

November 25, 2014

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20246

**Re: California Independent System Operator Corporation
Docket No. ER15-15-001**

**Response to November 6, 2014 Letter Regarding
CAISO Tariff Amendment, Requests for Shortened Comment
Period, Waiver of 60-Day Notice Requirement, and Expedited
Action, and Request for Privileged Treatment**

Dear Secretary Bose:

On October 1, 2014, the California Independent System Operator Corporation (“CAISO”) filed a tariff amendment (“October 1 tariff filing”) to modify its commitment cost recovery provisions to: (1) increase the daily proxy cost bid cap from 100 percent to 125 percent; (2) eliminate the registered cost option for generating resources other than use-limited resources; and (3) add provisions to allow the CAISO to use updated natural gas price data in the day-ahead market when a daily gas price reported by the Intercontinental Exchange (“ICE”) on the morning of a day-ahead market run exceeds 125 percent of any natural gas price index calculated for the day-ahead market during the previous night.¹ On November 6, 2014, Commission Staff issued a letter indicating that additional information is required by the Commission to evaluate the October 1 tariff filing.

The CAISO provides this response to Staff’s November 6 letter and requests that the Commission approve the October 1 tariff filing as submitted as soon as possible. The CAISO requests that the Commission provide a shortened comment period of no more than seven calendar days, *i.e.*, a

¹ Capitalized terms not otherwise defined herein have the meanings set forth in Appendix A to the CAISO tariff as revised by the October 1 tariff filing, and references to section numbers are references to sections of the CAISO tariff as revised by the October 1 tariff filing unless otherwise specified.

comment date of December 2, 2014, grant waiver of the 60-day notice requirement, and issue an expedited decision so as to allow the October 1 tariff filing to go into effect on December 9, 2014, or as soon thereafter as possible. The advent of colder weather across the United States as winter approaches significantly increases the risk of gas volatility and price spike events. In addition, natural gas storage levels are currently lower than at the same time last year, and recent weeks have seen a drawdown as opposed to continued injections. Therefore, it is critically important that the CAISO have in place the mechanisms proposed in the October 1 tariff filing to ensure that resources have a fair opportunity to recover their costs if a price spike event does occur in the CAISO markets.

As explained in the October 1 tariff filing and in this response:

- The revisions in the October 1 tariff filing represent incremental enhancements to the CAISO's Commission-approved commitment cost mechanisms meant to help ensure that resources have a fair opportunity to recover their operating costs during periods of higher gas price volatility, pending a more comprehensive consideration of these mechanisms in a new stakeholder process.
- The proposal in the October 1 tariff filing will also improve the CAISO's ability to limit the potential exercise of market power through economic withholding by moving most resources from the registered cost option, which has a cap of 150 percent of projected proxy costs, to the proxy cost option, which under the CAISO's proposal would have a bid cap of 125 percent.
- The CAISO's analyses indicate that the 125-percent proxy cost bid cap strikes a reasonable balance between allowing resources a fair opportunity to recover their actual commitment costs, which cannot and need not be perfectly captured by the proxy formula, while limiting the potential exercise of market power. No parties objected to this proposal, and in its memorandum to the CAISO Governing Board, the CAISO's Department of Market Monitoring expressed support for this tariff amendment.

I. Background

The Commission originally approved the proxy and registered cost options for commitment cost recovery as part of the CAISO's market design that went into effect in 2009. The CAISO designed the proxy cost option as a cost-based option that allows a resource to recover start-up and minimum load costs based on formulaic calculations of the resource's performance parameters that are calculated on a daily basis using the most recent gas price index. The registered cost option allows a resource to recover start-up and minimum load costs using values registered by the scheduling coordinator in the master file, subject to a cap originally based on 200 percent of the resource's projected proxy costs for resources in local capacity areas and 400 percent for resources outside those areas.² Although a scheduling coordinator can register costs above its proxy cost calculation, such values are static for a period defined in the tariff, which is currently 30 days.

