

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

California Independent System) Docket No. ER14-____-000
Operator Corporation)

PETITION FOR WAIVER OF TARIFF PROVISIONS

The California Independent System Operator Corporation (ISO) respectfully requests a limited, one-time suspension of the effectiveness – a “waiver” – of the time limitation contained in section 35.2 of the ISO tariff, which requires that price corrections for each trading day end no later than the fifth calendar day following the trading day.¹ The ISO seeks this waiver to correct prices for certain hours on January 9, 13, 14 and 26, 2013, due to a software defect, which are erroneous as posted.² The ISO did not identify these errors until after the expiration of the five-day window provided in the tariff.

The Commission should grant this request because there is good cause for the waiver consistent with Commission precedent. In particular, granting the waiver would enable the ISO to rectify an unjust outcome that, if left uncorrected, would force a small number of market participants to bear the cost of the software defect. The total cost of the pricing error for the specified days is approximately \$6.6 million and is largely born by four market participants that were overcharged for erroneous congestion reflected in the applicable locational

¹ Attachment A contains commercially sensitive information for which the ISO is requesting confidential treatment pursuant to 18 CFR 385.1112 (2013).

² Section 35.3 of the ISO tariff only allows the ISO to make changes after the expiration of the time limitation at the direction of the Commission, unless the changes are to remedy processing and publication issues, which these were not.

marginal prices. The waiver does not impose an undue burden on any single market participant. The initial error resulted in the allocation of excess congestion payments to scheduling coordinators based on their load and exports, from whom the excess payments would now be collected. Inasmuch as the ISO has taken steps to address the issues that led to the erroneous prices, the ISO does not anticipate the need for similar waivers in the future.

If the Commission grants the requested waiver, the ISO will commence the resettlement in the scheduled eighteen month resettlement statement which will occur on July 17, 21, 22 and August 1, 2014, respectively for the affected trade dates. This will be feasible if the Commission issues an order by June 16, 2014, to allow for the price corrections and processing of these price changes in the settlement system.³

I. Background

A. Software issue leading to erroneous accounting of wind resources output in market runs.

The erroneous prices that the ISO seeks to correct with the requested waiver occurred in connection with congestion attributable to the variability of wind generation. The ISO dispatches wind resources based on the resources' self-schedules during real-time pre-market runs. In the five-minute real-time interval market, however, the ISO uses the actual wind production, based on telemetry. Using the current market functionality, the ISO makes an adjustment

³ The ISO was not able to prepare the proposed price corrections in time for them to be included in the ninety day resettlement statement because of the need for an impact analysis, a stakeholder process, validation that the changes could be accomplished, and a Commission waiver of Section 35.2 of its tariff. The next regularly scheduled resettlement statement is the eighteen month statements, which the ISO is targeting for this price correction and associated resettlements.

to the forecasted output of such resource in the real-time system to account for wind variability when there is a need to conform the projected self-schedules in the pre-dispatch market to the most current observed production of wind. The ISO applies these wind imbalance adjustments by wind zone.

During certain hours on January 9, 13, 14, and 26, 2013, the ISO's software detected high levels of real-time congestion in the Birds Landing area, and produced congestion prices at \$1000/MWh during some intervals. This outcome was not initially alarming because the ISO expected some congestion due to a forced outage in the Birds Landing area that required enforcement of the contingencies, as well as because of the variability of the wind energy, so the congestion appeared plausible and the prices did not appear extraordinary. The ISO followed its regular price validation procedures to investigate the high congestion prices within the time available and did not identify anomalies sufficient to consider the prices invalid.

When the ISO observed similar congestion in February 2013, it again followed its normal procedures to validate the prices. This time, however, the ISO engineering staff identified a defect in the software that had incorrectly accounted for wind imbalance adjustments. The ISO was able to correct the February prices during the time allowed for price corrections under Section 35.2 of the ISO tariff. The ISO then notified the software vendor of the problem, and the vendor provided a software solution that resolved the problem prospectively.

Subsequently, the ISO reviewed the prices during the January time period in which it had observed excessive congestion to evaluate whether the software

defect drove those high congestion prices as well. The ISO determined that the software had also erroneously accounted for the wind imbalance adjustments in seven trading hours between January 9 and January 26. Table 3A in Attachment A identifies the affected hours and the constraints involved. The error did not have a system-wide impact and only affected approximately 60 individual pricing locations out of the approximately 5000 pricing locations in the ISO system, as well as several aggregated pricing locations. These are the prices the ISO seeks permission to correct.

