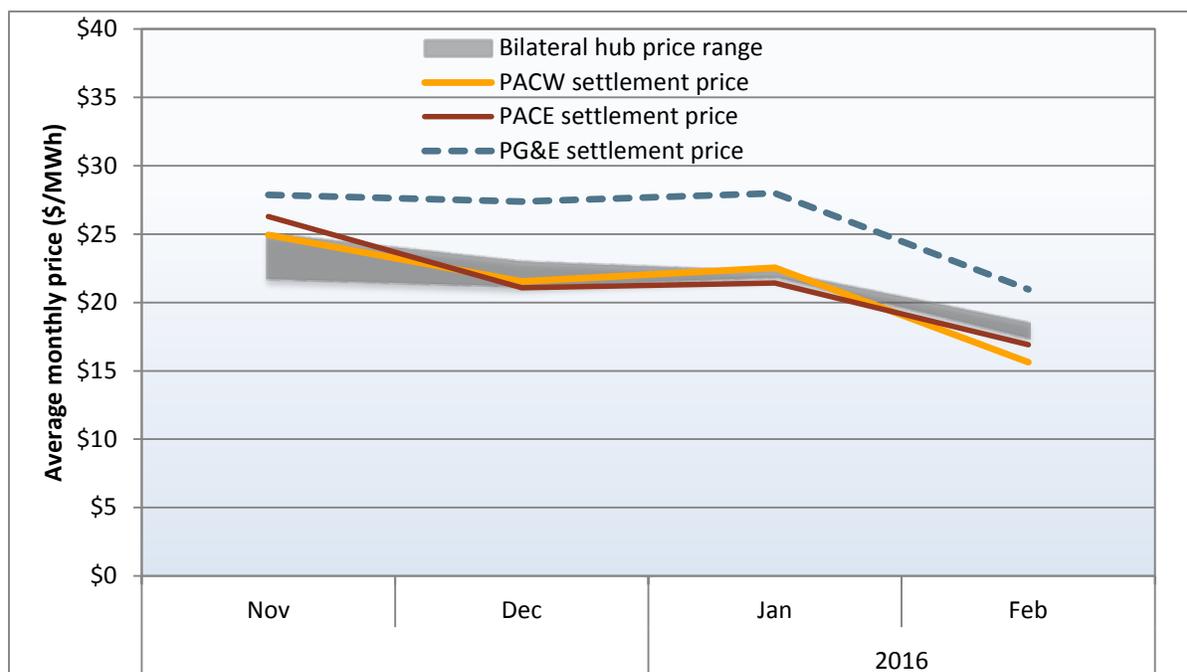
Figure 1.1 Settlement and bilateral trading hub prices – PacifiCorp East and West

Figure 1.2 and Figure 1.4 show the average daily frequency of constraint relaxations in the 15-minute market by month in PacifiCorp East and PacifiCorp West, respectively. Figure 1.6 and Figure 1.8 provide a similar summary for the 5-minute market in these two areas. A detailed description of various types of constraint relaxation in these figures has been provided in prior reports.⁵

Figure 1.3 and Figure 1.5 show average monthly prices in the 15-minute market *with* and *without* the special price discovery mechanism being applied to mitigate prices in PacifiCorp East and PacifiCorp West markets, respectively.⁶ Figure 1.7 and Figure 1.9 provide the same monthly price summary for the 5-minute market. All four figures also include monthly averages of firm bilateral trading hub market prices for comparison to EIM market prices.

Figure 1.2 through Figure 1.5 show that the flexible ramping constraint and the power balance constraint were relaxed very infrequently in February in both 15-minute PacifiCorp markets. As a result, prices in the PacifiCorp areas in the 15-minute market were just at the lower bounds of the bilateral trading hub range. This is in sharp contrast to market outcomes in PacifiCorp East during October and

⁵ Report on Energy Imbalance Market Issues and Performance, Department of Market Monitoring, April 2, 2015, p.5. http://www.caiso.com/Documents/Apr2_2015_DMM_AssessmentPerformance_EIM-Feb13-Mar16_2015_ER15-402.pdf.

⁶ A detailed description of the methodology used to calculate these counterfactual prices that would result without price discovery was provided on p. 6 of the April 2, 2015, report from DMM (link below). The ISO's June 3 Report notes that the ISO implemented the load bias limiter feature for EIM on March 20, 2015, so that data in the ISO's report now excludes intervals since March 20 when the power balance constraint was relaxed in the scheduling run, but this software feature would have been triggered if price discovery was not in effect. Also, when estimating prices without price discovery, it is assumed that when the load bias limiter would have been triggered, the resulting price would have been equal to the actual price that resulted with price discovery in effect. DMM has also adjusted its analysis to be consistent with the ISO report. http://www.caiso.com/Documents/Apr2_2015_DMM_AssessmentPerformance_EIM-Feb13-Mar16_2015_ER15-402.pdf.

November, when 15-minute market prices were significantly larger than the bilateral trading hub price range due to frequent relaxations of the flexible ramping constraint. In February there were no power balance constraint relaxations in the 15-minute market and therefore reported prices without the price discovery mechanism exactly matched observed prices with the price discovery mechanism in place.

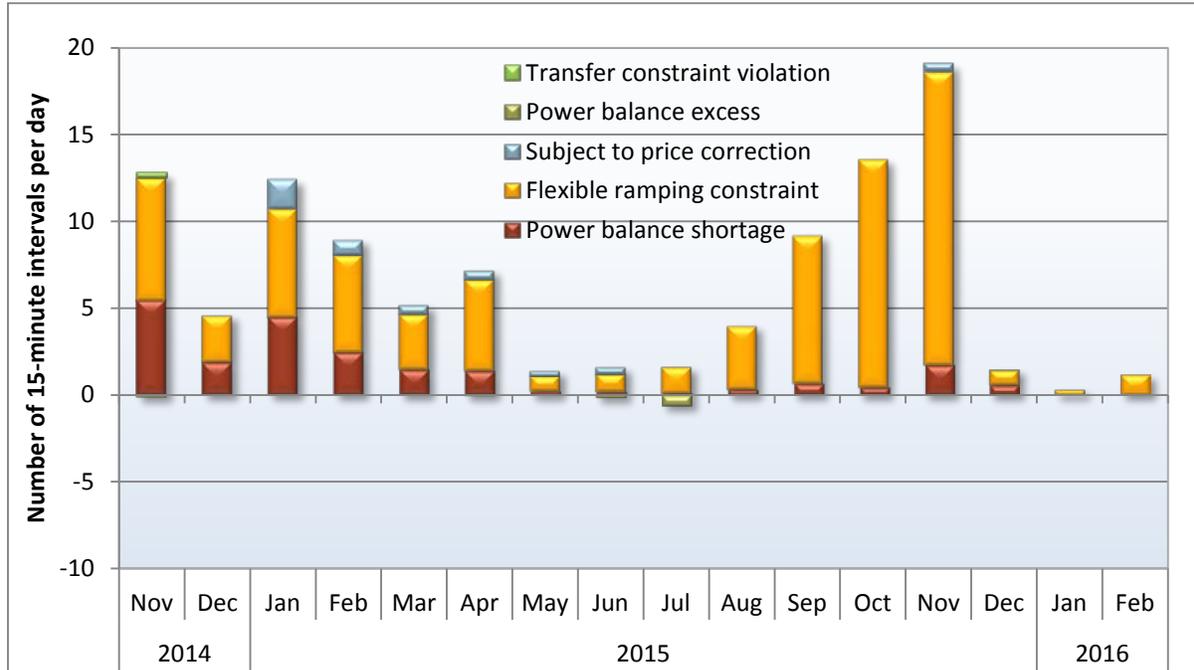
Figure 1.6 through Figure 1.9 show that the power balance constraint was relaxed very infrequently in both 5-minute PacifiCorp markets, and prices were below the bilateral trading hub price ranges. Because the power balance constraint relaxations were so infrequent, prices without the price discovery mechanism were nearly equal to observed market prices with the price discovery mechanism in place. In fact, prices without the price discovery mechanism in both markets were also below the bilateral trading hub price range.

