

place a limit on all locational marginal prices (LMPs), RUC prices, and ancillary services marginal prices (ASMPs) in all of the MRTU markets. The CAISO explained that the proposed price cap (\$2,500/MWh) and price floor (negative \$2,500/MWh) are safety measures intended to prevent potentially severe settlement impacts of extreme prices for energy, RUC capacity and ancillary services that could result from unanticipated and unusual circumstances as the CAISO transitions into MRTU. The CAISO has set the proposed cap and floor levels based on an examination of prices resulting from the MRTU market simulation process and its investigations into the root causes of such prices. The CAISO believes that the proposed price cap and floor levels will not dampen economic price signals, while protecting against extreme market outcomes.

In proposing this market protection mechanism, the CAISO emphasized that the cap and floor will not be a substitute for thorough testing of the MRTU software and correction of any identified problems prior to MRTU *go-live*, nor would the CAISO use the price cap and floor after *go-live* as an excuse not to investigate all instances of price spikes.

II. MOTION FOR LEAVE TO FILE ANSWER

Pursuant to Rules 212 and 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. §§ 385.212, 385.213, to the extent that this answer involves responses to protests, the CAISO requests waiver of Rule 213(a)(2), 18 C.F.R. § 385.213(a)(2), to permit it to do so. Good cause exists for this waiver here because the answer will aid the Commission in understanding critical facts about prices in the MRTU market and help to ensure a complete and accurate record in this case. *See, e.g., Entergy Services, Inc.*, 116 FERC ¶ 61,286, at P 6 (2006); *Midwest Independent Transmission System Operator, Inc.*, 116 FERC ¶ 61,124, at P 11 (2006); *High Island Offshore System, L.L.C.*, 113 FERC ¶ 61,202, at P 8 (2005). Moreover, to the extent

necessary, the CAISO requests leave to file this answer outside of the 15-day time period provided for answers set forth in Rule 213. Given that the amendment at issue will not become effective until MRTU *go-live*, the CAISO submits that no party to this proceeding will be prejudiced by accepting this answer out of time.

III. ANSWER

A. The Price Cap and Floor Is a Prudent Protective Measure to Protect Against Extreme and Unreasonable Prices at the Start of the MRTU Markets

In its protest, WPTF opposes the CAISO's price cap and floor proposal on several levels. First, WPTF argues that the CAISO has not adequately justified the need for the proposed cap and floor.² WPTF bases its argument in large part on the assertion that market simulation scenarios that were intended to produce extreme prices do not provide sufficient justification for a price cap.³ WPTF further argues that a price cap and floor should not be implemented unless actual post-go live experience supports the need for a cap.

WPTF's arguments are misplaced. As the CAISO fully explained in its initial filing, based on experience in MRTU market simulation, infrequent but repeated instances of extreme positive and negative prices warrant this protective measure for MRTU *go-live*. The CAISO has taken significant measures during market simulation and testing to ensure that it knows the root cause of any observed price excursions and over the past several months has taken many opportunities to discuss with market participants the findings of its analysis. However, in certain cases it has found that while it can find no particular issue with the bids submitted and cleared, nor with the performance of its market clearing software, extreme positive or negative prices have still arisen that are not based on legitimate economic price signals and not the result of

² WPTF at 3-7.

³ WPTF at 7.

aberrational circumstances, as discussed in the CAISO's initial filing.⁴ As the CAISO has continued its intensive efforts to identify and resolve issues that were leading to the price excursions identified earlier in the market simulation process, fewer instances of the price spikes have been observed overall. However, as it continues to observe market simulation results it is clear that it cannot anticipate that such price excursions will never occur. While these price excursions are anticipated to be infrequent, when they do occur it is not appropriate that market participants be exposed to extreme prices that are not found to be based on sound economic principles. Putting the price cap and floor in place, combined with diligent investigation into instances of high prices, is a prudent approach that protects consumers without constraining the ability of market prices to reflect the interaction of locational supply and demand within the bounds of the caps.