The registered cost option has always included a cap, which the Commission determined represents "a reasonable balance between preventing the exercise of market power and enabling recovery of supplier costs."³ The Commission has approved CAISO proposals to lower the specific amount of the cap in conjunction with amendments to increase the cost categories included in the proxy cost calculations to better account for resources' actual costs.⁴ Most recently, in its October 29, 2013 order, the Commission accepted the CAISO's proposal to reduce the cap from 200 percent of a resource's projected proxy cost to 150 percent in tandem with adding to the proxy cost formula categories allowing the explicit recovery of costs associated with major plant maintenance, grid management charges, and the bid segment fee. Despite protests urging the Commission to require the CAISO to retain the 200 percent cap, the Commission explained that, "[b]ecause more costs will be included in the proxy cost calculations, we find that a reduction in the registered cost cap is an appropriate safeguard against resources receiving inflated bid cost recovery uplift payments," and that these revisions, like previous revisions, struck a "reasonable balance between preventing the exercise of market power and enabling recovery of

² See *California Independent System Operator Corp.*, 123 FERC ¶ 61,288, at P 3 (2008); transmittal letter for October 1 tariff filing at 4-6.

³ *California Independent System Operator Corp.*, 128 FERC ¶ 61,282, at P 30 (2009).

⁴ *California Independent System Operator Corp.*, 123 FERC ¶ 61,288, at P 23 (accepting tariff revisions to set registered cost cap at 200 percent of projected proxy costs for resources in local capacity areas and 400 percent of projected proxy costs for resources outside those areas); *California Independent System Operator Corp.*, 128 FERC ¶ 61,282, at P 30 (accepting tariff revisions to adjust registered cost cap to 200 percent of projected proxy costs for all resources); *California Independent System Operator Corp.*, 145 FERC ¶ 61,082, at PP 21-22 (2013) (accepting tariff revisions to adjust registered cost cap to 150 percent of projected proxy costs).

supplier costs.”⁵ The Commission also directed the CAISO to submit an informational report one year from the date of its order that “evaluates the effectiveness of the 150 percent cap and its effect on cost recovery.”⁶ The CAISO timely submitted an informational report that validated the CAISO’s original analysis that lowering the registered cost cap would not deny resources an adequate opportunity to recover their commitment-related costs under the registered cost option in light of the increase in the costs eligible for recovery.⁷

The October 1 tariff filing is another step in the CAISO’s ongoing efforts to improve its commitment cost recovery mechanisms. The purpose of the October 1 tariff filing is to ensure that the CAISO’s commitment cost mechanisms provide resources with a fair opportunity to recover their costs during the upcoming winter months, when gas prices are more likely to be volatile because of cold weather events, by providing increased flexibility to bid up to 125 percent of proxy costs on a daily basis. The CAISO’s proposal is not a significant departure from its existing approach for start-up and minimum load cost recovery. Rather, it is an incremental improvement that the CAISO can feasibly implement in time for winter 2014-15 while the CAISO considers new bidding rules as part of a new stakeholder initiative. In effect, the CAISO is proposing to combine the best features of the proxy cost and registered cost options into a single, revised proxy cost option. The advantage of the proxy cost option is that it is calculated on a daily basis, and therefore better reflects changes in resources’ costs, particularly costs that are subject to more frequent volatility such as gas costs. On the other hand, as the Commission has recognized, the proxy cost option is a cost-based recovery mechanism that does not include a true-up mechanism.⁸ Therefore, the only way for resources subject to the proxy cost option to recover their actual start-up and minimum load costs, which cannot be perfectly predicted by the proxy formula, is to provide them with reasonable bidding headroom similar to, but lower than, that provided under the current registered cost option.

Consistent with previous instances in which the Commission has approved reductions to the cost cap for the registered cost option in conjunction with improvements to the formula itself, the CAISO conducted an analysis to determine the amount of headroom that would represent an appropriate balance under the new proxy cost option between providing resources a reasonable opportunity to recover their actual costs of operation and mitigating the exercise of market power. As explained in the October 1 tariff filing and in this response,

⁵ *Id.* at P 22 (citing 128 FERC ¶ 61,282, at P 30).