These figures show that the price discovery mechanism approved under the Commission’s December 1, 2014, Order had very little impact in terms of market price outcomes during February 2016, mostly driven by infrequent power balance constraint relaxations in all PacifiCorp markets. Without the price discovery mechanism, market prices would have been about the same as observed market prices with the price discovery mechanism in place, as shown in Table 1.1.

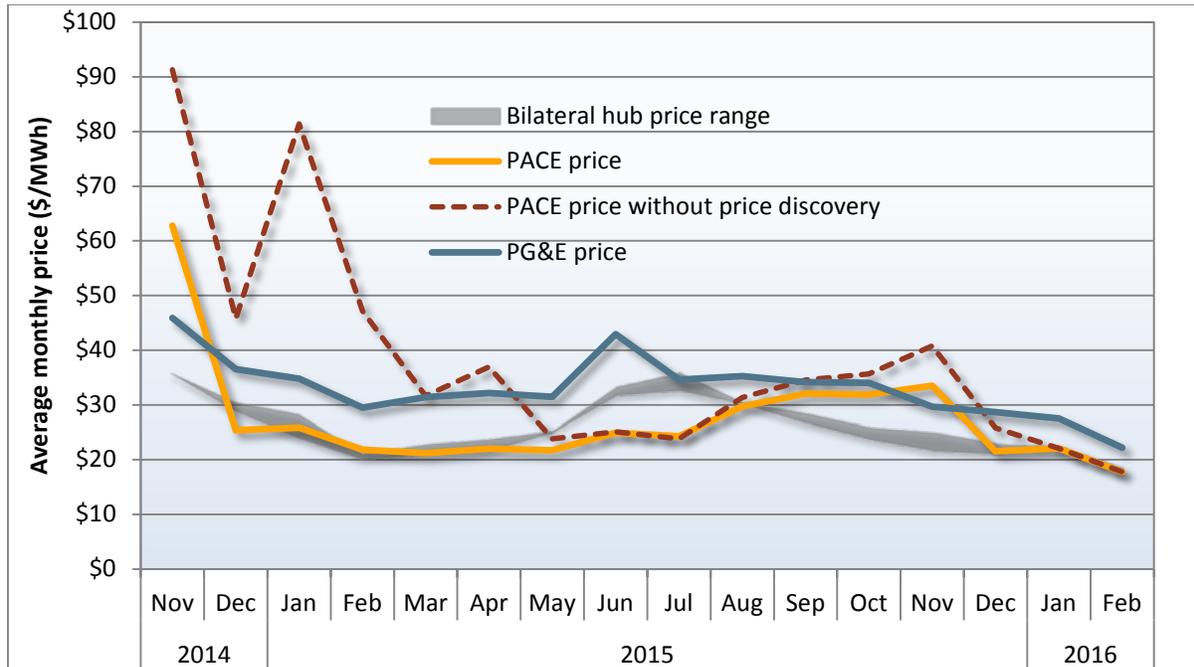
Table 1.1 Average prices in EIM and bilateral markets (February 2016)

	Bilateral trading hub range		Average EIM price	EIM price without price discovery
	Low	High		
<i>PacifiCorp East</i>				
15-minute market (FMM)	\$17.47	\$18.59	\$17.73	\$17.73
5-minute market (RTD)	\$17.47	\$18.59	\$14.57	\$14.91
<i>PacifiCorp West</i>				
15-minute market (FMM)	\$17.47	\$18.59	\$17.03	\$17.03
5-minute market (RTD)	\$17.47	\$18.59	\$13.35	\$16.62

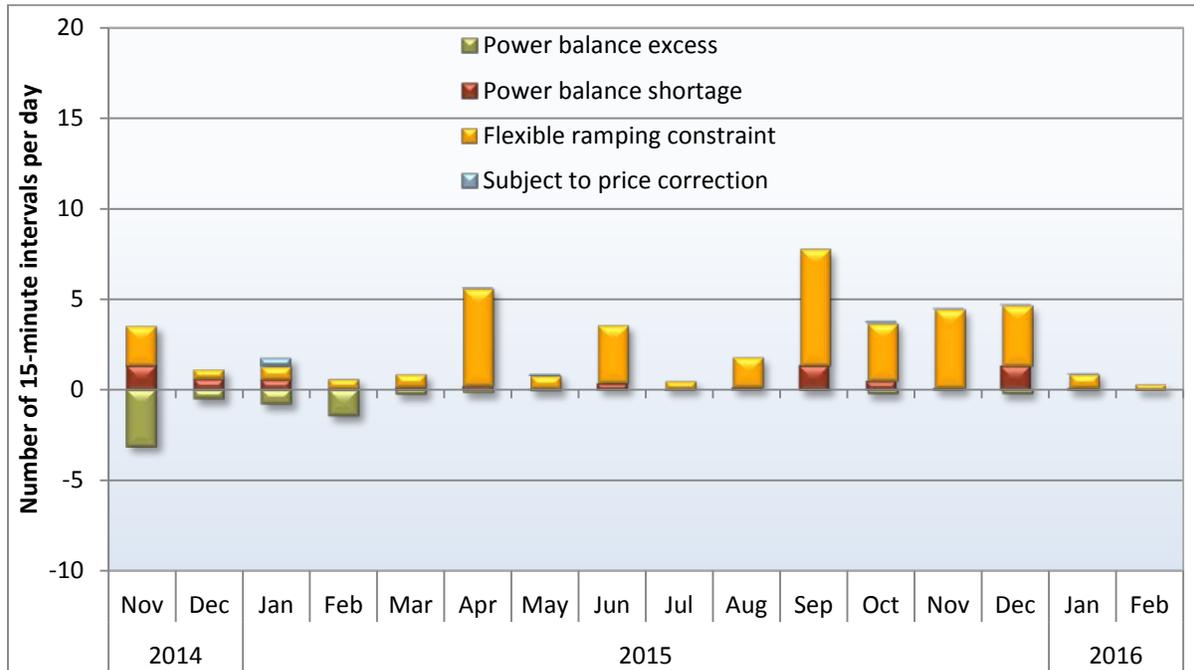
**Figure 1.2 Frequency of constraint relaxation
PacifiCorp East – 15-minute market**



