

June 2, 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 (CAISO) in its report on the performance of the Energy Imbalance Market for March 1, 2016 through March 23, 2016.¹ On March 23, 2016, the CAISO implemented the Commission's order on the Available Balancing Capacity feature. The implementation of Available Balancing Capacity marks the end of this monthly reporting requirement.

Please contact the undersigned with any questions.

Respectfully submitted,

By: /s/ Anna A. McKenna

Roger E. Collanton

General Counsel

Anna A. McKenna

Assistant General Counsel

John C. Anders

Lead Counsel

California Independent System

Operator Corporation

250 Outcropping Way

Folsom, CA 95630

Tel: (916) 608-7182

Fax: (916) 608-7222

amckenna@caiso.com

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

June 2, 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 May 10, 2016, covering the period from March 1 through March 23, 2016, (March Report) for the PacifiCorp balancing areas.¹ On March 23, 2016 the ISO implemented the available balancing capacity feature.² Implementation of this feature marks the end of this monthly reporting requirement. The red-line portion of the ISO's March Report shows that it contains updated graphs and figures from the ISO's February report and details that the software changes for available balancing capacity that were implemented in March.

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

- Overall EIM performance was good during March in the both PacifiCorp areas. Significant transfer capability continues to be available between NV Energy, PacifiCorp East and the ISO since the addition of the NV Energy area to EIM in December 2015. High transfer capacity and low congestion continue to allow prices in the PacifiCorp areas to be set at the competitive system marginal price effective throughout the ISO footprint during most intervals.
- Prices used to settle load deviations in PacifiCorp East averaged about \$17/MWh during March, while prices in PacifiCorp West averaged about \$11/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 where either the flexible ramping constraint or energy power balance constraint were relaxed to allow the market software to balance modeled supply and demand continued to be low during March. Thus, the overall impact on prices from both constraints was minimal and market performance was good during the month.
- In the 15-minute market, the power balance constraint did not need to be relaxed in either PacifiCorp East or PacifiCorp West during March, causing convergence between prices with and without the price discovery mechanism. The power balance constraint was relaxed relatively infrequently, during about 0.1 percent of all intervals, in the 5-minute market for both PacifiCorp areas. Thus, 5-minute prices with and without price discovery converged closely.
- 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. The additional \$60/MWh impact on prices that occurs during these intervals increased overall monthly average prices by less than \$2/MWh in both areas. This is a significant decrease from last fall when the monthly price impacts from flexible ramping constraint relaxations averaged as high as \$9/MWh. As noted in prior reports,

¹ The ISO's March Report was filed to FERC on May 10 and posted on the ISO website on May 11, 2016: http://www.caiso.com/Documents/May10_2016_March2016_EIMPriceWaiverReport_ER15-402.pdf.

² Please refer to future DMM quarterly reports for details regarding the available balance capacity feature, implementation, and impacts on market results.

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.

- The price discovery waiver expired for both PacifiCorp areas during March when the ISO implemented the available balancing capacity mechanism. If price discovery provisions had not been in place during the entire month, the load bias limiter feature would have been triggered infrequently. This is largely driven by the infrequent power balance constraint relaxations in March. When triggered, the load bias limiter would have the same effect as the price discovery feature, which is 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 power balance shortages. DMM estimates that the load bias limiter would have impacted prices in all PacifiCorp markets by less than \$0.25/MWh during March.

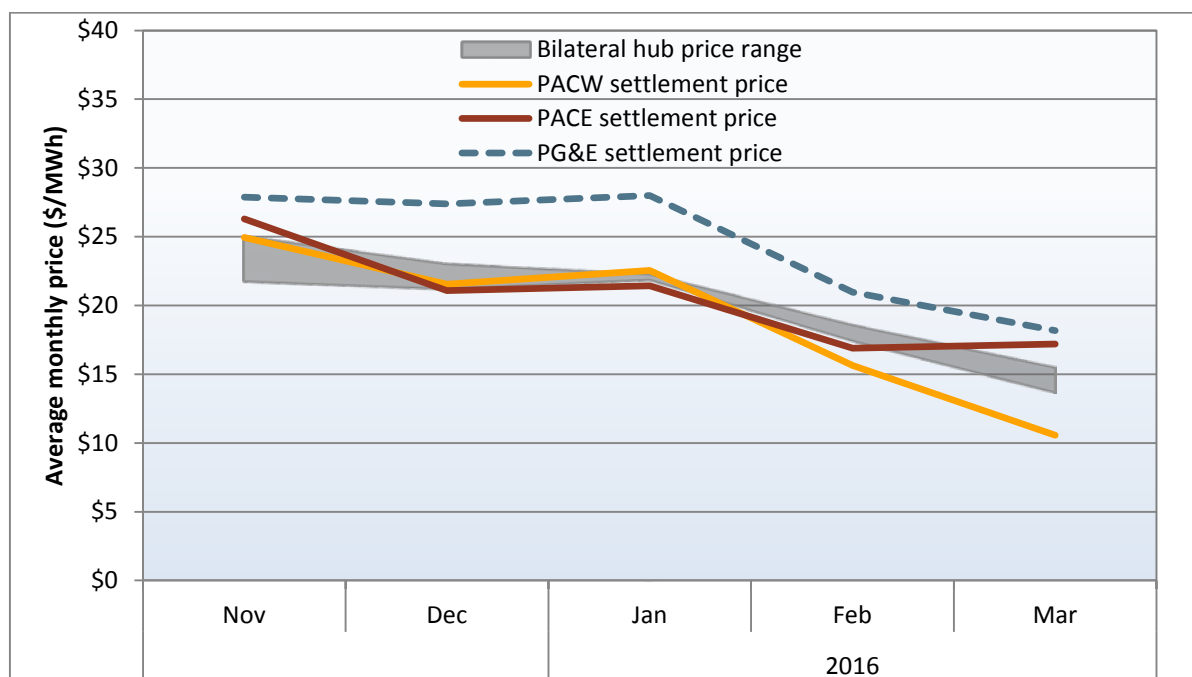
The remainder of this report is organized as follows. This summary section highlights key findings and trends occurring in March 2016. Section 1 provides a description of prices in the market and impacts from the power balance and flexible ramping market constraints. Section 2 provides information regarding 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 (Northern California) load aggregation areas as well as the range of bilateral trading hub prices DMM uses as an additional benchmark for EIM prices.³