In addition, WPTF overstates the role of the scenario testing phase of MRTU market simulation. During certain parts of its market simulation process, the CAISO did purposefully create extreme scenarios, many of which were requested by Market Participants, to determine what the scheduling, economic and reliability impact of those conditions would be in the LMP market. However, the occurrence of nodal prices well in excess of the proposed price cap was not limited to those extreme scenarios created and tested by the CAISO. Prices above and below the proposed caps also occurred under "normal" testing scenarios. Therefore, WPTF's suggestion that the CAISO's concerns are limited to hypothetical and extreme testing scenarios is in error.

Since the CAISO submitted its Price Cap Filing, the CAISO has continued to evaluate pricing results in weekly meeting with market participants. Just prior to submission of this answer, the CAISO conducted an additional analysis on the pricing results that occurred during

⁴ Price Cap Filing, Transmittal Letter at 3-5.

the most recent ten day period. The purpose of this analysis was to summarize and evaluate the variation in individual nodal LMPs observed in recent MRTU market simulation runs. The table below provides a comprehensive summary, covering all nodes, all hours in each day for the IFM market and all nodes, all 5-minute intervals in each hour for the Real-Time Market. The table shows the total frequencies over all ten days of LMPs falling in the intervals listed in the left-hand column. The intervals numbered 1 and 7 reflect LMPs that fall outside the proposed price cap and floor range. This simple analysis demonstrates that price excursions beyond the proposed thresholds continue to occur and are not entirely impossible. Such excursions are, however, relatively infrequent and for both the Day-Ahead and Real-Time markets for the most recent ten-day period, less than one tenth of one percent of the LMPs were outside the +/- \$2,500 range and would be impacted by the proposed LMP cap/floor.

Interval	IFM frequency	RTD frequency	IFM percent	RTD percent
1. Imp < -2500	0	0	0	0
2. -2500 <= Imp < -1500	0	0	0	0
3. -1500 <= Imp < -500	23	14495	2.762E-05	0.001470339
4. -500 <= Imp <= 500	830005	9361007	0.9966439	0.949558797
5. 500 < Imp <= 1500	2355	481888	0.0028278	0.048881599
6. 1500 < Imp <= 2500	199	782	0.000239	7.93243E-05
7. 2500 < Imp	218	98	0.0002618	9.94089E-06
Grand Total	832800	9858270		
		9993600		

Third, the CAISO disagrees with WPTF's suggestion that the price cap should only be implemented if prices above the cap or below the floor materialize in the MRTU market after *go-live*. The purpose of the caps is to *avoid* economic harm to Market Participants in the first place. The CAISO does not believe waiting for these results to materialize and only then going through the time- and resource-intensive process of analyzing and correcting for such circumstances

(including filing any necessary tariff changes) is the correct approach during the nascent phase of MRTU. Rather, the CAISO submits that the prudent approach is to put the cap and floor in place for start up and make a diligent effort to study and regularly report on price data and then based on such analyses, evaluate the need for and/or function of the cap on an ongoing basis.

Finally, the CAISO disagrees with WPTF's suggestion that a price cap should apply only to load prices determined at the Load Aggregation Points (LAPs). Capping LMP prices protects *all* market participants against the impact of extreme prices, while capping only LAP prices does not, because not all markets settle at LAP prices. For example, Participating Load resources will be settled at individual LMP rather than aggregated LAP prices. Moreover, WPTF's suggestion does not take into account potential negative prices charged to suppliers, which will also be settled at individual LMPs. If the price cap was only applied to LAPs then suppliers would be exposed to extreme charges in circumstances where energy prices fall below the proposed negative \$2500 floor. For these reasons, WPTF's approach would result in an arbitrary and discriminatory pricing scheme. Finally, WPTF's proposal also has the possibility of creating a revenue insufficiency if LAP prices are capped but the nodal price components of the LAP price are not, which would have to be allocated to market participants in some manner.

B. The Level of the Proposed Price Cap is Just and Reasonable

WPTF and Six Cities take issue with the CAISO's decision to set the price cap at \$2,500 per MWh.⁵ WPTF suggests the cap should be higher and Six Cities argues that the price cap should be set to the lower bid cap levels. WPTF also states that the CAISO has not provided sufficient justification for choosing \$2500 instead of some other level.⁶ The CAISO disagrees with these parties. As discussed in the filing, the CAISO determined that \$2,500 is an

⁵ WPTF at 8-10; Six Cities at 2-3.