B. Pricing and settlement impact if the Commission grants the requested waiver

If the Commission grants the waiver, the ISO will correct the prices identified in Table 3A in Attachment A and recalculate the settlement statements for all affected scheduling coordinators.⁴ The excessive negative prices resulted in an assessment of congestion charges to supply resources (imports and generators) providing energy during the affected hours.⁵ Under section 11.5.4.2 of the ISO tariff the excess congestion funds collected are allocated to

⁴ The determination of the corrected price will require adjusting the shadow price of these constraints. The shadow prices will fully zero out in instances where there was no actual congestion. In other instances, the shadow prices may be reduced from \$1000 to approximately \$60, because some congestion did exist. This in turn will adjust the marginal congestion component of the LMP of the affected nodes. The ISO has used an LMP of -\$30/MWh to estimate the impact of the price corrections, as reflected in this waiver request. The actual totals that will appear on the resettlement statements will differ because those will be passed on the prices as corrected.

⁵ Section 11.5.1 provides that scheduling coordinators will be paid for their imbalance energy based on the applicable real-time locational marginal price. The locational marginal price is composed of the marginal cost of congestion, the marginal cost of energy and the marginal cost of losses. The modeling error on the days identified in this request for a tariff waiver resulted in excessive negative marginal congestion component, which results in excessive negative locational marginal prices. Negative prices indicate excessive supply and results in charges to suppliers for the energy that is actually delivered to the system.

scheduling coordinators based on their measured demand.⁶ While the exact resettlement amounts are not obtainable until the actual resettlement is conducted, the ISO obtained estimates of the settlement impact of the waiver if granted.

If the Commission grants the waiver and prices are corrected, four market participants will receive the bulk of the refund of congestion charges that were previously assessed based on the erroneous excessive negative prices. Table 1 below provides an estimate of the refunds by scheduling coordinator, with the participant identity concealed. Table 1A in Attachment A provides the same information with the names of the scheduling coordinators on a confidential basis.

Table 1: Estimated refund of congestion payments to scheduling coordinators

Participant	Jan 9th	Jan 13th	Jan 14th	Jan 26th
Party A	-\$109,207	-\$1,219,811	-\$15,791	-\$51,437
Party B	-\$271,077	-\$1,766,037	-\$28,107	-\$81,217
Party C	-\$188,639	-\$1,554,582	-\$23,555	-\$82,735
Party D	-\$119,432	-\$1,143,499	-\$17,893	-\$60,597
All others	\$14,567	\$31,778	\$3,031	\$39,780
Net Total	-\$673,787	-\$5,652,151	-\$82,316	-\$236,206

Three scheduling coordinators will receive the bulk of a surcharge that will be applied to all scheduling coordinators based on their measured demand to collect the excessive payments they received. Table 2 below provides an

⁶ Section 11.5.4.2 provides that excess congestion offset amounts to scheduling coordinators based on their measured demand which consists of metered load and exports.

estimate of the surcharges by scheduling coordinator, with the participant identity concealed. Table 2A in Attachment A provides the same information with the names of the scheduling coordinators on a confidential basis.

Table 2: Estimated surcharge of congestion over-payments to scheduling coordinators

Participants	Jan 9 th	Jan 13 th	Jan 14 th	Jan 26 th
Party A	-\$240,677	-\$2,117,671	-\$39,078	-\$84,674
Party B	-\$234,073	-\$2,076,607	-\$38,038	-\$84,135
Party C	-\$53,709	-\$504,827	-\$9,068	-\$19,484
All Others	-\$122,287	-\$1,101,315	-\$23,954	-\$50,321
Total	(\$650,746)	(\$5,800,420)	(\$110,138)	(\$238,614)

II. Request for Waiver of ISO Tariff Provisions

The ISO requests waiver of section 35.2 of the ISO tariff in order to make the price corrections and resettle the associated congestion related charges and payments discussed above. The Commission has granted requests for waiver of time limitations for price correction where (1) the failure to discover the software defect during the period for time corrections was a good faith error, (2) the waiver is of limited scope, (3) a concrete problem needs to be remedied, and (4) granting the waiver will prevent harm to market participants.⁷

⁷ See *N.Y. Indep. Sys. Operator, Inc.*, 136 FERC ¶ 61,156 at PP 5, 7 (2011). See also *Southwest Power Pool, Inc.*, 138 FERC ¶ 61,200 at P 5 (2012); *Southwest Power Pool, Inc.*, 135 FERC ¶ 61,032 at P 12 (2011).