⁶ *Id.*

⁷ See CAISO informational report, Docket No. ER13-2296-000 (Oct. 29, 2014).

⁸ See *California Independent System Operator Corp.*, 134 FERC ¶ 61,257, at P 24 (2011).

the CAISO concluded that a 125-percent proxy cost bid cap is reasonable based on two factors: (a) data showing that both day-over-day and intra-day gas prices in California have experienced some volatility, but that increases of 25 percent or more have been much rarer than price increases below 25 percent; and (b) the fact that the proxy cost formula cannot reflect individual resources' actual operating costs with perfect precision. The CAISO also proposed to set the bid cap at 125 percent because resources' commitment costs will not be locked in for 30 days as was the case with the registered cost option, but rather the commitment costs will be updated daily using the proxy cost formula. No party in this proceeding objected to the CAISO's proposal to implement the 125-percent proxy cap,⁹ and the CAISO Department of Market Monitoring expressed support for this proposal in its memorandum to the CAISO Governing Board.¹⁰

To protect against the rare instances in which day-over-day gas prices increase by more than 25 percent, the CAISO is proposing to update its gas price calculations on the day it runs the day-ahead market with the single index available at that time from ICE if the daily ICE price is more than 125 percent of the price that the CAISO calculated the previous evening using its standard multi-index formula. This process is substantially identical to the one the Commission approved earlier this year pursuant to the CAISO's request for limited tariff waiver,¹¹ and actually improves on the waiver process because the October 1 proposal will use the more updated gas price data to re-calculate not only start-up and minimum load costs, but also default energy bids.

⁹ On October 31, 2014, the CAISO filed an answer in this proceeding to comments and a limited protest in which parties argued only that (1) the CAISO should use updated natural gas price data in the event of a significant gas price decrease, and (2) the CAISO should make a future filing by a date certain.

¹⁰ See transmittal letter for October 1 tariff filing at 9.

¹¹ *California Independent System Operator Corp.*, 146 FERC ¶ 61,218, at PP 22-24 (2014). As explained in the October 1 tariff filing, the use of multiple gas price indices (at least when a spike in natural gas prices does not need to be quickly addressed) is consistent with guidance previously provided by the Commission. Transmittal letter for October 1 tariff filing at 21 (citing Commission orders).

II. Responses to Requests for Additional Information

The CAISO provides the following response to each of Staff's requests as follows:

1. Request No. (1):

Other than Table 1 of the CAISO's Revised Draft Final Proposal, which shows the trade dates when the day-over-day percentage increase in natural gas prices exceeded 120 percent, did CAISO perform additional analyses when determining the 125 percent cap? If so, please provide copies of any analyses supporting the 125 percent cap. For example, has CAISO examined solely the impact of implementation of the ICE day-ahead natural gas price when the 125 percent natural gas price spike threshold is triggered, rather than the ex post reported gas prices from the other reference indices in the CAISO's tariff, as compared to increasing the proxy price cap, even if the day-ahead gas price spike threshold is not triggered?¹²

Response to Request No. (1):

During the stakeholder process for the October 1 tariff filing, stakeholders were divided between those that supported a proxy cost cap set at the same level as the current registered cost cap, *i.e.*, 150 percent, and those that supported a lower cap.¹³ Ultimately all stakeholders agreed that the cap would appropriately be greater than 100 percent as a result of the registered cost option no longer being available to resources other than use-limited resources. In addition to the day-over-day gas price analyses presented in the Revised Draft Final Proposal, the CAISO conducted an analysis of intra-day price volatility to help determine the appropriate price cap on commitment cost bids.