⁶ WPTF at

appropriate level based on market simulation results to date which indicated that the cap at this level would apply to less than one percent of LMPs in the Integrated Forward Market and the Real-Time Market. The more recent market simulation data reported in the previous section suggest far lower frequencies. The fact that prices above the selected cap or below the selected floor are so infrequent demonstrates that limiting the settlement implications of LMPs beyond these thresholds will not take away revenue opportunities for parties associated with such infrequent prices. Rather, market simulation experience demonstrates that the overwhelming majority of prices will fall within this range. Therefore, adopting such thresholds is not expected to significantly impact market opportunities for supply resources. Based on this data, the CAISO believes that a \$2500 cap leaves significant room for prices to rise when economic conditions dictate accordingly.

The CAISO acknowledges that there is no consensus price at which it can definitively be said that price signals suddenly cease to be meaningful. However, the CAISO does believe that as prices reach the multiple-thousands of dollar range that they become increasingly less meaningful and more punitive, insofar as further incremental price increases above such levels do little more than penalize market participants without conveying any additional meaningful economic information or incentives for behavioral responses. Based on the market simulation data, the CAISO chose \$2500 as a reasonable proxy for the transition between meaningful price signals and unreasonably punitive prices.

C. DWR's Participating Load Issue is not Before the Commission in this Proceeding

DWR argues that the imposition of a price cap and floor would be sufficient justification for a change to how Participating Load is treated when resolving a constraint.⁷ DWR argues that the approval of the price cap and floor should be conditioned on restricting the CAISO to what it refers to as nondiscriminatory application of involuntary adjustments, curtailments or service denials to all loads, including Participating Loads. DWR is referring to an issue it has raised in detail in Docket No. ER09-240. The price cap proposal has no bearing on how Participating Load is treated in the MRTU market and it would be inappropriate for the Commission to address this issue in this proceeding. The CAISO will respond to DWR's concerns in the ER09-240 proceeding, and that is the appropriate proceeding where the issue should be addressed.

D. Issues Relating to MRTU Readiness Are Not Before the Commission in this Proceeding

Several municipal parties use their comments on the price cap filing to raise issues regarding MRTU readiness. NCPA, Six Cities, SMUD, and CMUA argue that the price cap filing indicates some fundamental lack of preparation for MRTU.⁸ These arguments have no bearing on the question at hand, *i.e.* whether the price cap and floor are just and reasonable. As the CAISO explained in the Price Cap Filing, the proposed cap and floor will not be a substitute for thorough testing of the MRTU software and the correction of any identified problems prior to MRTU *go-live*. Likewise, after MRTU *go-live* the CAISO will not rely on the price cap and floor as a substitute for prompt and thorough investigation into the causes of extreme prices and the development of appropriate remedies where warranted. The CAISO's actions to date have

⁷ DWR at 2-3.

⁸ Six Cities at 2-3; CMUA at 4-5; SMUD at 3-6; NCPA at 3-4.

borne this out. The CAISO has created a separate forum for readiness issues to be aired and all interested parties will be permitted to comment on the CAISO's MRTU readiness certifications when filed at the Commission. The CAISO also notes that its Board of Governors, based on the opinion of CAISO management and the comments of market participants, agreed that additional time is required to resolve the outstanding concerns regarding MRTU readiness and therefore directed CAISO management to be prepared to file the 60-day readiness certification with the Commission by December 30, 2008, for a March 1, 2009 *go live* date. These evaluations and decisions regarding MRTU readiness have been made independent of, and are separate and apart from, the fact that the CAISO has proposed to adopt a price cap and floor at the outset of the MRTU markets.