The load settlement price is an average of the 15-minute and 5-minute prices, weighted by the amount of estimated load imbalance in each of these markets.⁴ The 15-minute market prices are weighted by the imbalance between base load and forecasted load in the 15-minute market, and the 5-minute prices are weighted by the difference between forecasted load in the 15-minute market and forecasted load in the 5-minute market. The hourly shape and level of these settlement prices track most closely with 15-minute prices. This occurs because settlement prices are weighted more heavily on prices in the 15-minute market as imbalance is generally greater between base load and forecasted load in the 15-minute market than between forecasted load in the 15-minute and 5-minute markets.

Figure 1.1 Settlement and bilateral trading hub prices – PacifiCorp East and West⁵



³ Data in Figure 1.1 begins in November after the ISO made some corrections to the methodology for calculating EIM load settlement prices.

⁴ 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_5.13.doc.

⁵ Settlement prices are computed using 15-minute and 5-minute prices weighted by respective real-time imbalance energy. Because real-time imbalances vary, settlements prices may differ somewhat from 15-minute and 5-minute prices discussed throughout this report.

In March, settlement prices for both PacifiCorp East and PacifiCorp West continued to track well overall with bilateral trading hub market prices, as observed in prior months. The average monthly settlement price in PacifiCorp East was about \$17/MWh, or about 20 to 30 percent above the bilateral price range. The PacifiCorp West settlement price was about \$11/MWh, or about 20 to 30 percent below the bilateral price range. Prices during March in both PacifiCorp areas remained below the PG&E area settlement price, consistent with historical relationships.

The bilateral trading hub price range in Figure 1.1 is calculated as the range between prices from the ICE and Powerdex indices, and are representative of energy prices prior to EIM implementation. 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.⁶ The PG&E load aggregation area price is used as a comparison with both PacifiCorp regions because prior to EIM, PG&E settlement prices were consistently higher than those at the average bilateral trading hub range and these prices usually moved in the same direction and relative magnitude. As shown in Figure 1.1 this trend has generally persisted from November through March.

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.⁷

Figure 1.3 and Figure 1.5 show average monthly prices in the 15-minute market *with* and *without* the special price discovery mechanism that was applied to mitigate prices in PacifiCorp East and PacifiCorp West markets during much of March.⁸ 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 shows that the flexible ramping constraint was relaxed very infrequently and the power balance constraint was not relaxed during March in the 15-minute market of both PacifiCorp areas. As a result, prices in the PacifiCorp areas in the 15-minute market were very close to the bounds of the bilateral trading hub range, and prices were the same with and without the special price discovery feature. This is in sharp contrast to market outcomes in PacifiCorp East during October and 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. Because there were no power balance constraint relaxations in the 15-minute market in the PacifiCorp areas during March, prices with and without the price discovery mechanism converged.

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 close to the bilateral trading hub price range.

⁶ 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.

⁷ *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.

⁸ The price discovery waiver expired for both PacifiCorp areas on March 23, 2016 when the ISO implemented the available balancing capacity mechanism. A detailed description of the methodology used to calculate the counterfactual prices prior to the expiration that would result without price discovery was provided on p. 6 of DMM's April 2, 2015 report: http://www.caiso.com/Documents/Apr2_2015_DMM_AssessmentPerformance_EIM-Feb13-Mar16_2015_ER15-402.pdf.

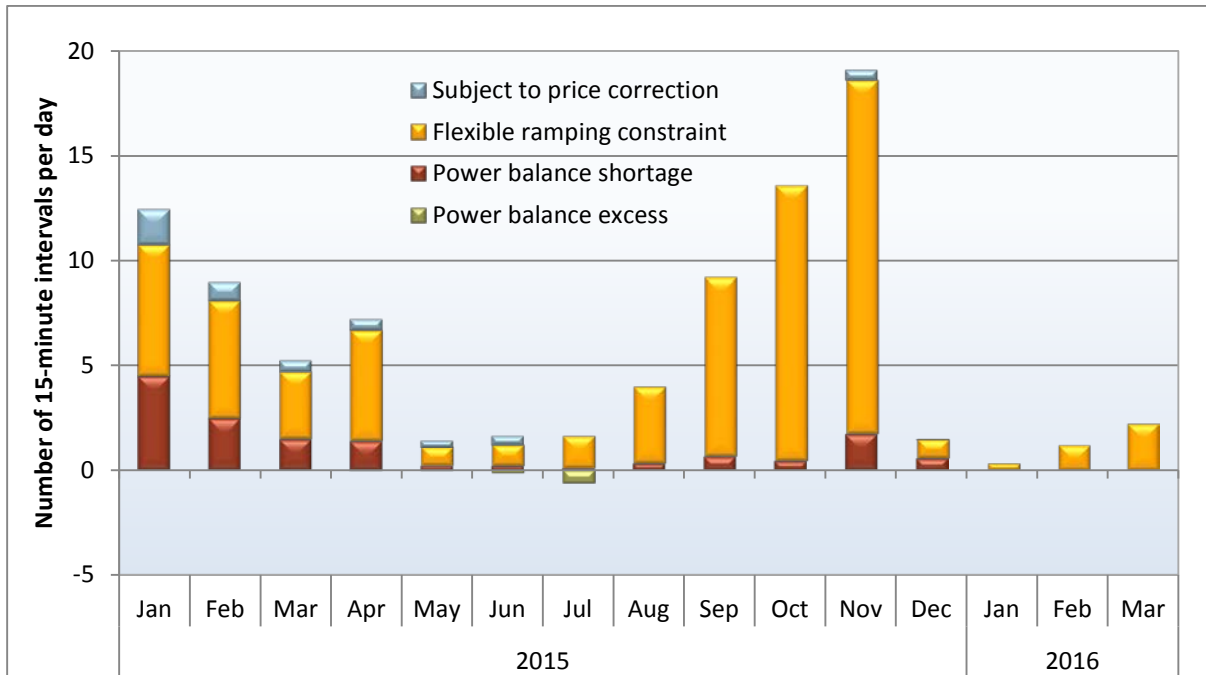
Because the power balance constraint relaxations were so infrequent, prices without the price discovery mechanism were nearly equal to observed market prices with the price discovery mechanism in place.