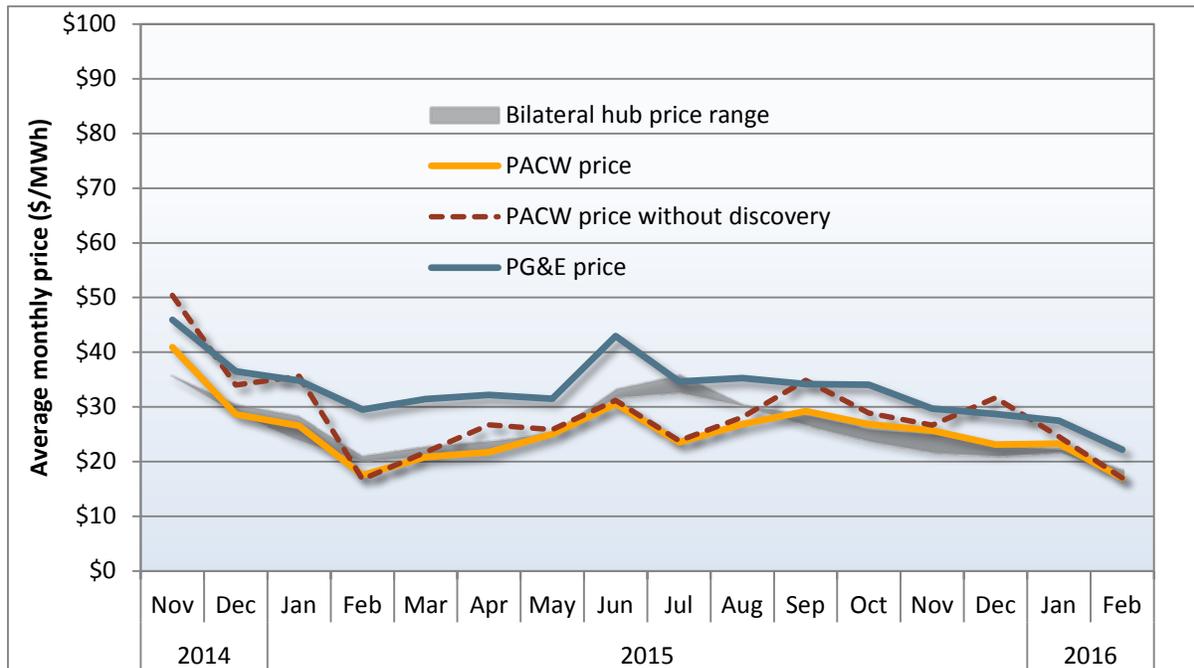
**Figure 1.3 Average monthly prices with and without price discovery
PacifiCorp East – 15-minute market**



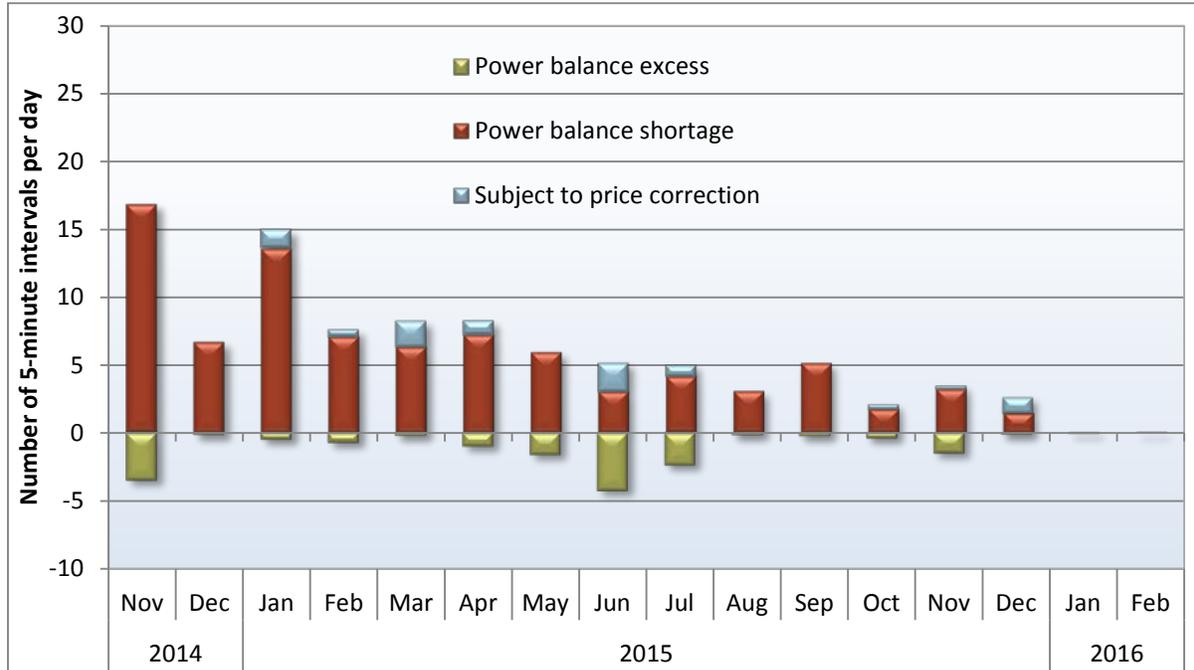
**Figure 1.4 Frequency of constraint relaxation
PacifiCorp West – 15-minute market**