The CAISO is including two Attachments to this response containing both day-over-day and intra-day gas price analyses. These analyses reveal some day-over-day and intra-day price volatility, but show that increases of 25 percent or more have been relatively rare. Taken together, the analyses demonstrate that some bidding headroom is appropriate to allow resources a fair opportunity to recover their costs, including the costs associated with day-over-day and intra-day gas price volatility. On the other hand, the relative rarity of increases greater than 25 percent, in conjunction with the need for flexibility to account for variations from the calculated proxy cost in actual operations, support the CAISO's proposal to set the proxy bid cap at 125 percent.

¹² November 6 letter at 1-2.

¹³ See transmittal letter for October 1 tariff filing at 19-20; October 1 tariff filing, Attachment D (memorandum to CAISO Governing Board), at 6-7.

Attachment A contains a corrected¹⁴ and expanded version of the original day-over-day analysis that the CAISO submitted with the October 1 tariff filing. This analysis compares day-over-day gas price changes using: (1) the CAISO's gas price index; (2) the ICE gas price alone; (3) the CAISO's gas price index for a given day versus prices reported by ICE for the following day; and (4) ICE gas prices reported in the morning versus the CAISO's gas price index calculated on the evening of the same day. The CAISO also sorted the day-over-day percentage changes into percentile rankings based on their magnitude. The results, which were substantially similar as between the four methods of comparison, show gas price volatility in California occurs with some frequency, but that increases of 25 percent or greater are rare.

The CAISO also performed analyses relating to intra-day gas purchasing costs, which are contained in Attachment B. Because these analyses use market-sensitive stakeholder cost information, as well as proprietary gas price data, the CAISO is requesting confidential treatment of Attachment B. First, during the stakeholder process, the CAISO requested that stakeholders provide natural gas cost data over the span of at least a year. Only one stakeholder, Pacific Gas and Electric Company ("PG&E"), provided such data. The data shows the change or spread between the price of intra-day gas and the price of gas purchased the day before as a percentage of the price calculated using the CAISO's gas price index for the same trade date. This analysis shows that the vast majority of such cost spreads fell within the headroom provided by the CAISO's proposed 125-percent proxy cap.

During the stakeholder process, the CAISO also evaluated intra-day trades reported to ICE from August 2013 to August 2014.¹⁵ For purposes of this response, the CAISO conducted a secondary analysis focusing on those specific days where the day-over-day percentage change in the CAISO gas price index was greater than 110 percent. Both of these analyses are included in Attachment B. They show that while there is some intra-day gas price volatility, reinforcing the need for a reasonable amount of bidding headroom, all but a few instances of price increases would be addressed by a 125-percent proxy cost cap along with the CAISO's proposed alternative price calculation when day-over-day prices increase by more than 25 percent. The CAISO does not believe that it would be appropriate to increase the bidding cap above 125 percent due to these outlier instances. The CAISO's proposal balances the need for daily

¹⁴ The correction involves the CAISO's identification of dates on which day-over-day prices increased over 120 percent, and reveals that the gas price derived from the CAISO's multi-index formula was somewhat less volatile than originally reported.

¹⁵ The CAISO was unable to obtain the backup data for all trade dates but was able to view the trades graphed over the year on ICE's WebICE Internet service

flexibility against the need to limit market participants' ability to exercise market power. The 125-percent bid cap provides an appropriate balance.

With respect to whether the CAISO considered implementing the alternative ICE-only price calculation methodology when the 125-percent natural gas price spike threshold is triggered, in lieu of increasing the proxy price cap to 125 percent, the CAISO did not consider and does not support such an approach for two reasons. First, simply switching to the ICE price would not address intra-day gas price volatility. The CAISO's analyses discussed above demonstrate the need for bidding headroom to account for the less-extreme intra-day price volatility (*i.e.*, increases of 25 percent or less) that occurs in the CAISO markets with some frequency. Importantly, this volatility occurs to about the same degree whether using just the ICE price or the CAISO's gas price index. Second, as discussed in detail in the response to Request No. (2) below, adopting the ICE-only mechanism without bidding headroom would not allow resources to account for the fact that certain components of the proxy formula do not reflect actual costs and thus will likely vary somewhat from the calculated proxy. A 125-percent proxy cost bid cap, in conjunction with the ICE-only alternative mechanism, addresses both of these concerns. Therefore, it is just and reasonable for the CAISO to adopt the 125-percent cap, particularly in light of the elimination of the registered cost option with its 150-percent cap for resources other than use-limited resources.¹⁶