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 March 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.

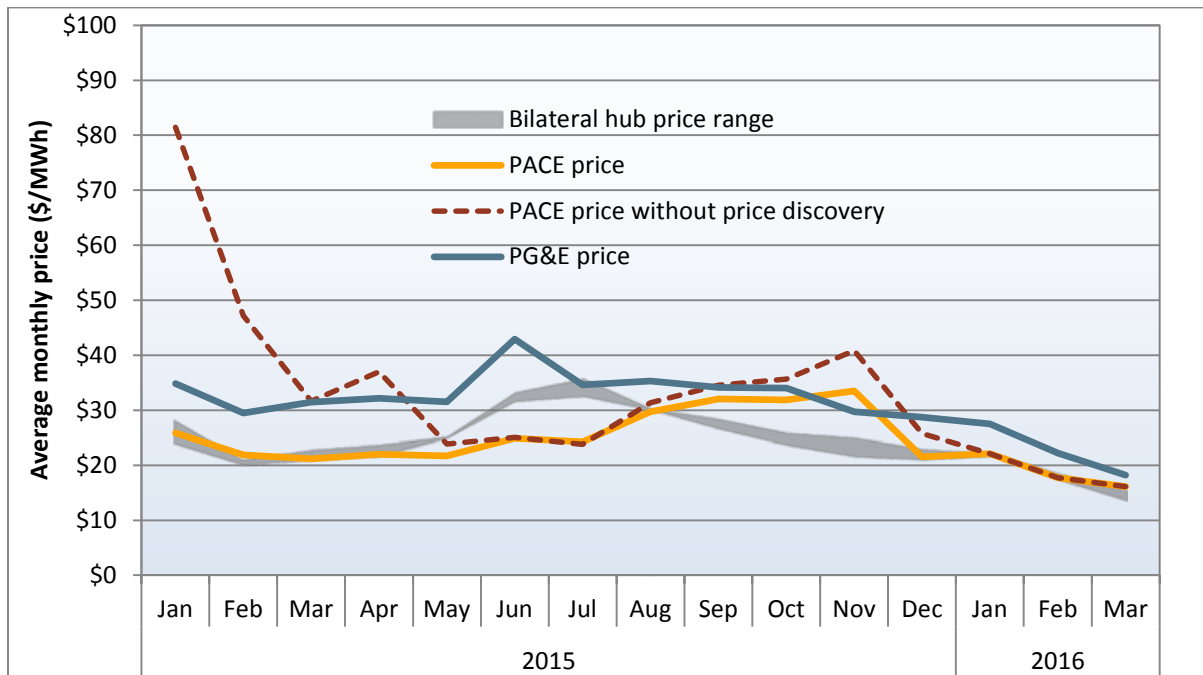
Table 1.1 Average prices in EIM and bilateral markets (March 2016)

	Bilateral trading hub range		Average EIM price	EIM price without price discovery
	Low	High		
<i>PacifiCorp East</i>				
15-minute market (FMM)	\$13.75	\$15.57	\$16.13	\$16.13
5-minute market (RTD)	\$13.75	\$15.57	\$16.13	\$16.90
<i>PacifiCorp West</i>				
15-minute market (FMM)	\$13.75	\$15.57	\$12.78	\$12.78
5-minute market (RTD)	\$13.75	\$15.57	\$8.42	\$8.71

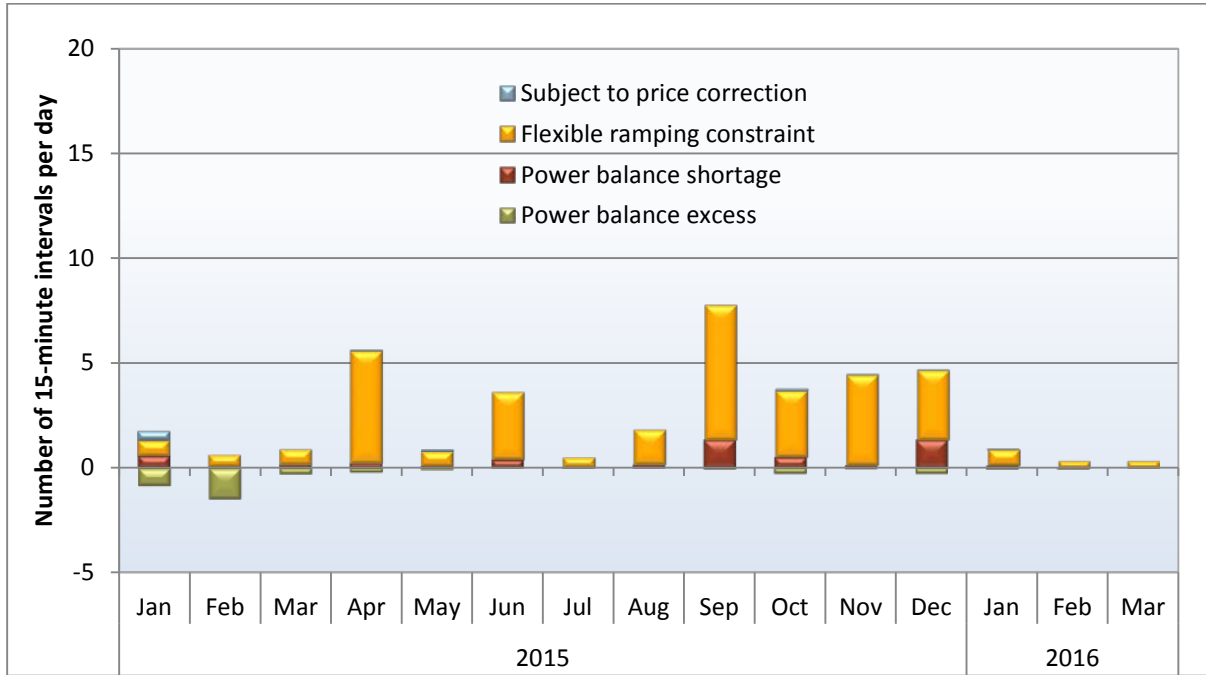
**Figure 1.2 Frequency of constraint relaxation
PacifiCorp East – 15-minute market**