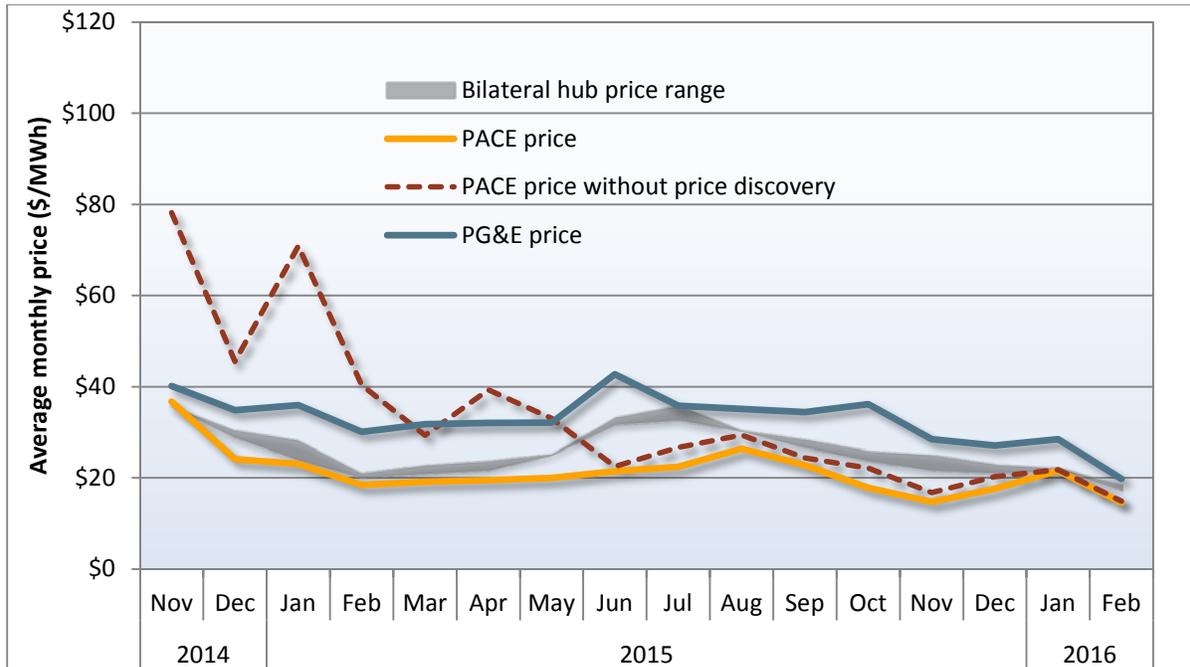
**Figure 1.5 Average monthly prices with and without price discovery
PacifiCorp West – 15-minute market**



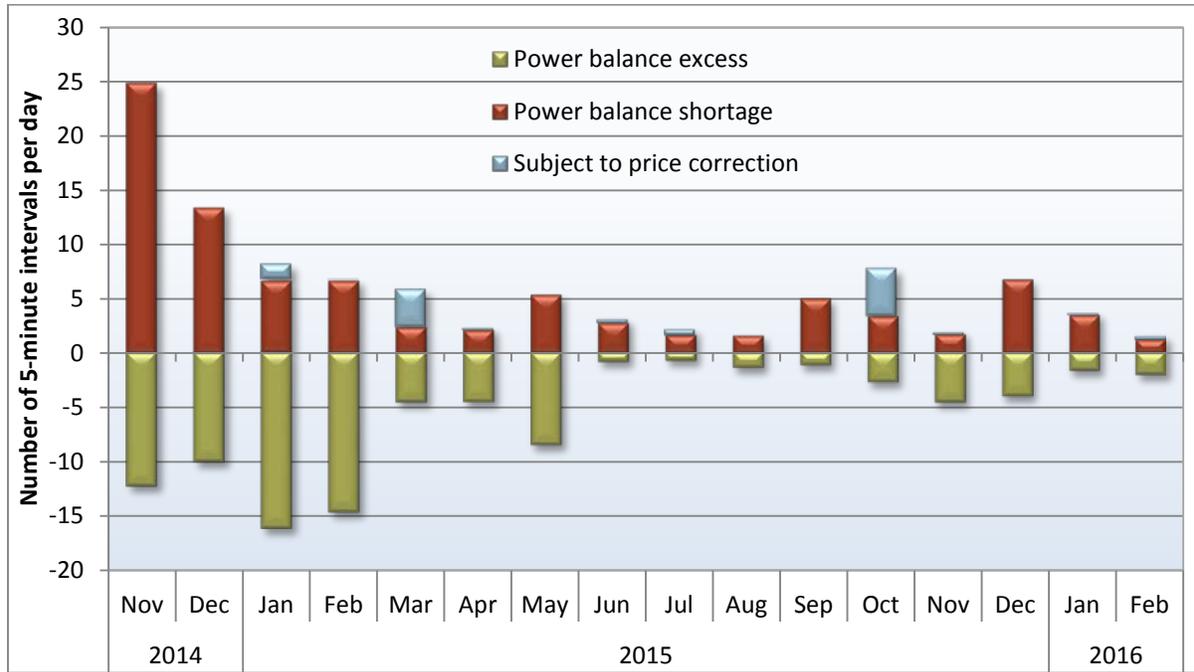
**Figure 1.6 Frequency of constraint relaxation
PacifiCorp East – 5-minute market**



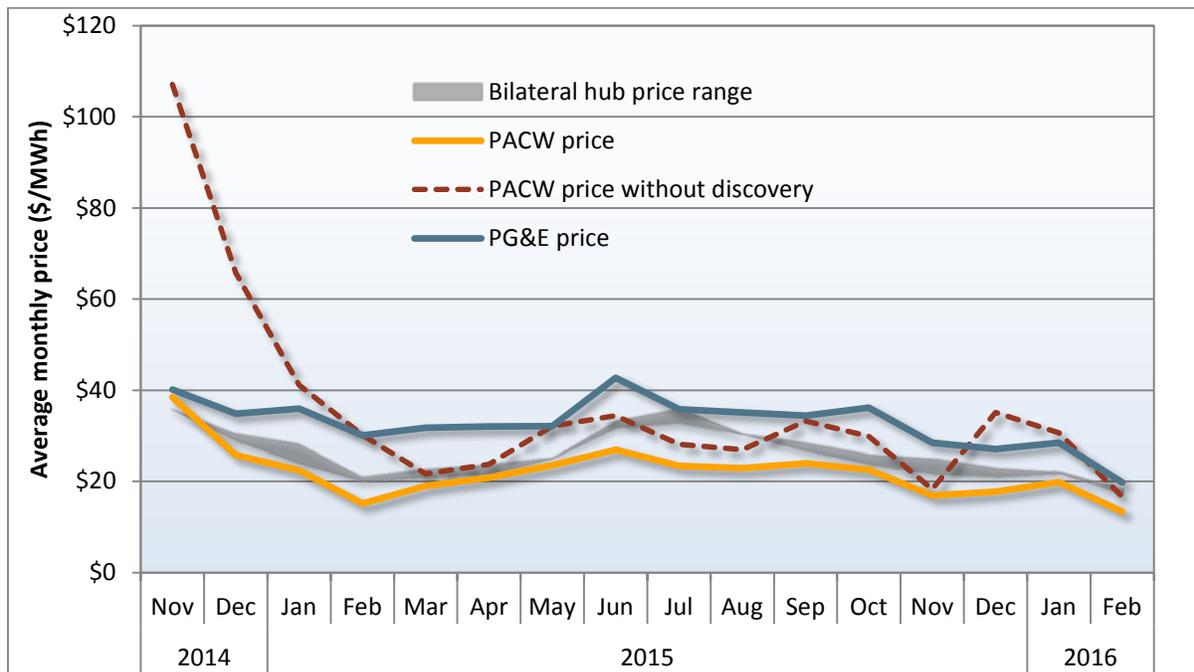
**Figure 1.7 Average monthly prices with and without price discovery
PacifiCorp East – 5-minute market**