In addition, if this question is intended to ask whether the CAISO has considered calculating proxy costs using only the ICE price every day, instead of just when the next day's ICE price is 125 percent or more of the previous evening's multi-index price, such an approach would not be feasible for the CAISO to implement, at least not without a thorough investigation into the impacts on the CAISO's market processes.¹⁷ ICE publishes its daily gas prices at or after 10:00 a.m. The CAISO's day-ahead market closes at 10:00 a.m.¹⁸

¹⁶ Transmittal letter for October 1 tariff filing at 10.

¹⁷ Further, the Commission generally supports the use of multiple indices in determining proxy gas prices. See *California Independent System Operator Corp.*, 116 FERC ¶ 61,274, at P 1045 (2006) ("We believe the proxy gas price established from the four regional indices will sufficiently reflect the daily fluctuation in gas prices"), *order on clarification and reh'g*, 119 FERC ¶ 61,076, at P 502 (2007) ("These four published indices are widely used by industry participants to measure change in regional gas prices, and averaging of these four indices allows market participants to reduce their exposure to fluctuating gas prices, while improving their risk management strategy in the energy market."); *California Independent System Operator Corp.*, 141 FERC ¶ 61,237, at P 31 (2012) (citation omitted) ("[Commission] staff noted that using a composite index made by averaging more than one index can avoid gaps in index availability. The Staff Report therefore suggested that entities may choose to average across several index developers for the same time period or average over several time periods from the same developer.").

¹⁸ Any notion of making changes to the existing market timeline was far beyond the scope

Once the ICE prices are published, assuming the 125-percent threshold is triggered, the CAISO proposes to implement an entirely manual process that will involve recalculating proxy costs and default energy bids to incorporate the updated price, and then will permit market participants to resubmit bids. Although the CAISO has proposed the tariff authority to implement this manual process to hold the market open and publish the day-ahead market results significantly after the normal 1:00 p.m. deadline, this process is so labor-intensive that the CAISO intends to use it for only the most extreme and rare gas price increases. Due to the disruptive impact this can have on the CAISO's operations, the CAISO believes it is appropriate to utilize the day-of ICE price only when a significant price spike occurs such that generators would not otherwise have a reasonable opportunity to cover their costs with the 125-percent proxy cost bid cap. Furthermore, the CAISO and its stakeholders all agreed, and the CAISO emphasized in the October 1 tariff filing, that implementing a feasible solution in time for the 2014-15 winter season is the highest priority, particularly given the problems encountered last winter.¹⁹ Changing the proxy cap percentage and implementing a back-up solution of using the day-of ICE price in cases of extreme price spikes poses little implementation risk, whereas changing the timeline for the day-ahead market close would be a much more significant change, and might potentially cause a misalignment with the potential new gas trading timelines discussed in the Commission's recent Notice of Proposed Rulemaking to better coordinate the scheduling of natural gas and electricity markets in light of increasing reliance on natural gas for electric generation.²⁰ Also, it would require numerous other tariff changes to implement.

of the stakeholder process for the October 1 tariff filing. Making such drastic changes could have other far-reaching impacts that neither the CAISO nor its stakeholders have considered.

¹⁹ Transmittal letter for October 1 tariff filing at 1-2, 3, 8, 13, 20.

²⁰ See Notice of Proposed Rulemaking, *Coordination of the Scheduling Processes of Interstate Natural Gas Pipelines and Public Utilities*, 146 FERC ¶ 61,201 (2014).

2. Request No. (2):

On page 10 of the transmittal, you state that the 125 percent cap “will provide additional flexibility for scheduling coordinators to account for commitment costs not included in the proxy cost calculation” and “will also account for variations in the standard resource-specific costs that are used in the CAISO’s master file, such as the variable operation and maintenance expense, greenhouse gas costs, and natural gas imbalance charges.”