This waiver request satisfies all four of these elements under Commission precedent for granting a tariff waiver. First, the error was in good faith. The defect in the software did not manifest itself during the testing prior to its placement in service. Because the ISO had anticipated a certain amount of congestion, the high prices in January appeared plausible upon the ISO's initial review of the prices. Once the ISO discovered the software defect, the ISO corrected the defect promptly.

Second, the waiver is of limited scope. It applies only to seven trading hours during 4 trading days. The ISO's investigation has determined that there were no other affected transactions.⁸

Third, the requested waiver will remedy a concrete and clearly defined problem: the erroneous prices produced by the software's erroneous identification of congestion levels. For the same reasons, the waiver meets the fourth criterion, the prevention of harm to market participants. In circumstances such as this, the Commission must strike a balance between the need for finality and the administrative burden (both to the utility and to its market participants) of resettlement, on the one hand, with the financial impact on market participants, on the other. The price correction will impose a minimal administrative burden.

The ISO does not anticipate the need for any future waivers in connection with the software issue that led to the erroneous prices. The ISO's software vendor has resolved that defect. In addition, this incident was anomalous: the ISO is normally able to detect software issues leading to anomalous congestion

⁸ Because the error affected only real-time prices, the erroneous congestion did not affect the settlement of congestion revenue rights.

prices within the price correction time horizon and is able to exercise its tariff-based authority correct for such issues within that time frame.

Therefore, good cause exists to grant the ISO's requested waiver of Section 35.2.

III. Stakeholder Consideration

On August 27, 2013, the ISO posted a Technical Bulletin regarding the need for the price correction and the ISO's intention to seek a waiver.⁹ The ISO conducted a stakeholder web conference on September 4, 2013 and sought feedback from stakeholders. Subsequently, the ISO received comments from five parties. All five parties support the price correction. A matrix of the comments and the ISO's responses is provided in Attachment B.

None of the stakeholders opposed the ISO's decision to seek a waiver for this issue. As reflected in the matrix attached, some stakeholders raised concerns with the process and time it takes to identify and resolve these types of issues. The ISO appreciates these concerns and will consider these comments as it continues to improve its systems and processes. This, however, in no way diminishes the need to correct the prices at issue.

IV. Request for Additional Waivers

To the extent that the Commission deems that Section 35.17(e) of its regulations applies to this waiver request, the ISO respectfully requests waiver of that Section 35.17(e). The ISO further requests that the Commission grant any

⁹ The bulletin is available at: http://www.caiso.com/Documents/TechnicalBulletin-PriceCorrections-InvalidCongestion-Jan_2013.pdf.

additional waivers of its regulations as may be necessary to grant this request. The ISO submits that good cause exists for granting a waiver of its regulations for the reasons stated above.

V. Service

The ISO has served copies of this filing upon the California Public Utilities Commission and all parties with effective scheduling coordinator service agreements under the ISO tariff. In addition, the ISO has posted this filing on its website.

VI. Correspondence

The ISO requests that all correspondence, pleadings and other communications concerning this filing be served upon the following:

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VII. Conclusion

For the reasons discussed above, the ISO respectfully requests that the Commission grant a one-time waiver of certain requirements in Section 35.2 of its tariff, in order to permit the ISO to correct erroneous prices for certain hours on January 9, 13, 14 and 26, 2013.

Respectfully submitted,

/s/ Anna A. McKenna

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Attachment A

Tables 1A – 3A

Table 1A

**[ATTACHMENT CONSISTS OF PRIVILEGED MATERIAL REDACTED
PURSUANT TO 18 C.F.R. 388.112]**

Table 2A

**[ATTACHMENT CONSISTS OF PRIVILEGED MATERIAL REDACTED
PURSUANT TO 18 C.F.R. 388.112]**

Table 3A: List of real-time (RTD) intervals subject to waiver and price correction.