**Figure 1.8 Frequency of constraint relaxation
PacifiCorp West – 5-minute market**



**Figure 1.9 Average monthly prices with and without price discovery
PacifiCorp West – 5-minute market**



2 Market software constraint relaxation

This section provides summary information on the frequency of power balance and flexible ramping constraint relaxations in EIM by calendar month for each market. Figure 2.1 and Figure 2.2 summarize the percent of intervals in which the power balance and flexible ramping constraints were relaxed, by month, in the 15-minute markets in PacifiCorp East and PacifiCorp West, respectively. Figure 2.2 and Figure 2.4 summarize the percent of intervals in which the power balance constraint was relaxed, by month, in the 5-minute markets in PacifiCorp East and PacifiCorp West, respectively.

Figure 2.1 shows that the flexible ramping constraint was relaxed during 1.3 percent of intervals in the 15-minute PacifiCorp East market during February. Relative to prior months, this is an infrequent rate of relaxation, and stands in stark contrast to rates observed during October and November. When the flexible ramping constraint is relaxed a \$60/MWh penalty price is imposed, which leads to significant price increases in the 15-minute market. Figure 2.2 shows a similar trend in PacifiCorp West, where the percentage of intervals with flexible ramping constraint relaxations declined substantially from higher levels observed in September and November to frequencies below 1 percent of all intervals during January and February.

The large decline in flexible ramping constraint relaxations in PacifiCorp East, which began in late November, coincided with the return of generating capacity from outage. The addition of NV Energy to the EIM in December may have also helped to reduce the number of flexible ramping relaxations. The addition of NV Energy provides a significant increase in the amount of additional energy scheduled in the 15-minute market, particularly into the PacifiCorp East area. Although flexible ramping capacity cannot be directly imported from other EIM areas, additional energy imports can allow more ramping capacity from resources within an EIM area to remain unloaded and available to meet flexible ramping constraint requirements.

Figure 2.1 through Figure 2.4 show that the frequency of intervals when the power balance constraint was relaxed to allow the market software to balance modeled supply and demand remains at low levels during February in all four PacifiCorp markets. The power balance constraint was not relaxed in either 15-minute market during February, and was relaxed during significantly less than 1 percent of all intervals in the 5-minute markets. The infrequency of power balance constraint relaxations resulted in a strong price convergence between prices with and without price discovery in each PacifiCorp market during February, as discussed above.

Figure 2.1 Frequency of constraint relaxation in 15-minute market – PacifiCorp East

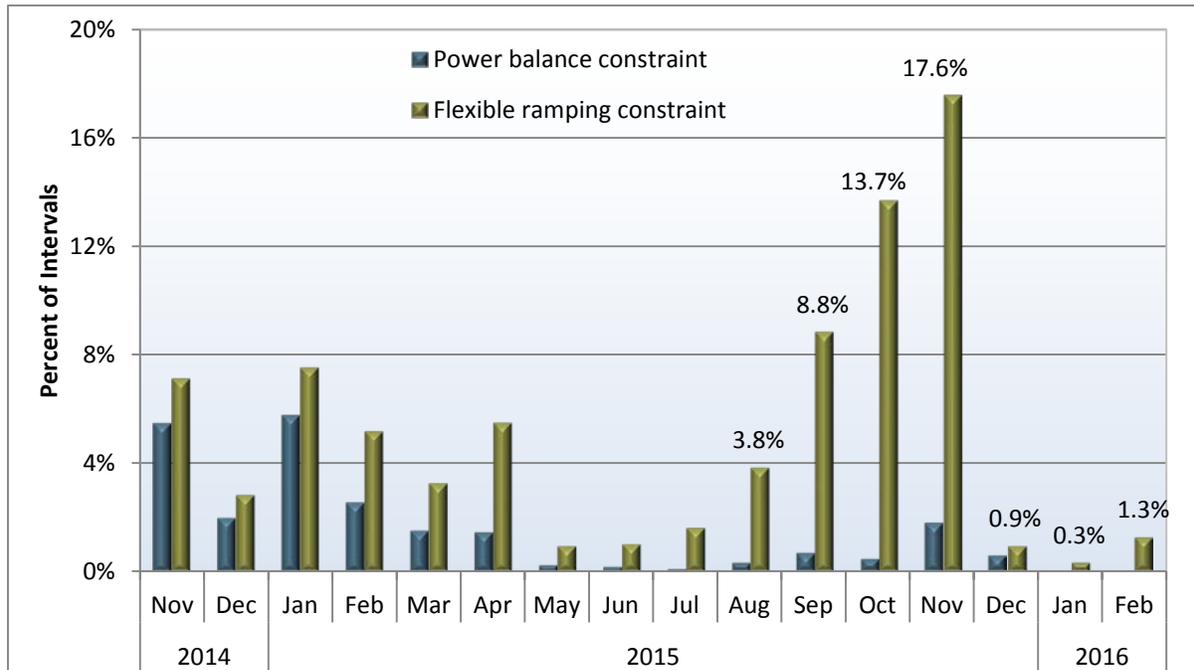


Figure 2.2 Frequency of constraint relaxation in 15-minute market – PacifiCorp West