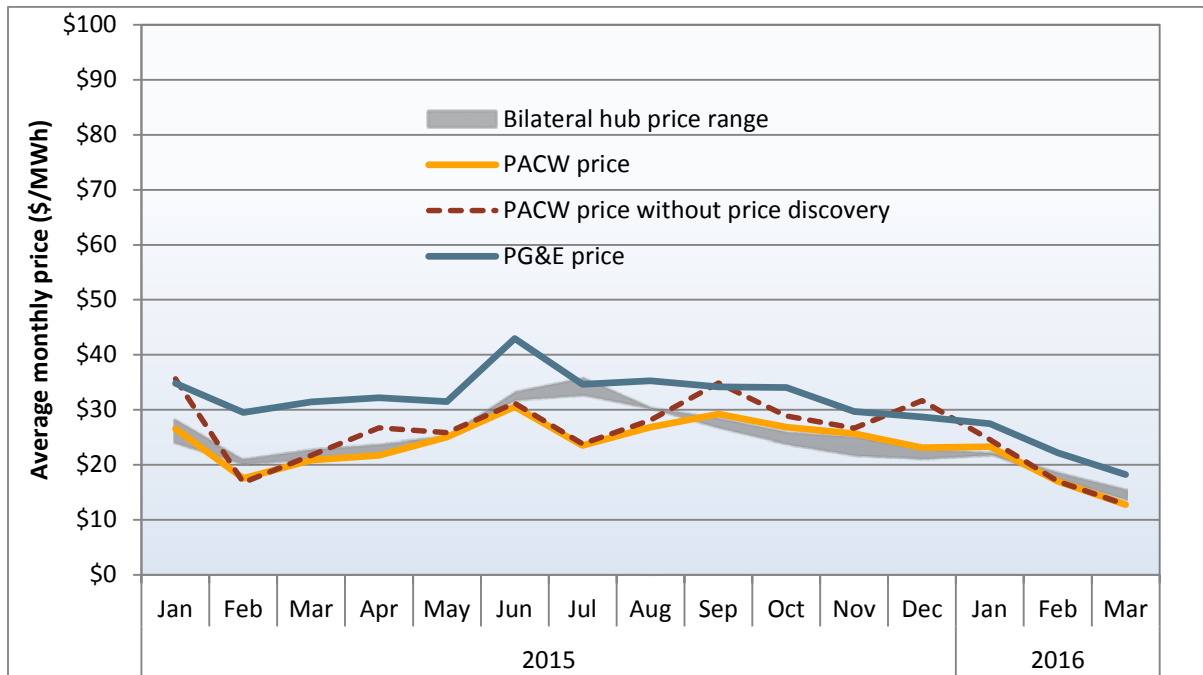
**Figure 1.3 Average monthly prices with and without price discovery
PacifiCorp East – 15-minute market**



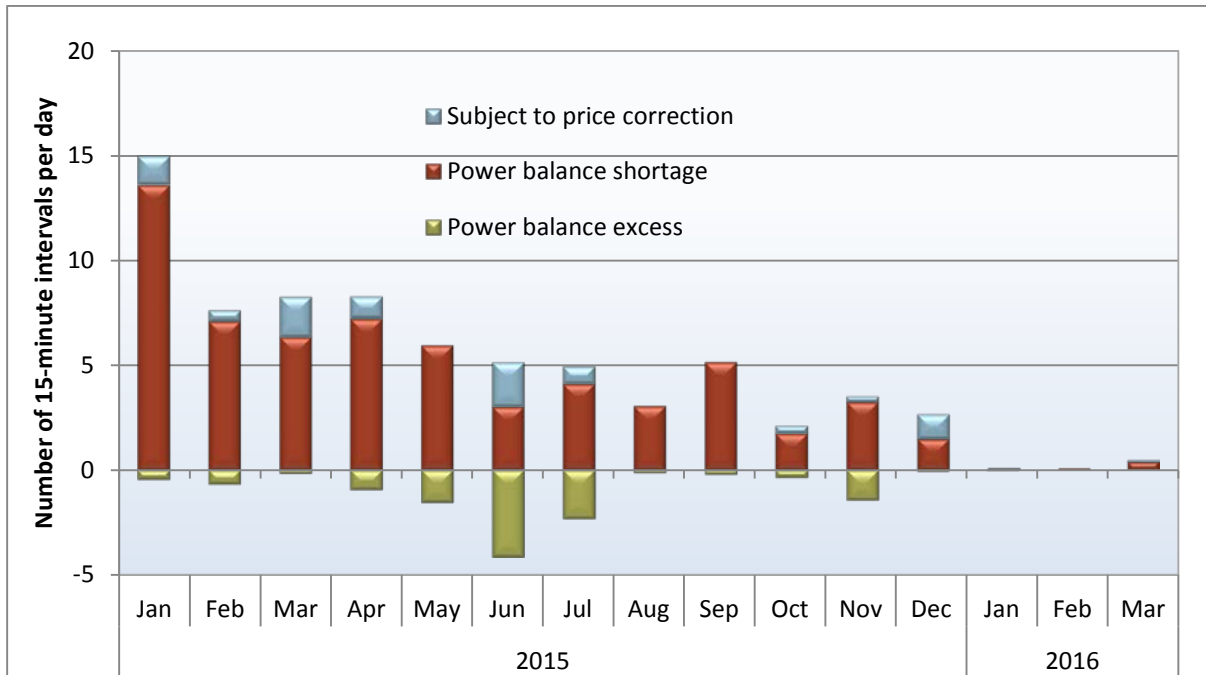
**Figure 1.4 Frequency of constraint relaxation
PacifiCorp West – 15-minute market**