FLOWGATE NAME	TRADE_DT	Interval	Hour Ending							
			1	2	13	18	22	23	24	
30460_VACA-DIX_230_30472_PEABODY_230_BR_1_1	13-Jan-13	4					1000			
		5					1000			
		6					1000			
		7						1000		
		8						1000		
		9						1000		
		10						1000		
		11						1000		
		12						1000		
		30460_VACA-DIX_230_30478_LAMBIE_230_BR_1_1	9-Jan-13	4				1000		
				5				1000		
				6				1000		
7						1000				
8						1000				
9						1000				
13-Jan-13	1						1000	1000	1000	
	2						1000	1000	1000	
	3						1000	1000	1000	
	4						1000	1000	1000	
	5						1000	1000	1000	
	6						1000	1000		
	7						1000	1000		
	8						1000	1000		
	9						1000	1000		
	10						1000	1000		
	11						1000	1000		
	12						1000	1000		
26-Jan-13	7					1000				
	8					1000				
30472_PEABODY_230_30529_BRDSLNG_230_BR_1_1	9-Jan-13		4				1000			
			5				1000			
			6				1000			
			7				1000			
		8				1000				
		9				1000				
	13-Jan-13	1					1000	1000	1000	
		2					1000	1000	1000	
		3					1000	1000	1000	
		4					1000	1000	1000	
		5					1000	1000	1000	
		6					1000	1000	1000	
		7					1000	1000		
		8					1000	1000		
		9					1000	1000		
		10					1000	1000		
		11					1000	1000		
		12					1000	1000		
	14-Jan-13	1	1000							
	26-Jan-13	7				1000				
		8				1000				

Table 3A: List of real-time (RTD) intervals under evaluation for a post five day price correction – Continuation.

FLOWGATE NAME	TRADE_DT	Interval	Hour Ending						
			1	2	13	18	22	23	24
30529_BRDSDLNG_230_30478_LAMBIE _230_BR_1_1	9-Jan-13	4				1000			
		5				1000			
		6				1000			
		7				1000			
		8				1000			
		9				1000			
	13-Jan-13	1					1000	1000	1000
		2					1000	1000	1000
		3					1000	1000	1000
		4					1000	1000	1000
		5					1000	1000	1000
		6					1000	1000	1000
		7					1000	1000	
		8					1000	1000	
		9					1000	1000	
		10					1000	1000	
		11					1000	1000	
		12					1000	1000	
	14-Jan-13	1	1000						
		2	56.4						
		3	57.7						
		4		56.9					
		6		57.2					
		7			1000				
	26-Jan-13	7			1000				
		8			1000				

Attachment B

Matrix of Stakeholder Comments

Price Corrections for Invalid Congestion in January 2013 – Responses to Technical Bulletin Comments

- EDF Renewable Energy (EDF-RE)1**
 - Opening Comments 1
 - EDF-RE Comments 1
 - EDF-RE Suggestions 2
 - Closing Comments..... 2
- Northern California Power Agency3**
 - Opening Comments 3
 - NCPA Comments 3
- Sacramento Municipal Utility District (SMUD).....5**
 - SMUD Comments 5
- Pacific Gas and Electric6**
 - Opening Comments 6
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 - Closing Comments..... 8
- Southern California Edison9**
 - Opening Comments 9
 - SCE Comments..... 9
 - Closing Comments..... 10

Company	Date	Submitted By
EDF Renewable Energy (EDF-RE)	September 12, 2013	Sylvia Gibson T: 858.521.3412
Opening Comments		
<p>EDF Renewable Energy (EDF-RE) hereby submits these comments on the CAISO’s proposed real-time price corrections for intervals on January 9th, 13th, 14th and 26th. The CAISO is proposing the corrections because these prices do not reflect true congestion on the system, but are the result of a defect in the software functionality for wind deviation adjustments.</p> <p>Because the corrections would be made outside the normal five-day window for price validation and correction, the CAISO proposes to request FERC approval of these revisions, through a waiver of CAISO Tariff Section 35.2. EDF-RE strongly supports the CAISO’s proposed filing.</p>		
ISO Response		
Thank you for stating your position.		
EDF-RE Comments		
<p>First, while EDF-RE understands the importance of balancing the harm that retroactive price changes may cause and the benefits of the accuracy, there is clearly “good cause” for the filing, as the CAISO has found. Section 1.5.5 of Appendix G to the BPM for Market Operations contains the criteria for that finding, i.e.: (1) the impact on the market as a whole; (2) the impact on individual Market Participants and sectors of the market; and (3) the feasibility and administrative burden of resettling based on the corrected prices.</p> <p>The combination of the magnitude of the correction (close to \$7 million) and the concentration of adverse impacts on a “small number of Market Participants” are particularly compelling. At least some of the affected Market Participants suffered huge losses (hundreds of thousands of dollars apiece, or perhaps more) over just a few hours for what were not large MW imbalances. The CAISO has all the data needed to perform the correction and the problems occurred over only short periods, so it should be not be unduly difficult to fix the problem.</p> <p>Second, under no generally accepted standard can imbalance prices that ranged from nearly \$2,500 to almost \$4,000 per MWh be considered “just and reasonable.” This is especially true if those prices were due to a software error, and not the actual market results. The resulting huge imbalance charges were not a price signal reflecting a local emergency condition, but instead were just a mistake. Market Participants should not be forced to bear huge costs due to a mistake, simply because the CAISO did not detect it within the usual five-day correction period.</p>		