- (a) *Please provide a description of the types of commitment costs not included in the proxy cost calculation. Please identify any factors that impact these commitment costs on a daily basis, and describe the manner in which each identified factor impacts these costs.*
- (b) *Please describe the standard resource-specific costs that are used in the CAISO’s master file.*
 - (i) *Are these costs accounted for in the calculation of a resource’s proxy cost?*
 - (ii) *If so, why is additional flexibility needed to account for these costs if they are already reflected in proxy cost calculation? If not, why are these costs not reflected in the proxy costs?*
 - (iii) *What factors contribute to changes in these costs from day to day?*
 - (iv) *What is the relationship of these costs to changes in natural gas prices? In particular, why is it appropriate to recover these costs by allowing higher bidding of natural gas prices?²¹*

Response to Request No. (2)(a):

The most significant cost category not included in the CAISO’s proxy cost formula consists of gas-related costs other than commodity and transportation costs. These include costs associated with intra-day gas purchases, hedging costs, and other risk premiums.²² The level of intra-day gas price volatility is difficult to predict and traditionally has been a concern for short start peaking units. Moreover, as the number of intermittent renewable generators

²¹ November 6 letter at 2.

²² The CAISO recently began a stakeholder process to address opportunity costs for use-limited resources. See transmittal letter for October 1 tariff filing at 13.

participating in the CAISO markets increases, gas-fired resources may receive even more incremental or unexpected dispatch instructions to address flexibility needs. This may mean that resources other than just peaking units may need to procure additional gas intra-day. Also, the CAISO's flexibility needs have increased during shoulder seasons and off-peak hours. This in turn may require resources to seek additional hedging opportunities or incur risk premiums. The CAISO cannot predict exactly when these costs will be incurred, but allowing scheduling coordinators the flexibility to manage their gas procurement will support the CAISO's dispatch and system reliability by ensuring that resources respond when needed.²³

Also, as discussed in response to Request No. (2)(b), the proxy cost formula does not precisely capture certain other, non-gas-related variable costs. The 125-percent proxy cost bid cap is necessary to give resources the headroom required to have a reasonable opportunity to recover their costs, akin to the headroom provided for variable costs under the existing 150-percent registered cost cap. Pursuant to the October 1 tariff filing, resources will continue to recover their variable costs even if they will no longer be permitted to use the registered cost methodology.²⁴ Given the need to have a reasonable mechanism in place prior to the winter, it was not feasible within this initiative for the CAISO and stakeholders to address enhancements to the proxy cost formula that may improve the ability of the proxy cost formula to reflect unit-specific costs. The CAISO and its stakeholders will address these issues in the upcoming bidding rules stakeholder initiative.

Response to Request No. (2)(b):

The standard resource-specific costs used in the CAISO's master file are those specified in tariff section 30.4.1.1, and include: (1) formulaic fuel costs for gas-fired resources; (2) auxiliary power costs used in start-up; (3) greenhouse gas costs; (4) rates for the market services charge and system operations

²³ The CAISO is not alone in its concerns about the effects of gas procurement on the dispatch of resources. In 2012, ISO New England Inc. ("ISO-NE") examined dispatch response performance following system contingency events from the previous three years. Based on its examination, ISO-NE reported significant reliability degradation due to gas supply constraints causing generators to not respond to dispatch instructions. Transmittal letter for ISO-NE tariff amendment to implement energy market offer flexibility changes, Docket No. ER13-1877-000, at 3 (July 1, 2013).

²⁴ The CAISO's proposal allows use-limited resources to continue to use the registered cost option to utilize the higher headroom to reflect opportunity costs under the 150-percent registered cost cap. However, not all use-limited resources require the higher headroom. Instead, these use-limited resources can choose to immediately switch to the proxy cost option and recover their opportunity costs within the proposed 125-percent proxy cost bid cap.

charge; (5) major maintenance expenses; (6) variable operation and maintenance costs; and (7) the bid segment fee.