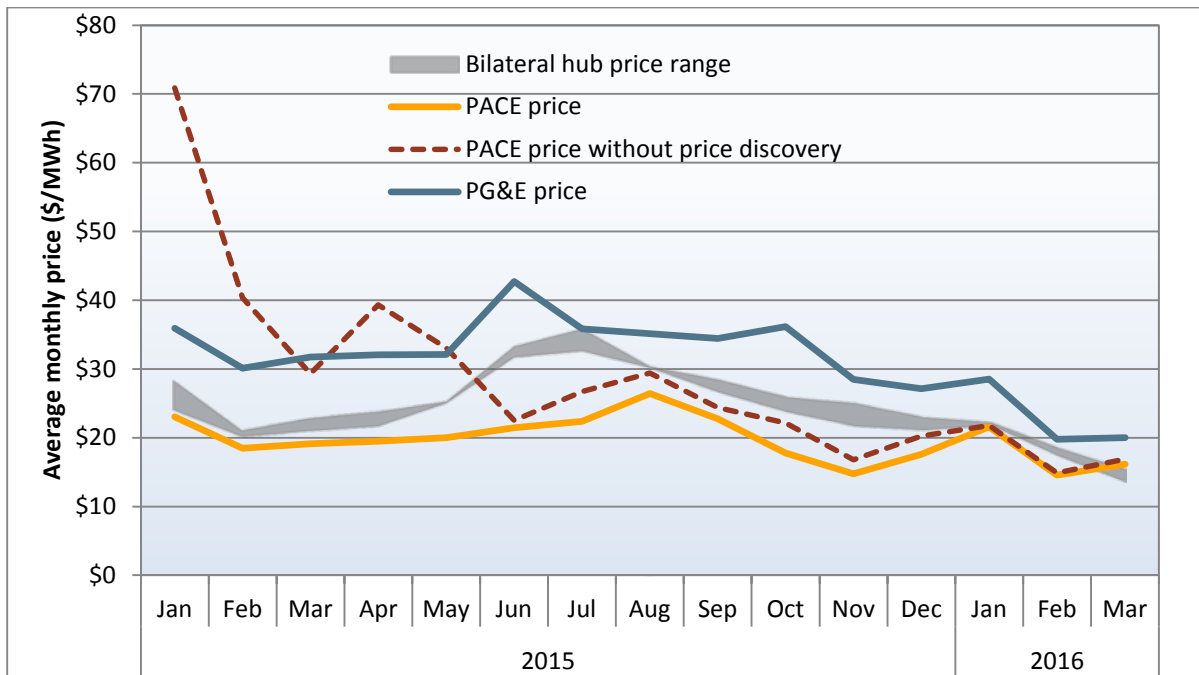
**Figure 1.5 Average monthly prices with and without price discovery
PacifiCorp West – 15-minute market**



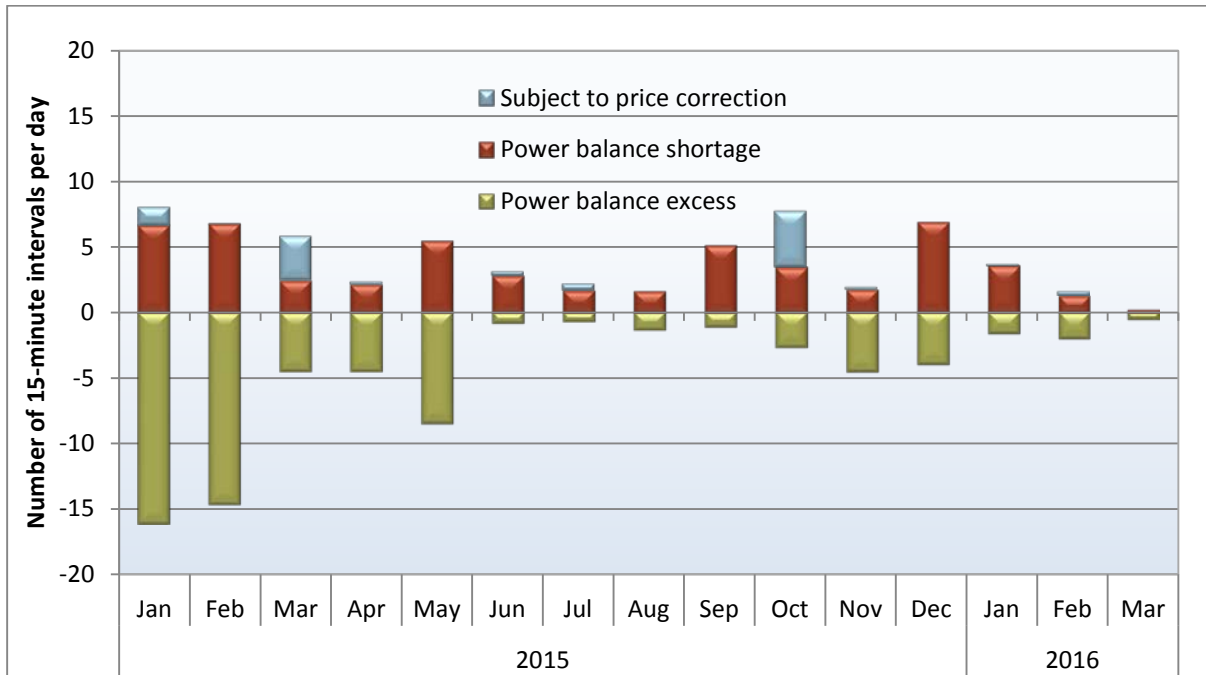
**Figure 1.6 Frequency of constraint relaxation
PacifiCorp East – 5-minute market**