E. The Commission Should Not Mandate that the Price Cap and Floor Sunset by a Date Certain

Both WPTF and Reliant argue that, if the Commission approves the price cap and floor, it should require the CAISO to include an automatic sunset date on the implementing tariff provisions.⁹ WPTF asks for a 90-day sunset and Reliant proposes a 180-day sunset. The CAISO believes an automatic sunset would be inappropriate. First, the timeframes proposed by WPTF and Reliant would be inadequate because the CAISO market sees significant seasonal variation in conditions and, as a result, it would not be prudent to lift the price cap and floor before the CAISO and Market Participants have had the benefit of a full year's experience with MRTU. That will allow grid and market conditions associated with all of the seasonal variations to be observed and evaluated. It would be imprudent to remove the caps after 90 or 180 days and then have adverse consequences arise as a result of seasonal variations that occur outside of the 90 or

⁹ WPTF at 11-12; Reliant at 3-6.

180 day period. Second, the CAISO does not believe an automatic sunset would be appropriate at this juncture because it is important for the CAISO and its market participants to have significant real-world experience with the MRTU markets before determining the appropriate duration of the price cap and floor. For example, over time the CAISO will be able to collect actual market data to determine whether the thresholds as suggest in the Price Cap Filing are still appropriate. Any persistent price excursions beyond the \$2500 will be recorded and analyzed so that if they become more frequent without sound explanation, the CAISO and market participants may find it necessary to expand the thresholds or narrow them depending on how the balance of reasonable compensation opportunities versus potential harm to market participants changes over time. Putting in any of the recommended expiration dates goes against the basis for the proposal in the first place as discussed above, and it the original Price Caps Filing. The CAISO reiterates that it will be diligent in its investigation of high prices and will address the functioning of the price cap in its quarterly MRTU quarterly performance reports. This will provide the Commission (and stakeholders) with sufficient information to monitor the cap and floor should it determine on its own motion to investigate or alter it.

F. Proposed Modifications to Use of Price Correction Process and Posting of Prices

SCE and PG&E object to the CAISO's proposal to apply the proposed price cap and floor through the price correction mechanism that allows the CAISO to correct prices after the market optimization has run.¹⁰ SCE & PG&E believe that publication of the uncapped prices on the normal market production time line followed by publication of the corrected prices at a later time will unnecessarily confuse market participants and complicate their systems for the purposes of validating market settlements against published LMP results. SCE also adds that bilateral trades

¹⁰ PG&E at 4; SCE at 4.

that settle based on posted CAISO prices in near real-time would be settling against incorrect prices.

SCE asks that the Commission require the CAISO to post only the mitigated prices to the market in the first instance. Alternatively, SCE would be open to the CAISO flagging LMP prices that have been adjusted through the market software to provide a means of transparency to stakeholders that market prices have been adjusted to price cap and floor levels. SCE also would not object to the CAISO storing the unmitigated prices in internal system so that the CAISO can use this information to diagnose software errors and to make future improvements to their pricing methodology. SCE argues that internally storing all uncapped prices and externally flagging all prices adjusted to cap and floor levels provides the transparency needed by stakeholders as well as provides the CAISO with the necessary information to thoroughly test the MRTU software and correct any identified problems prior to and after MRTU go-live. PG&E also supports the posting of only the capped prices to the settlement files and the posting of only the capped prices to the scheduling coordinator settlement files. PG&E does not object to the CAISO publishing uncapped price data in a separate document. PG&E points to Section 35.6 of the CAISO MRTU Tariff which states that "the CAISO shall summarize all price corrections that occur within a week in a report that shall be posted on the CAISO Website by the seventh day of the following week." PG&E proposes that the CAISO use this or a similar report to publish uncapped and capped price data for each pricing node.

The CAISO agrees with the concerns articulated by SCE and PG&E, and in fact, believes that the publishing of *any* prices that will be or stand a reasonably significant chance of being revised (including for price cap reasons) could create added confusion for stakeholders and interject unnecessary complexity into the price validation process. As such, the CAISO is

proposing to delay the publication of such prices until they can be verified or corrected.