Response to Request No. (2)(b)(i):

Yes.

Response to Request No. (2)(b)(ii):

The components of the proxy cost formula represent a reasonable proxy of the costs that a generator incurs in starting-up or running at minimum load. However, these formulaic values do not, and cannot, perfectly reflect day-to-day variations in the actual costs incurred by generators. This is explained in detail in the response to Request No. (2)(b)(iii) below.

Response to Request No. (2)(b)(iii):

Default variable operation and maintenance costs – Tariff section 39.7.1.1.2 sets forth fixed default operation and maintenance adders based on a resource's fuel source or technology that range from \$0 per MWh for solar to \$5.00 per MWh for biomass. These fixed default values are representative of standard industry costs and are not resource-specific. Thus, a resource's actual variable operation and maintenance costs may well exceed these values. Scheduling coordinators may also elect to negotiate resource-specific values in lieu of default values, but because they are established in advance, even these values may vary from actual costs.

Major maintenance costs – Tariff section 30.4.1.1.4 allows scheduling coordinators to negotiate major maintenance adders based on actual historical or estimated costs for their resources. However, actual major maintenance costs for resources can be higher than the negotiated values due to subsequent unplanned expenses.

Greenhouse gas costs – Similar to the gas price formula, the CAISO calculates greenhouse gas costs pursuant to tariff section 39.7.1.1.4 using a daily price index calculated the day before the day-ahead market runs. Generators can procure emissions allowances in advance and use them at a later date or vice versa, so the actual costs of allowances used by a generator on a particular day will vary.²⁵ During the stakeholder process leading up to the CAISO's 2012 commitment cost refinement amendment, the CAISO initially proposed to decrease the registered cost option cap from 200 to 125 percent.

²⁵ The California emissions market was established only in 2013, and changes are still being made to the market rules, e.g., new allowances to account for natural gas suppliers that will take effect in 2015. These changes increase the overall level of volatility in the emissions market.

However, stakeholders persuaded the CAISO to decrease the cap to 150 percent to account for, among other variables, the volatility of the nascent greenhouse gas market.²⁶ The greenhouse gas market has largely stabilized since then, but starting on January 1, 2015, natural gas suppliers will also be considered covered entities for the amount of gas delivered to California end-users, net of the amount delivered to existing covered entities.²⁷ It is unclear how this additional compliance component will impact gas suppliers, and by extension, the costs of gas-fired generators, to whom gas suppliers will presumably pass on any compliance-related costs. The California Public Utilities Commission (“CPUC”) is currently assessing the impact of greenhouse gas compliance on natural gas suppliers and released a proposed decision on November 18, 2014, which has not been fully vetted by the CAISO and stakeholders.²⁸ It is also unclear whether the gas price indices will reflect greenhouse gas costs in the future.

In addition, the CAISO makes certain assumptions in the proxy cost calculation that can vary between individual generators in actual operations. These include the CAISO’s use of a standard heat rate (10,000 MMBtu/kWh) and a generator’s fastest start-up time when determining start-up costs.

The Commission has recognized that the formulaic calculations under the proxy cost option are within the zone of reasonableness even if they do not precisely capture all of a resource’s start-up and minimum load costs.²⁹ Use of those calculations permits resources to adequately recover their costs without requiring the CAISO to engage in the cumbersome and unnecessary exercise of calculating those costs to the penny. In this respect the proxy cost option, along with a reasonable cap on commitment cost bids, strikes a balance analogous to that articulated by the Commission with respect to cost causation methodologies, namely that adherence to cost-causation principles must be weighed against

²⁶ See transmittal letter for CAISO tariff amendment to further enhance cost recovery by generating resources, Docket No. ER13-2296-000, at 11-12 (Aug. 30, 2013); Attachment D thereto (containing addendum to draft final proposal).

²⁷ CPUC, *Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge*, Rulemaking 14-03-003, at 3 (July 7, 2014).