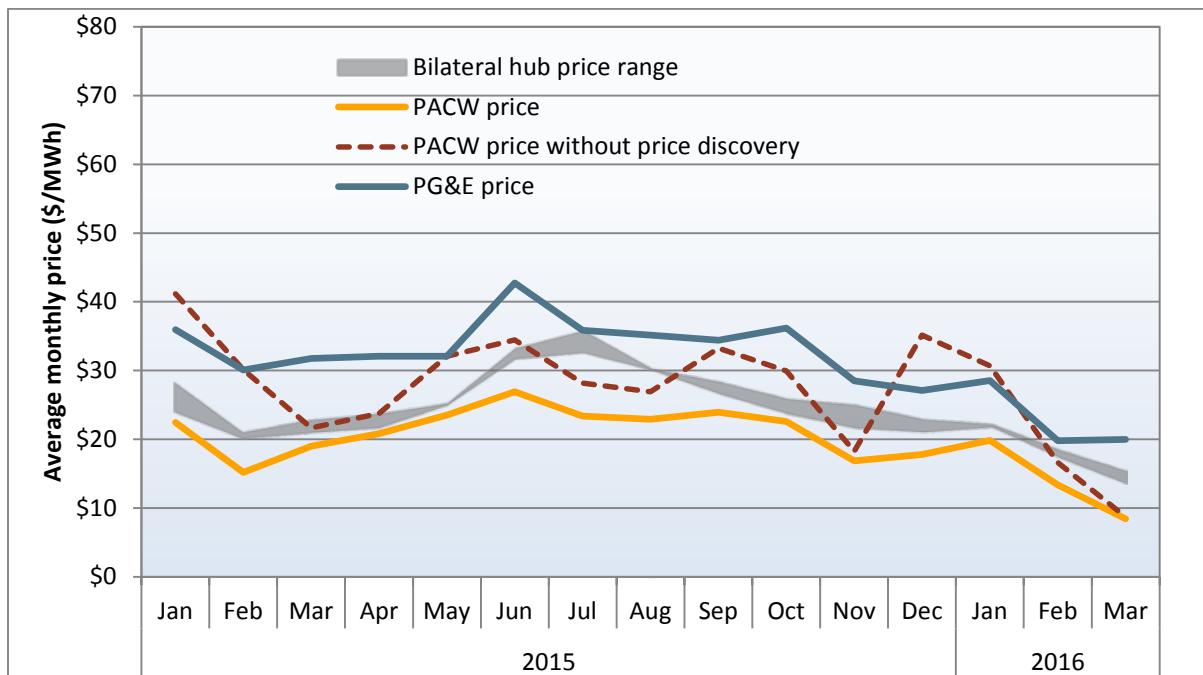
**Figure 1.7 Average monthly prices with and without price discovery
PacifiCorp East – 5-minute market**



**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 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 2.3 percent of intervals in the 15-minute PacifiCorp East market during March. This is a relatively infrequent rate of relaxation and stands in contrast to rates observed during October (13.7 percent) and November (17.6 percent). 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 (6.7 percent) and November (4.5 percent) to frequencies below 0.5 percent of all intervals during February and March.

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. Moreover, the addition of NV Energy to the EIM in December 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 March in both PacifiCorp areas and both real-time markets. The power balance constraint was not relaxed in either 15-minute market during March, and was relaxed in only 0.1 percent of all intervals in the 5-minute markets in PacifiCorp East and PacifiCorp West. The infrequency of power balance constraint relaxations resulted in price convergence between prices with and without price discovery in each PacifiCorp market during March, as discussed above.

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

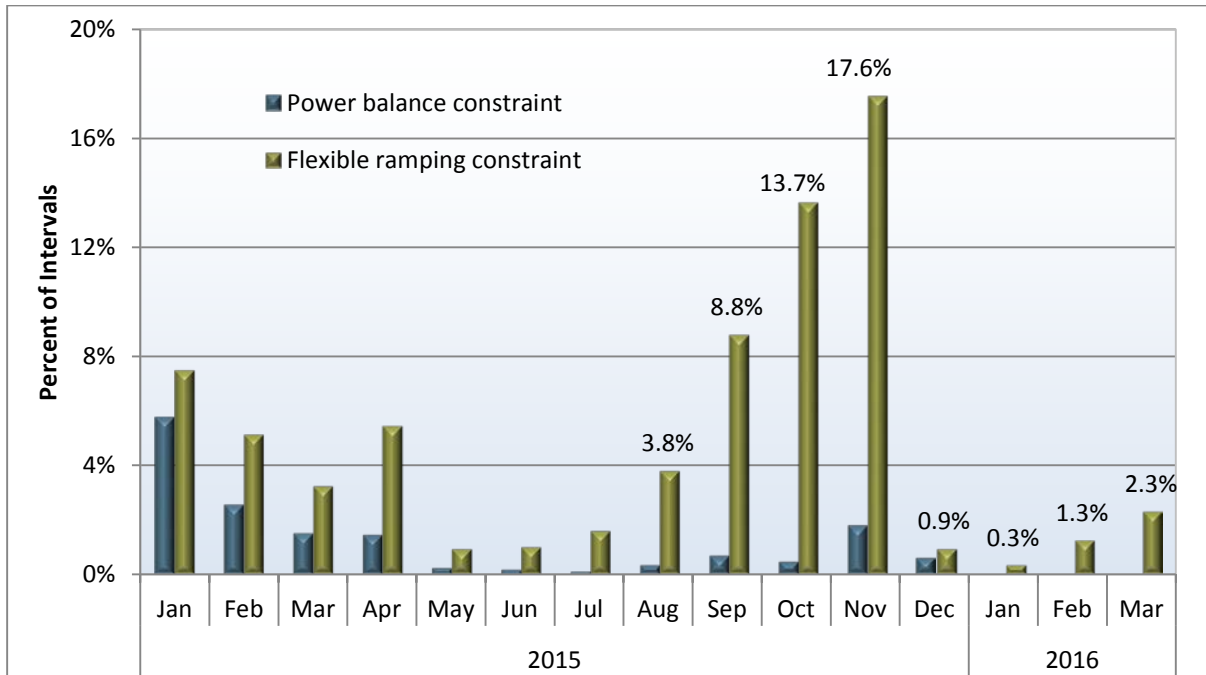


Figure 2.2 Frequency of constraint relaxation in 15-minute market – PacifiCorp West