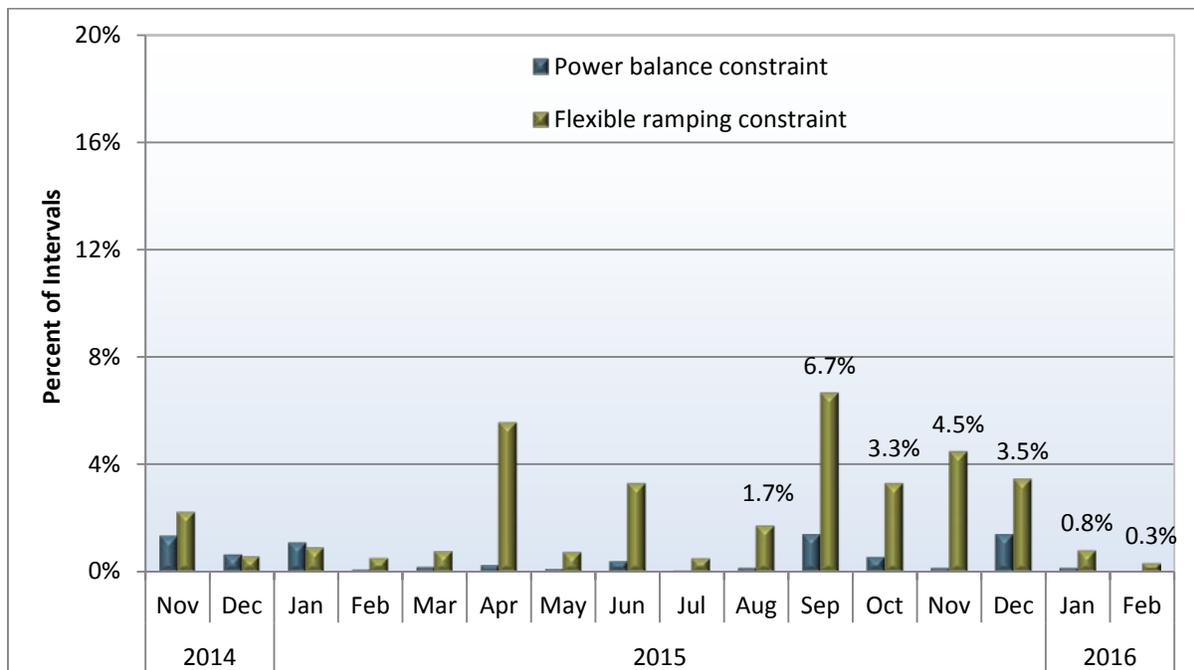


Figure 2.3 Frequency of constraint relaxation in 5-minute market – PacifiCorp East

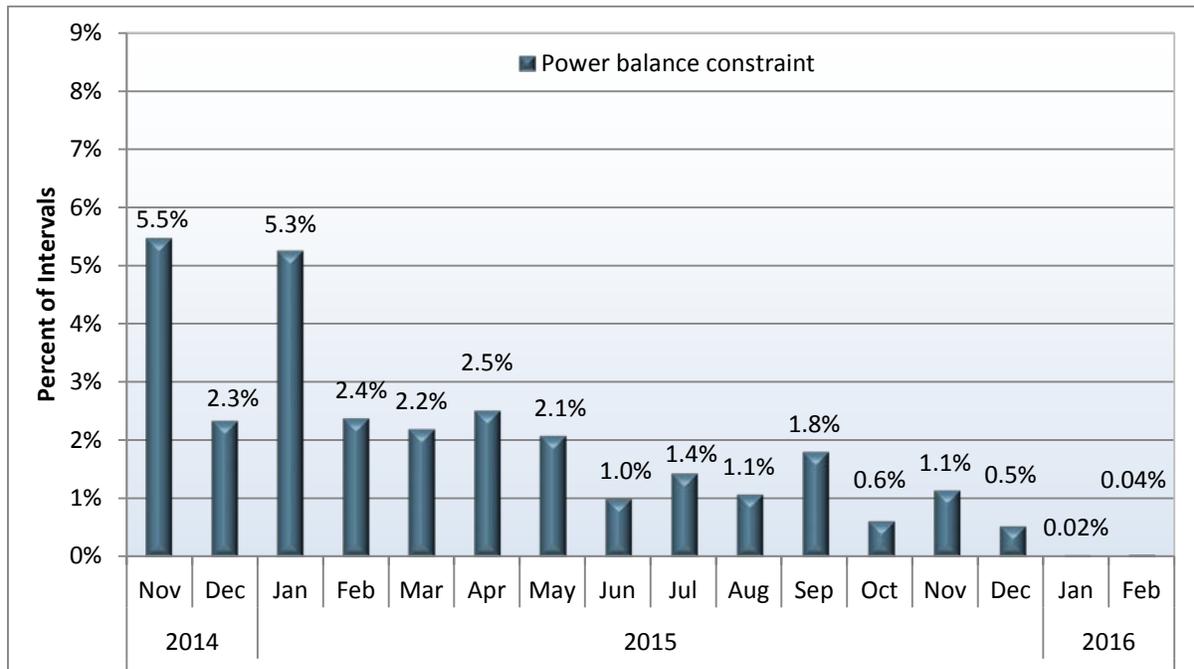
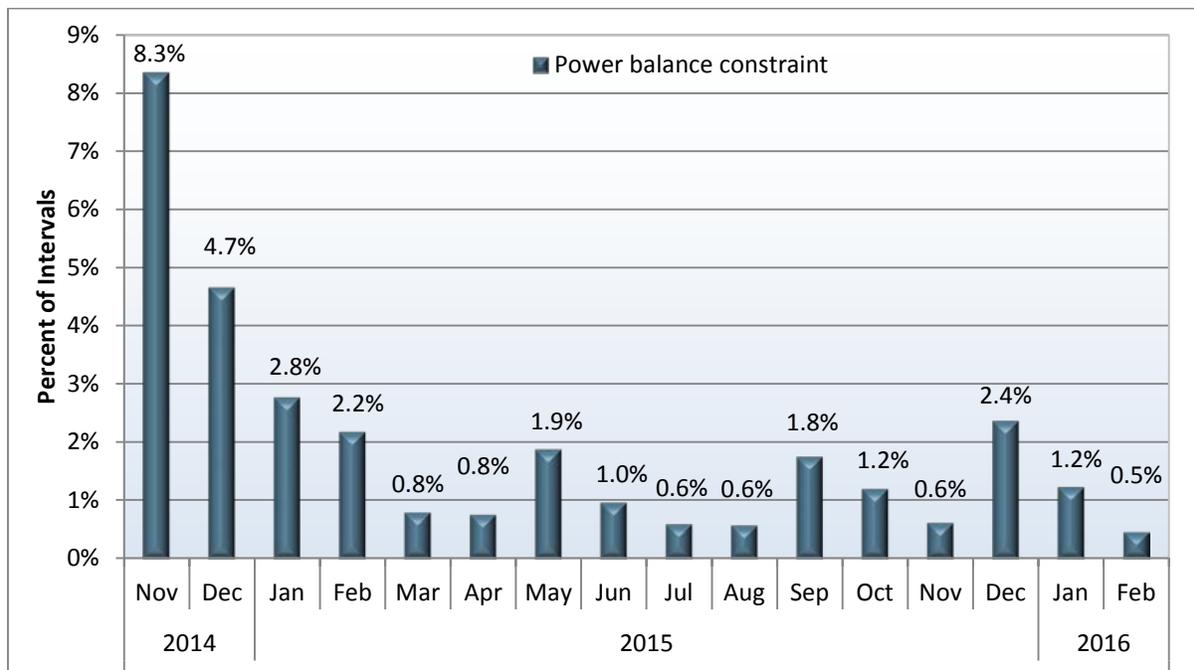