Through recent discussions with stakeholders as part of the market simulation experiences, the CAISO has come to recognize that market participants will rely on the posted prices for numerous purposes. In the first instance, as discussed by SCE in their pleading, participants will look to the posted CAISO LMPs to structure their bilateral trades because the CAISO markets do serve as price discovery measures for market participants. The CAISO also understands that certain participants are seeking to validate their settlements from the posted prices all the way through to their settlement statements. In light of these additional insights into market participants' business requirements, the CAISO believes that the posting of *any* prices that will be corrected or stand a reasonably significant chance of being corrected could unnecessarily complicate market participants' validation procedures by requiring them to continue to track multiple pricing sources and variations.

The proposal to delay publication of prices that may likely be revised prior to settlement is consistent with Section 35.1 of the MRTU Tariff, under which the CAISO has the authority to correct prices that are inconsistent with the provisions of the Tariff prior to the publishing of those prices on its OASIS system. Through this process, if the CAISO encounters a price exceeding the \$2500 cap or floor (which per the price cap amendment would not be used for settlements in the CAISO markets), the CAISO can initially correct that price to the appropriate cap or floor value before posting. The CAISO believes that the meaningful and detailed analysis on the application of the price cap and floor and price trends that it will include as part of its regular MRTU performance reports, as discussed below, will provide market participants with sufficient transparency regarding the application and operation of the price cap and floor.

However, prices that exceed the price cap or floor do not constitute the only instances in which prices produced by the MRTU market clearing software may need to be corrected. Section 35.4 provides that the CAISO may correct prices whenever the CAISO identifies an invalid market solution or invalid prices in an otherwise valid market solution, and that circumstances in which the CAISO may determine that an invalid market solution or invalid prices exist include: (1) the occurrence of data input failure; (2) the occurrence of hardware or software failure; or (3) a result that is inconsistent with the CAISO Tariff. These categories of corrections, as well as corrections made pursuant to the price cap, are not mutually exclusive. Indeed, during its market simulation, the CAISO has encountered many instances where prices outside the price cap range were the result of errors that once corrected no longer resulted in prices in excess of the cap. Thus, the CAISO believes that the concerns articulated by SCE and PG&E with respect to publishing prices apply with equal force not only to prices that exceed the cap and floor, but to any prices that will need to be corrected for any of the reasons set forth in Section 35.4. Publishing any of these suspect prices prior to verification and correction if appropriate will create confusion and uncertainty for market participants for the reasons discussed above.

The CAISO will, pursuant to Section 35.1, make every attempt to identify and correct such prices prior to the timelines for publishing prices to OASIS and in settlements data to market participants. There will, however, be circumstances under which it will be impossible to analyze whether a price should be corrected and, if necessary, perform a correction within the time frame between the closing of the market and the time the CAISO must post prices under its tariff. This is especially true in the real-time market, during which the CAISO is required to post LMPs every five minutes. Therefore, in order to avoid burdening market participants with the

confusion and additional complexity associated with publishing prices that may not actually be used in settlement (whatever the reason for the price excursion might be), the CAISO proposes the following measures, which if accepted by the Commission would result in the CAISO providing appropriate implementing tariff language on compliance.

The CAISO proposes that it will not post any prices if it is known before the timeline for posting that the prices cleared through its markets will not be or are not likely to be used for settlement purposes because they will be or stand a reasonably significant chance of being corrected pursuant to Section 35, including any price that exceeds the \$2500 cap or negative \$2500 floor threshold.¹¹ If the CAISO has not had the opportunity to analyze and either confirm the validity of or correct a suspect price before the posting deadline for the particular market, the CAISO will delay posting of any such price until it is either confirmed as valid or corrected, but in any event will post the price no later than provided for by the timeline for price corrections as set forth in Section 35.2 (*i.e.* no later than 1700 hours of the eighth calendar day following the relevant Trading Day). The CAISO then proposes to follow the process in Section 35.6 to summarize and report on any price corrections. The CAISO recognizes that it will need to define the criteria by which it will flag prices for which it will delay publication because they are reasonably likely to require correction under Section 35. If the Commission believes this proposed methodology is appropriate to resolve the issues identified by SCE and PG&E, the CAISO would, on compliance, conduct a short stakeholder process to determine the criteria that will be used to identify such prices. The CAISO also recognizes that this proposal will require other changes to the price validation and correction procedures in Section 35 to incorporate this

¹¹ Note in particular that the occurrence of a price outside the range of the proposed price cap and floor does not automatically mean that the respective price cap or floor would be the final settlement price. It is possible that the CAISO validation process could find that the correct price is within the cap and floor range.

additional correction step and would include these changes in the above proposed stakeholder process preceding its compliance filing.