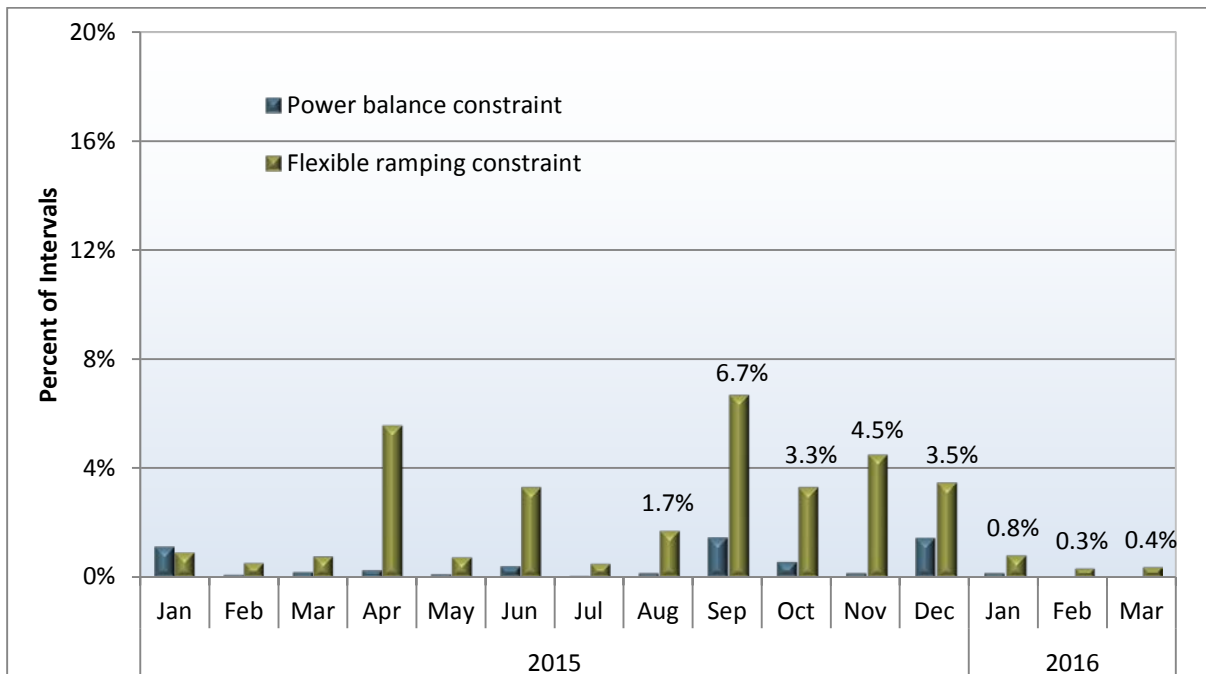


Figure 2.3 Frequency of constraint relaxation in 5-minute market – PacifiCorp East

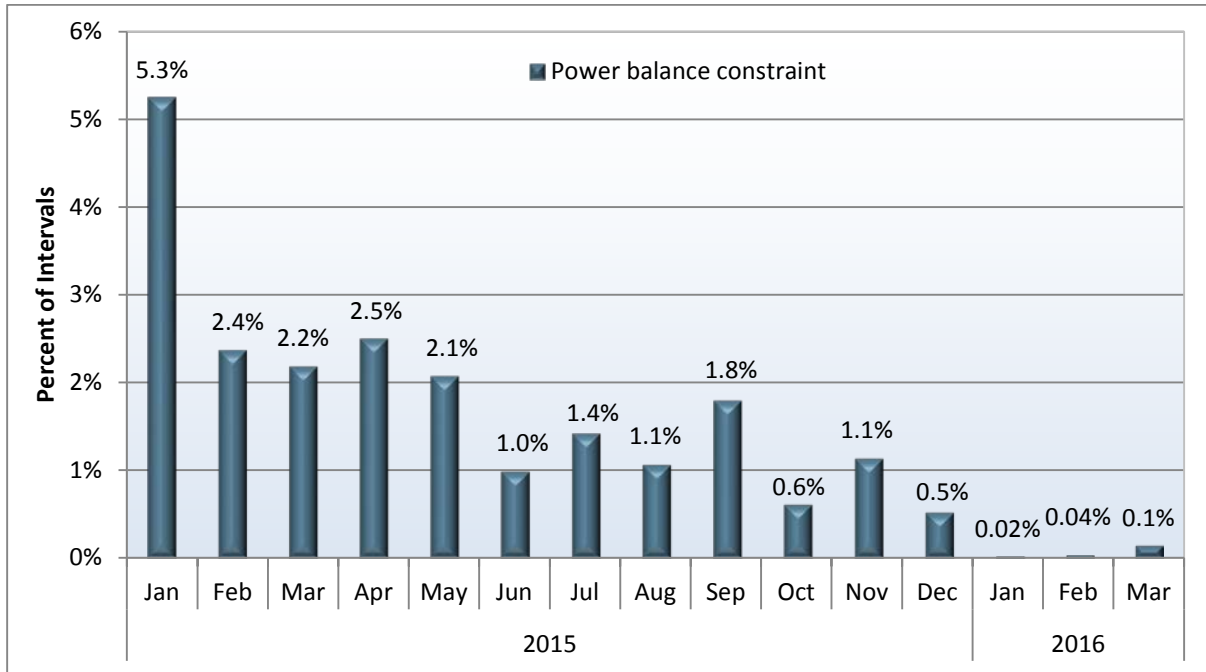
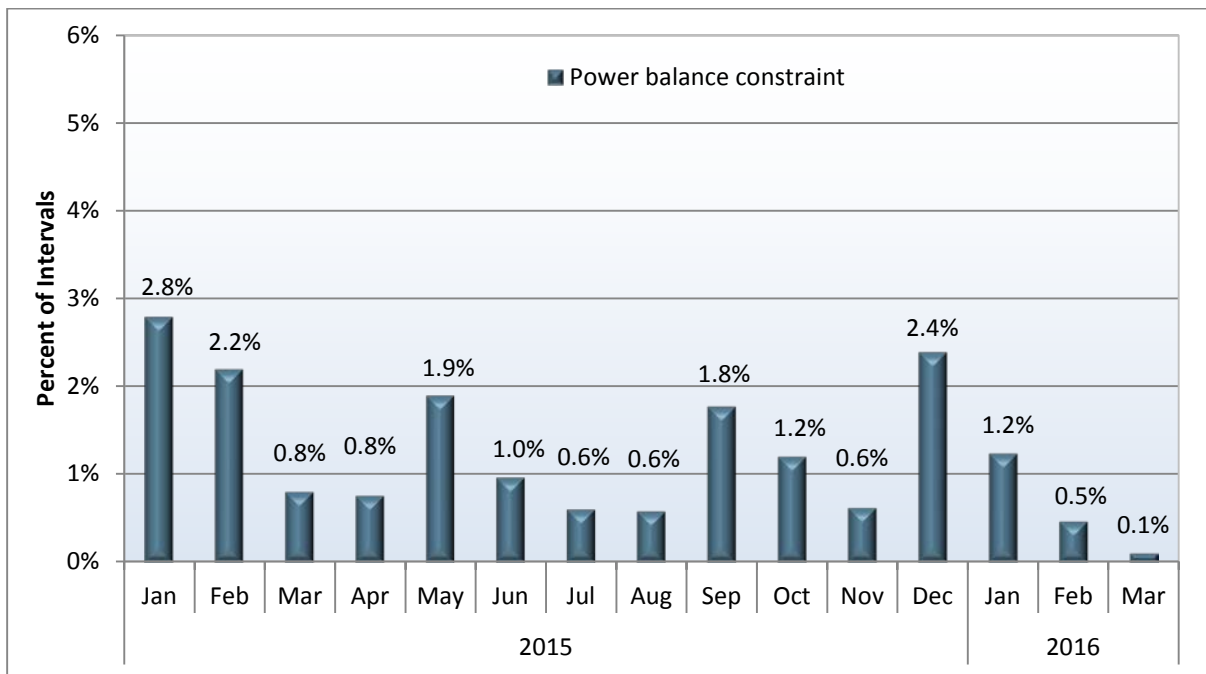