ISO Response

As indicated by the participant and stated in the technical bulletin, the ISO believes this instance meets the threefold criteria to seek for a waiver of its tariff requirements from FERC to implement a price correction outside the five-day time horizon.

It is important to highlight that this item is being pursued since a software defect was identified to be the cause of such prices to be in error and is confined to this specific instance. This specific instance does not render any other high price invalid, since there may be certain conditions that may result in valid high prices.

EDF-RE Suggestions

EDF-RE also urges the CAISO to take two additional actions:

Clarify which intervals are actually proposed for price correction. For example, the Technical Bulletin lists “Jan 13, HE22, HE23, HE24, Intervals 1-5” for correction; does this mean that prices for all of HE22-23 would be corrected, or just Intervals 1-5 in those hours?

Ensure that other unreasonably high prices close to the specified correction periods are accurate. For example, prices on January 13th in HE21 were of the same general magnitude as those proposed for correction in HE22-24. It is hard to believe that the prices proposed to be corrected are wrong but those at the same levels, at close to the same time, are right. (This would apply also, in the example above, to prices in the remainder of HE22 and HE23 if they are not covered under the proposal – see clarification request above.)

ISO Response

Table 1 and 2 listed in the end of this document provide the set of all intervals to be subject to price corrections; they are organized by constraint, trade date, hour and intervals; the table shows the shadow prices of these constraints that would be subject to price corrections.

For January 13, HE21, such constraints are not binding and therefore there are no targeted price corrections for HE21. Prices for HE21 were not affected by this issue and they do not reflect prices in error.

Closing Comments

EDCF-RE appreciates this opportunity to comment on the CAISO’s proposal and urges the CAISO to take these additional actions, and then make the filing, as soon as reasonably possible.

ISO Response

Thank you for your comments and suggestions.

Company	Date	Submitted By
Northern California Power Agency	September 4, 2013	Gillian Biedler Phone (916) 7813636
Opening Comments		
<p>NCPA views the price correction steps discussed in Next Steps as laudable. We also appreciate the additional information imparted during the September 4, 2013 conference call regarding the processes by which the market results are reviewed as well as improvements made to those processes so that market issues such as these can be detected and corrected in a timely fashion. NCPA suggests that having descriptions of these practices and improvements would be a useful element to provide additional context within this Technical Bulletin.</p>		
ISO Response		
<p>Thank you for stating your position. Please see responses below for the suggestion about details of this issue.</p>		
NCPA Comments		
<p>As noted above, NCPA applauds the detection and correction of the problem on the market side of the issue. NCPA would like to note, however, that the Bulletin does not include a discussion of the root cause software glitch that caused the problem, namely “[t]he software defect that existed in the logic [that] was counting the wind adjustment in the five-minute real-time dispatch on top of the actual wind output” (page 7 of the Technical Bulletin). Accordingly, NCPA recommends that the Next Steps section of the Bulletin be broadened to include more information on the technical side of the issue such as (1) the root cause of the glitch, (2) corrective actions taken to prevent such a software glitch from reoccurring, and (3) improvements to code review and market simulation performance review so that glitches such as these are detected prior to the code going into production. Review improvements may include, for examples, a code walk-thru by the developers along with market experts, module testing, and more rigorous validation testing.</p>		
ISO Response		
<p>As explained in the conference call, the ISO tests new software features and fixes through a standard testing cycle to ensure the functionality is working as designed and identify any software bugs prior to implementation. In some instances, the ISO also conducts a market simulation as part of the process, which includes participation by market participants. During testing, the ISO evaluates the new feature or fixes under different scenarios and replicates typical production conditions in non-production environments before deploying the new software features to the Production environment. Unfortunately, the software defect was not detected during the testing cycle. It was not until there was the combination of system conditions</p>		

(outages, wind deviations, and need for truing up the wind schedules) that this condition became visible in Production. The congestion that occurred was actually plausible given the system conditions at the time. However, the software defect exacerbated the congestion. Once the ISO identified the software defect, the ISO pursued a fix with the software vendor, which was put through the testing cycle and was deployed to production expeditiously. This resolved the root cause leading to the issue. This was in addition to correcting prices for the instances that were within the time horizon for price corrections.