Figure 2.4 Frequency of constraint relaxation in 5-minute – PacifiCorp West



Flexible ramping capacity constraint

A detailed description of the flexible ramping constraint and how it impacts the market was provided in prior DMM reports on EIM market performance. In these reports DMM also discussed the relationship between the flexible ramping constraint and the flexible ramping sufficiency test. The most comprehensive discussion can be found in the EIM report covering November 2015.⁷

When the flexible ramping constraint cannot be met and must be relaxed, during intervals in which price discovery is not triggered by a relaxation of the power balance constraint, energy prices across the balancing area increase by the \$60/MWh shadow price that results for this constraint.

Table 2.1 shows that in February the percent of intervals where the flexible ramping constraint bound, but was not relaxed, declined to about 52 percent of intervals in PacifiCorp East and 45 percent of intervals in PacifiCorp West. Although the overall percentage of intervals the flexible ramping constraint bound decreased from January, the levels continue to be high compared to historical frequencies. This coincides with the trend of increasing flexible ramping requirements that began when the tool to set requirements was implemented in March 2015. This table also shows a decline in the percentage of intervals that the flexible ramping constraint was relaxed in PacifiCorp East and PacifiCorp West, beginning in late November, which is discussed above.

Because of the small number of intervals when the flexible ramping constraint was relaxed during February, 15-minute market prices in PacifiCorp East and PacifiCorp West tracked very closely with the representative bilateral trading hub price range. This continues the trend that began in late November, where the percent of intervals that the flexible ramping constraint was relaxed decreased dramatically.

⁷ *Report on Energy Imbalance Market Issues and Performance*, Department of Market Monitoring, January 28, 2016, pp.13-19: http://www.caiso.com/Documents/Jan28_2016_Department_MarketMonitoringReport_Performance_Issues_EIM_Nov2015_ER15-402.pdf.

Table 2.1 Flexible ramping constraint requirements and market impacts⁸

	Average flex ramp requirement (MW)	Binding flexible ramping constraint (no shortage)		Flexible ramping constraint (shortage)	
		Percent of intervals	Average shadow price	Percent of intervals	Average shadow price
<i>PacifiCorp East</i>					
2015 March	33	6.4%	\$8.92	0.9%	\$21.17
April	44	8.0%	\$7.57	2.6%	\$27.67
May	39	7.7%	\$7.68	0.6%	\$47.86
June	63	15.1%	\$9.28	0.9%	\$60.00
July	87	15.7%	\$8.91	1.5%	\$60.00
August	112	30.8%	\$11.75	3.5%	\$60.81
September	139	29.5%	\$16.20	8.2%	\$60.31
October	139	28.0%	\$16.28	13.2%	\$60.11
November	134	41.7%	\$9.17	15.8%	\$60.00
December	139	51.0%	\$7.17	0.5%	\$60.00
2016 January	139	67.6%	\$6.65	0.3%	\$60.00
February	139	51.9%	\$6.22	1.3%	\$60.00
<i>PacifiCorp West</i>					
2015 March	27	12.9%	\$6.09	0.2%	\$9.54
April	47	17.2%	\$8.00	2.0%	\$9.75
May	32	15.4%	\$6.95	0.5%	\$41.02
June	54	26.1%	\$10.65	2.9%	\$60.85
July	69	20.0%	\$8.78	0.5%	\$60.00
August	86	37.6%	\$9.19	1.6%	\$60.14
September	97	36.2%	\$8.22	5.3%	\$60.00
October	99	49.7%	\$10.05	2.8%	\$60.00
November	99	48.0%	\$8.30	4.3%	\$60.00
December	99	39.6%	\$5.85	2.3%	\$60.00
2016 January	99	57.0%	\$4.92	0.7%	\$60.00
February	99	44.5%	\$4.71	0.4%	\$60.00

⁸ The percent of intervals with flexible ramping constraint shortages in Table 2.1 reflects intervals where the constraint needed to be relaxed in the scheduling run and resulted in a positive shadow price in the pricing run, typically equal to the \$60/MWh penalty price. These intervals do not include periods when the power balance constraint was also relaxed and the penalty price for both the power balance and flexible ramping constraint were set to \$0/MWh via the price discovery mechanism.

Flexible ramping requirements

DMM believes that a factor contributing to flexible ramping constraint relaxations may be the limited number of observations used by the current methodology to set flexible ramping requirements. As discussed in DMM's last few quarterly reports, on March 30, 2015, the ISO implemented an automated procedure to set the flexible ramping requirement in both the ISO and PacifiCorp balancing areas.⁹ This procedure is called the balancing area ramp requirement (BARR) tool.

Because this tool calculates flexible ramping requirements based on a very limited set of historical observations, the tool returns results with a very high variability from one 15-minute interval to the next in both the ISO and EIM areas. This results in the flexible ramping requirement being set frequently at either the lower or upper thresholds imposed by the ISO on the requirement. Both DMM and other ISO staff are concerned about the limited number of observations used by the BARR tool to calculate flexible ramping requirements and the resulting high percentage of intervals when the requirement is set by the threshold. The limited number of observations used may set requirements unnecessarily high in some intervals and too low in others, when compared to the actual potential demand for ramping capacity.

The ISO implemented tighter thresholds in the second quarter of 2015 to decrease the variability of the flexible ramping requirements. While this change helped reduce the volatility of flexible ramping requirements, it did not address the underlying concern about the limited size of observations that was being used by the tool. As noted in our 2015 second quarter report, DMM has recommended increasing the set of observations used to calculate the requirement – preferably by grouping surrounding intervals together – to increase the accuracy of the calculation and reduce the high level of variability due to random variations in historical data. The ISO has indicated it will seek to implement this enhancement but has taken several months to review how best to implement this change. DMM continues to recommend that the ISO expedite the implementation of this enhancement.

⁹ *Report on Market Issues and Performance, Q2 2015*, Department of Market Monitoring, August 17, 2015, pp. 43-46.
http://www.caiso.com/Documents/2015_SecondQuarterReport-MarketIssues_Performance-August2015.pdf.