Figure 2.4 Frequency of constraint relaxation in 5-minute – PacifiCorp West



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 2015.⁹

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 March the percent of intervals where the flexible ramping constraint bound, but was not relaxed, was about 55 percent of intervals in PacifiCorp East and 40 percent of intervals in PacifiCorp West. These levels are high compared to historical frequencies through most of 2015. This coincides with the trend of increasing flexible ramping requirements that began in the summer of 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 March, 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, when the frequency of flexible ramping constraint relaxations decreased.

⁹ *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 impacts¹⁰

	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
March	140	55.2%	\$8.50	2.3%	\$61.17
<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
March	99	40.3%	\$9.46	0.4%	\$63.51

¹⁰ 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, in March 2015, the ISO implemented an automated procedure to set the flexible ramping requirement in both the ISO and EIM areas.¹¹ 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 would seek to implement this enhancement, but so far has not made any updates or proposed revisions to the current calculation methodology. DMM continues to recommend that the ISO expedite the implementation of this enhancement.

¹¹ *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.^{12,13} A more detailed description of the load bias limiter was included in DMM's 2015 annual report.¹⁴

Prior to implementation of the available balancing capacity feature on March 23, the price discovery feature was active and would replace prices, anytime the power balance constraint was relaxed, with prices from the last economic bid dispatched. After March 23, when the price discovery mechanism was no longer in place, the load bias limiter continued set price to the last economic bid, but only when load adjustments were greater than the power balance shortfalls or excess and in the same direction. The analysis in this section estimates the effect that the load bias limiter would have had if the special price discovery feature had not been active during the entire month.

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 March, particularly in the 15-minute market. In the 5-minute market for PacifiCorp East and West, about 0.1 percent of intervals contained power balance shortages. The load bias limiter could only have resolved a small percentage of these instances, and therefore the load bias limiter would have had a small overall impact on prices.

Table 3.1 shows the overall impact the load bias limiter would have had on prices if the price discovery waiver had not been in place for the entire month. In the 5-minute market, the load bias limiter would have decreased prices in both PacifiCorp areas by less than 1.5 percent. Changes to prices in the 15-minute market would have been zero, as there were no shortages in the 15-minute market in both PacifiCorp East and PacifiCorp West during March.

¹² The load bias limiter is not the same as the price discovery mechanism and only replaces the penalty parameter with the last dispatched bid when the power balance is relaxed and the load bias is greater than the energy shortfall or excess. Additionally, the load bias entered needs to be positive to trigger the feature when there is an energy shortfall and negative for oversupply. Conversely, the price discovery mechanism is activated whenever there is either an excess or shortage of the power balance, without exception. The primary function of the load bias limiter is to prevent operators from triggering power balance constraint relaxations, and the ISO has committed to reviewing this tool for future enhancements.

¹³ 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. 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.

¹⁴ *2015 Annual Report on Market Issues and Performance*, Department of Market Monitoring, May 12, 2016, pp. 109-111. http://www.caiso.com/Documents/May12_2016_2015AnnualReport_MarketIssues_Performance_ZZ16-4.pdf.

Table 3.1 Impact of load bias limiter on EIM prices (March 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
<i>PacifiCorp East</i>							
15-minute market (FMM)	\$13.75	\$15.57	\$16.13	\$16.13	\$16.13	\$0.00	0.0%
5-minute market (RTD)	\$13.75	\$15.57	\$16.13	\$16.90	\$17.14	-\$0.24	-1.4%
<i>PacifiCorp West</i>							
15-minute market (FMM)	\$13.75	\$15.57	\$12.78	\$12.78	\$12.78	\$0.00	0.0%
5-minute market (RTD)	\$13.75	\$15.57	\$8.42	\$8.71	\$8.81	-\$0.10	-1.2%

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 2nd day of June, 2016.

1st Anna Pascuzzo
Anna Pascuzzo