Company	Date	Submitted By
Sacramento Municipal Utility District (SMUD)	September 10, 2013	Jessica Kasparian (916) 732-6312
SMUD Comments		
<p>SMUD appreciates the CAISO's issuance of a Technical Bulletin to provide transparency and inform market participants of pricing issues. We agree that the impact of the invalid congestion at Bird's Landing in January 2013 is not negligible and there is a significant impact on some market participants. SMUD fully supports the CAISO's decision to seek authorization from FERC to proceed with a post-five day price correction for the invalid congestion.</p>		
ISO Response		
<p>Thank you for stating your position.</p>		

Company	Date	Submitted By
Pacific Gas and Electric	September 11, 2013	Tom Girlich (415) 973-9381
Opening Comments		
<p>Pacific Gas and Electric Company (PG&E) appreciates the opportunity to comment on the Price Corrections for Invalid Congestion in January 2013 as discussed in the CAISO Technical Bulletin posted on August 27, 2013. PG&E fully endorses reasonable measures within the confines of the Tariff to ensure that CAISO's markets produce accurate prices.</p> <p>The technical bulletin provides an analysis of congestion observed in certain intervals of the real-time market in the Birds Landing area during January 2013. Highlights of the bulletin are as follows:</p> <ol style="list-style-type: none"> 1. The congestion experienced in January 2013 was impacted by wind deviations observed on the system. The current market functionality allows the CAISO to make an adjustment to forecasted resource output in the real-time system for wind variability when there is a need to converge the projected self-schedules in the pre-dispatch to the current observed production of wind. 2. The software defect that existed in the logic was counting the wind adjustment in the five minute real-time dispatch in addition to the actual wind output. The defect was not identified and consequently the invalid congestion was not corrected through the price validation and correction process in the five calendar day window. 3. Initially, the CAISO deemed the congestion it observed in January as valid because it expected some degree of congestion given the system conditions and outages it observed in those areas at that time. 4. The CAISO estimates the market impact of excess congestion charges in January at approximately \$6.6 million to a small number of market participants. Furthermore, the CAISO estimates that certain prices in the range of negative \$3,000 per MWh in the five-minute real-time market could be adjusted to approximately negative \$30 per MWh if price correction is implemented for the impacted trade dates. 5. The congestion on these elements was observed again in early February and by that time the CAISO had identified that there was a software defect impacting the wind adjustment functionality. 6. The CAISO intends to seek a waiver of Section 35.2 "Timing of the Price Correction Process" from FERC to proceed with a post five day price correction for the trade dates January 9th, 13th, 14th and 26th. 		
ISO Response		

Thank you for stating your position.

PG&E Comments

PG&E supports the CAISO for taking this price correction action and hopes that following FERC approval resettlement will occur on a timely basis given the size of the market adjustment. As the CAISO is aware, Tariff Section 11.29.7.3.1 “Unscheduled Reissue Recalculation Settlement Statements” directs the CAISO to reissue an unscheduled T+9M or T+18M when a miscalculation exceeding \$1 million per trading day has occurred to the market. Based upon the CAISO’s estimates, January 13th meets that threshold.

PG&E respectfully raises several questions by which Stakeholders can further review and offer input into the CAISO’s price correction processes:

1. What triggered a review of the January 2013 prices when they originally were thought to be correct?
2. Was the review begun prior to the identification and correction of the February 2013 software issue? If yes, did the January review lead to the detection of the software issue in early February?
3. Why has the CAISO selected this time to notify the market of January price corrections if the issue was known in February?
4. Did identification of the software issue occur as a result of detection by CAISO controls or market inquiries?
5. Does the CAISO have any controls currently that link newly detected software defects with material prior settlement events to determine if retroactive adjustment is warranted? How do market participants know that all impacts have been identified and resettled correctly?
6. As a result of the January software issue, does the CAISO have any new controls and/or processes in place to better assist with timely detection of modeling errors?

ISO Response

In regards to the timeline of the resettlements and given the expected timing of the waiver filing, the ISO expects to resettle this item on the next available scheduled settlement run for the impacted trade dates which is currently the T+18M statement. If this run is not attained, then the ISO will consider the feasibility of issuing an unscheduled resettlement.