Report on Market Issues and Performance, Q3 2015, Department of Market Monitoring, November 16, 2015, pp. 33-36.
<http://www.caiso.com/Documents/2015ThirdQuarterReport-MarketIssuesandPerformance-November2015.pdf>.

3 Load bias limiter

When triggered, the load bias limiter would have the same effect as the price discovery feature by causing prices to be set by the last economic bid dispatched rather than the \$1,000/MWh penalty price for energy power balance relaxations. A more detailed description of the load bias limiter was included in DMM's April 2, 2015, report.¹⁰ The ISO included discussion of the load bias limiter in its answer to the comments regarding the ISO's response to the Commission's September 24, 2015, letter requesting additional information on the ISO's August 19, 2015, filing to implement its available balancing capacity proposal in the EIM.¹¹

The percentage of intervals when the energy power balance constraint was relaxed to allow the market software to balance modeled supply and demand continued to remain at low levels during February, particularly in PacifiCorp East and the 15-minute market in PacifiCorp West. In the 5-minute PacifiCorp West market, about 0.5 percent of intervals contained power balance shortages, and the load bias limiter could only have resolved a small percentage of these instances. Frequencies of intervals resolved by the load bias limiter are similar to results observed from the last few months.

Figure 3.1 shows that without special price discovery provisions in effect the load bias limiter would have only been triggered during less than 0.1 percent of all intervals in the 5-minute PacifiCorp West market. This represents the load bias limiter being triggered during fewer than 20 percent of intervals when the power balance constraint bound. February had the fewest number of power balance constraint shortages during the last year in this market, and thus the load bias limiter would have had a small overall impact on prices. The percentage of intervals when the load bias limiter would have been triggered during power balance shortages remains consistent from prior months.

Table 3.1 shows the overall impact the load bias limiter would have had on prices if the available balancing capacity program was implemented. In February, prices in both PacifiCorp East markets would not have been changed, and changes would have been very small in the 15-minute PacifiCorp West market. The load bias limiter would have caused a reduction in prices infrequently in the 5-minute PacifiCorp West market, and would have decreased prices by less than 5 percent.

The estimates of EIM prices without price discovery in Section 1 of this report assume that price discovery provisions are not in place, but energy prices would not be set by the \$1,000/MWh penalty price when the power balance constraint was relaxed and the criteria for triggering the load bias limiter were met.¹² The analysis in this section reflects that on March 20, 2015, the ISO indicated that the load bias limiter would have been triggered under these criteria, if price discovery provisions were no longer in effect.

¹⁰ *Report on Energy Imbalance Market Issues and Performance*, Department of Market Monitoring, April 2, 2015, pp.34-35. http://www.caiso.com/Documents/Apr2_2015_DMM_AssessmentPerformance_EIM-Feb13-Mar16_2015_ER15-402.pdf.

¹¹ Answer of the California Independent systems Operator Corporation to Comments, November 24, 2015, pp. 13-21. http://www.caiso.com/Documents/Nov24_2015_Answer_Comments_AvailableBalancingCapacity_ER15-861-006.pdf.

¹² See discussion in Section 1, page 5.

**Figure 3.1 Mitigation of power balance relaxation by load bias limiter
PacifiCorp West – 5-minute market**

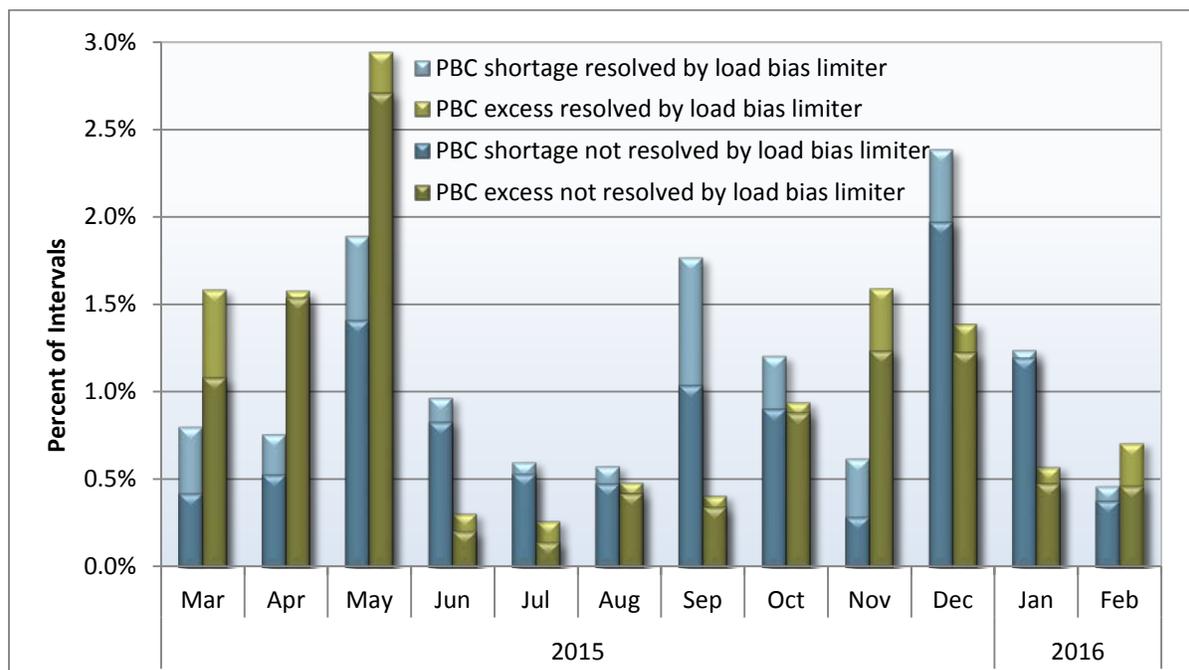


Table 3.1 Impact of load bias limiter on EIM prices (February 2016)

	Bilateral trading hub range		Average EIM price	EIM price without price discovery	EIM price without price discovery or load bias limiter	Potential impact of load bias limiter	
	Low	High				Dollars	Percent
PacifiCorp East							
15-minute market (FMM)	\$17.47	\$18.59	\$17.73	\$17.73	\$17.73	\$0.00	0.0%
5-minute market (RTD)	\$17.47	\$18.59	\$14.57	\$14.91	\$14.91	\$0.00	0.0%
PacifiCorp West							
15-minute market (FMM)	\$17.47	\$18.59	\$17.03	\$17.03	\$16.94	\$0.10	0.6%
5-minute market (RTD)	\$17.47	\$18.59	\$13.35	\$16.62	\$17.29	-\$0.67	-3.9%

CERTIFICATE OF SERVICE

I 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 6th day of April, 2016.

Is/ Anna Pascuzzo
Anna Pascuzzo