Powerex requests that the Commission require the CAISO to analyze why prices exceeded the cap or floor in each instance and include this analysis in its quarterly reports to the Commission.¹² Reliant also asks the Commission to establish appropriate measures to provide transparency into the frequency, location, root causes and consequences associated with each triggering of the price cap and floor.¹³ Six Cities voices a similar request.¹⁴ The CAISO confirms that it will report on uncapped prices in two ways. The CAISO already intended to include in its quarterly MRTU performance reports to the Commission analysis of the prices and price variability. The CAISO, however, believes it is imprudent to agree to Powerex's request to include an analysis of "every instance" of a 5-minute price exceeding \$2,500 over the course of a quarter, due to the fact that such an analysis may prove to be meaningless. For example, every five minute price excursion may not be significant for the ten minute settlement interval which is based on an average of the two five minute intervals for a given settlement interval. However, the CAISO does commit to meaningful and detailed analysis on the price cap and price trends in its quarterly reports and monthly market performance reports, upon which Powerex will be free to comment and if more detail is required can so request for such information at that time.

G. Requests for Additional Information

Several comments and protests request additional information regarding the implementation of the price cap and floor. DWR argues the CAISO should be required to explain (1) whether the capped/floored LMP will apply in all settlement calculations, including

¹² Powerex at 4-5.

¹³ Reliant at 4-5.

¹⁴ Six Cities at 2-3

for instance Congestion Revenue Rights (CRR) payments and charges, and Bid Cost Recovery payments and cost allocations, and (2) how under- or over-recoveries associated with the use of the capped/floored LMPs will be allocated and paid.¹⁵ The CAISO clarifies that the price cap and floor will apply to all settlements for energy, and ancillary services cleared through the market, *i.e* they will apply to LMPs, RUC prices and ASMPs. With respect to energy and RUC prices, the cap will be applied to nodal prices so the CAISO does not anticipate that the imposition of the cap will result in any shortfalls or over-collections on nodal prices. In the energy markets these capped nodal prices will be used to calculate LAP prices. As described in the CAISO's filing, this will generally operate by reducing the congestion component of the LMP. Accordingly, CRRs will be settled on the capped congestion price because that is the price charged to Market Participants with flows on that particular path. While the CAISO does not expect any CRR shortfall or over-collection to result from this methodology, any such shortfall or over-collection that might occur will be cleared through the CRR Balancing Account pursuant to Section 36 of the CAISO Tariff.

WPTF argues that the CAISO has provided insufficient information about the price cap and the Commission should order CAISO to prepare all the Business Practice Manual and tariff changes needed to reflect this change in the energy settlement and explain why they are just and reasonable, or to otherwise justify why such changes are not needed.¹⁶ The CAISO submitted all of the necessary tariff language to implement the price cap in its filing. The CAISO recognizes that some changes to various BPMs may be necessary, but that the changes would be a straightforward application of the caps and floors. The CAISO does not expect these changes to rise to the level of necessitating additional tariff language because the CAISO believes it has

¹⁵ DWR at 4.
¹⁶ WPTF at 14.

included all the necessary language in its filed proposed tariff language that will impact rates terms and conditions, and therefore, any BPM refinements need not stand in the way of approval of the price cap filing. The CAISO commits to working with its stakeholders on any necessary BPM changes as quickly as possible after Commission approval of the price cap proposal.

V. CONCLUSION

For the reasons explained above, the Commission should accept the Price Cap Filing as filed, and reject protests and comments urging otherwise.

Respectfully submitted,

/s/ Michael Kunselman_____

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CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service list in the captioned 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 Washington, D.C. this 15th day of December, 2008.

/s/ Daniel Klein
Daniel Klein