For the related questions:

1. The anomalous congestion was observed in January and then in February and both instances were flagged during the standard price correction procedure. Although the software issue existed since January, it was not until further investigation of the instances of February when the ISO determined the software defect. This however, was already outside the five calendar day window.
2. The ISO began investigating the invalid congestion with the cases it observed in January but it was until the February cases arose that it was able to detect the software issue. However, by that time the cases of January were outside five-day price corrections

window.

3. While the software issue identified in February, the ISO had not conducted a settlement impact assessment. In response to market participant inquiries later on, the ISO conducted an additional settlement analysis. This effort has been further delayed because of the need for deeper analysis of the impact to justify the ISO seeking a waiver.
4. The ISO identified the software issue through the standard ISO investigation of market outcomes. In this case, subsequent settlement inquiries from participants led to the ISO's investigation of the settlements impact of this issue.
5. When a new issue of material impact is detected, the ISO will attempt to quantify the past impact. The price validation and correction process strikes a balance between accuracy and certainty and the ISO takes a diligent and programmatic validation of all market outcomes to ensure prices in error are identified as much as possible within the allowed time for corrections. In addition, the market participants often raise questions regarding the settlement impact of such issues and the ISO investigates the issues as appropriate.
6. This instance is a software defect and not a model issue per se. Software issues such as the one in this case are detected through the ISO's price correction and validation process. This is in addition to the standard testing cycle in place to verify the correctness of market functionality coming into the system. In regards to modeling issues, in an effort to capture more such issues before publication of prices, the ISO is proposing to modify its price correction timeline for the day-ahead market so that more analysis is done prior to posting the prices. Information on this effort is available at: <http://www.caiso.com/informed/Pages/StakeholderProcesses/RevisionsPriceCorrectionRequirements.aspx>. There is also an effort to have more proactive validation for software releases and database model promotions to identify –model or software– issues before they are deployed into the actual market application.

Closing Comments

The CAISO's price correction initiative for invalid January 2013 congestion is necessary since it will correct a software defect materially exacerbating the effects of negative congestion to market participants. PG&E very much appreciates the CAISO's continuous effort to improve its market software to more accurately model the system's actual operating conditions at the time.

ISO Response

Thank you for providing comments.

Company	Date	Submitted By
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Southern California Edison	September 11, 2013	Wei Zhou – (626)302-3273
Opening Comments		
<p>Southern California Edison (SCE) appreciates the opportunity to comment on the California Independent System Operator (CAISO) Technical Bulletin on Price Corrections for Invalid Congestion in January 2013¹.</p> <p>SCE supports the CAISO’s effort to make price corrections, including those outside the regular price correction time window that have a material market impact, to ensure market prices are correct and reflect reality. The quality of market prices is important and the CAISO should make every effort to identify material errors that impact market prices and correct them.</p>		
ISO Response		
<p>Thank you for stating your position on this issue.</p>		
SCE Comments		
<p>To improve price validation and make timely corrections, SCE suggests that (1) the CAISO should improve its current price validation process and (2) the resettlement on corrected prices should occur as early as practical and be consistent with the tariff governing market resettlements.</p> <p>According to the technical bulletin, the software defect that caused the erroneous prices was identified in February; however, the price corrections were proposed at the end of August (six months later). While SCE supports the CAISO’s proposal to correct the erroneous prices, SCE believes that timeliness of price corrections is important and SCE requests that CAISO establish a guideline on price correction timeline from the time an erroneous price is identified to the resettlement of the corrected price. Furthermore, SCE believes that the current price validation process can be improved. SCE recommends the CAISO establish a daily price validation process, if it is not already in place, to review and validate <i>market outlier prices</i>² and provide a daily status on the result of price validation check of ² these outliers. Such information can be included in existing reports, for example, Daily Market Watch³, or in new reports.</p> <p>To increase the transparency, the CAISO may also want to release more information regarding how issues were tracked after they were identified and how root causes were analyzed, without releasing market participant-specific or confidential information. This would help market participants better understand delays in price correction, such as the one relevant to this technical bulletin.</p>		
<p><small>1 The CAISO Technical Bulletin on Price Corrections for Invalid Congestion in January 2013: http://www.caiso.com/Documents/TechnicalBulletin-PriceCorrections-InvalidCongestion-Jan_2013.pdf</small></p>		

2 Outlier prices can be based on pre-established thresholds. An example would be a local price exceeding three times of a DLAP price or a monthly average.

3 The CAISO currently publishes Daily Market Watch for both DAM and RTM (<http://www.caiso.com/Documents/Day-ahead%20daily%20market%20watch>; <http://www.caiso.com/Documents/Real-time%20daily%20market%20watch>). These reports will be better utilized by market participants if the reports include information on abnormal prices and information regarding CAISO's validation of abnormal prices.

ISO Response

While these comments are outside the scope of the current effort in which the ISO seeks to obtain a waiver for the identified error, the ISO appreciates SCE's comments. The ISO notes that it has recently completed a stakeholder process to evaluate its price validation and corrections requirements. Information on that effort is available at:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/RevisionsPriceCorrectionRequirements.aspx>.

The changes identified there will address some of the issues identified by SCE here. The ISO will continue to evaluate its processes regularly and, to the extent, some of the changes require a change in its policies, the ISO will conduct a similar stakeholder process. In addition, the ISO will consider these comments as it strives to improve its processes. When a new issue is identified that has a material impact, the ISO will attempt to quantify the past impact and when appropriate share such information via a Technical Bulletin.

Closing Comments

If the proposed price corrections cannot be completed by the Recalculation Settlement Statement T+9M, the CAISO should evaluate whether the proposed price corrections meet the criteria set forth in Tariff and whether an Unscheduled Reissue Recalculation Settlement Statement should be issued. The price correction resettlement process should conform to the provisions of the Tariff.

ISO Response

The ISO expects to resettle this item on the next available scheduled settlement run for the impacted trade dates which is currently the T+18M statement. If this run is not attained, then the ISO will consider the feasibility of issuing an unscheduled resettlement.

Table 1: List of real-time (RTD) intervals under evaluation for a post five day price correction.

FLOWGATE NAME	TRADE_DT	Interval	Hour Ending							
			1	2	13	18	22	23	24	
30460_VACA-DIX_230_30472_PEABODY_230_BR_1_1	13-Jan-13	4					1000			
		5					1000			
		6					1000			
		7						1000		
		8						1000		
		9						1000		
		10						1000		
		11						1000		
		12						1000		
		30460_VACA-DIX_230_30478_LAMBIE_230_BR_1_1	9-Jan-13	4			1000			
				5			1000			
				6			1000			
7					1000					
8					1000					
9					1000					
13-Jan-13	1					1000	1000	1000		
	2					1000	1000	1000		
	3					1000	1000	1000		
	4					1000	1000	1000		
	5					1000	1000	1000		
	6					1000	1000			
	7					1000	1000			
	8					1000	1000			
	9					1000	1000			
	10					1000	1000			
	11					1000	1000			
	12					1000	1000			
26-Jan-13	7				1000					
	8				1000					
30472_PEABODY_230_30529_BRDSLNG_230_BR_1_1	9-Jan-13		4			1000				
			5			1000				
			6			1000				
			7			1000				
		8			1000					
		9			1000					
	13-Jan-13	1				1000	1000	1000		
		2				1000	1000	1000		
		3				1000	1000	1000		
		4				1000	1000	1000		
		5				1000	1000	1000		
		6				1000	1000	1000		
		7				1000	1000			
		8				1000	1000			
		9				1000	1000			
10					1000	1000				
11					1000	1000				
12					1000	1000				
14-Jan-13	1	1000								
26-Jan-13	7			1000						
	8			1000						

Table 2: List of real-time (RTD) intervals under evaluation for a post five day price correction –Continuation.

FLOWGATE NAME	TRADE_DT	Interval	Hour Ending						
			1	2	13	18	22	23	24
30529_BRDSL DNG_230_30478_LAMBIE _230_BR_1_1	9-Jan-13	4				1000			
		5				1000			
		6				1000			
		7				1000			
		8				1000			
		9				1000			
	13-Jan-13	1					1000	1000	1000
		2					1000	1000	1000
		3					1000	1000	1000
		4					1000	1000	1000
		5					1000	1000	1000
		6					1000	1000	1000
		7					1000	1000	
		8					1000	1000	
		9					1000	1000	
		10					1000	1000	
		11					1000	1000	
		12					1000	1000	
	14-Jan-13	1	1000						
		2	56.4						
		3	57.7						
		4		56.9					
		6		57.2					
		7							
	26-Jan-13	7				1000			
		8				1000			