²⁸ See proposed decision available on the CPUC website at <http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=140045387>.

²⁹ See 134 FERC ¶ 61,257, at P 24 (noting that the proxy cost option does not include a true-up mechanism); *id.* at 30 (stating that the proxy cost option is not unjust or unreasonable merely because it does not “allow for more granular cost recovery” akin to the mechanisms that some other Independent System Operators and Regional Transmission Organizations use to calculate start-up and minimum load costs); *id.* at 31 (explaining that the Commission has previously found the proxy cost methodology to be a just and reasonable option for recovering start-up and minimum load costs).

administrative feasibility, which requires only a “reasonable approximation of . . . costs.”³⁰

Response to Request No. (2)(b)(iv):

These costs are not recovered by “allowing higher bidding of natural gas prices.” As explained above, the proxy cost formula provides for the recovery of a number of different types of costs in addition to natural gas costs. As such, the 125-percent proxy cost bid cap is intended to allow generators to recover intra-day gas costs and other gas costs that do not relate to commodity and transportation costs as well as to reflect variability with respect to fuel and other costs, as discussed above in response to Request No. (2)(b)(iii).

As explained above, the 125-percent cap is based on the concept, consistently approved by the Commission in relation to the registered cost option, of providing resources with sufficient flexibility to recover their actual commitment costs associated with CAISO market dispatches. The CAISO eliminated the registered cost option for resources other than use-limited resources, which had a 150-percent cap, while increasing the proxy cost daily bidding cap to 125 percent. The CAISO believes that its analyses, as presented in the October 1 tariff filing and in Attachments A and B to this response, provide sufficient basis for the Commission to conclude, as it has in the past, that the 125-percent cap represents a “reasonable balance between preventing the exercise of market power and enabling recovery of supplier costs”³¹

As explained in the October 1 tariff filing, the CAISO will be addressing commitment cost issues more comprehensively in its upcoming bidding rules stakeholder process.³² The purpose of the October 1 tariff filing is to have in place an interim process that can be implemented in time for the 2014-15 winter season that provides generators a reasonable opportunity to recover their costs, particularly during periods of price volatility such as those experienced last winter, while maintaining adequate protections against the exercise of market power.

³⁰ *California Independent System Operator Corp.*, 133 FERC ¶ 61,039, at P 60 (2010). See also *California Independent System Operator Corp.*, 130 FERC ¶ 61,122, at P 112 (2010) (citing federal circuit court precedent) (“Cost causation principles do not require costs to be allocated with exacting precision, as long as the costs incurred are reasonably commensurate with the benefits received.”)

³¹ 128 FERC ¶ 61,282, at P 22 (citing 128 FERC ¶ 61,282, at P 30).

³² Transmittal letter for October 1 tariff filing at 20.

3. Request No. (3):

*At page 12 of the transmittal, you state that CAISO does not currently have a market power mitigation measure for minimum load and start-up costs. Please explain if the implementation of the instant proposal was analyzed by CAISO to determine whether local market power can arise and the resultant impact on market prices under the proposed modifications.*³³

Response to Request No. (3):

As noted in the October 1 tariff filing, the CAISO “does not have an *explicit* market power mitigation methodology for commitment costs *like it has for energy*.”³⁴ The filing explained that market power mitigation for commitment costs is currently achieved through caps on commitment cost bids under either the proxy cost or the registered cost option and the requirement that a scheduling coordinator may not change its election for 30 days. As noted in the October 1 tariff filing and in a memo from the Department of Market Monitoring (“DMM”) to the CAISO Governing Board, the proposed changes provide for an effective level of local market power mitigation that is equal or greater than that provided under the current tariff, while providing greater potential market efficiency and assurances that generators will recover gas costs under unusual gas market conditions.³⁵

Currently, potential market power of gas-fired units selecting the proxy cost option is mitigated because bids under this option cannot exceed cost-based bids calculated by the CAISO based on daily spot market gas indices. Raising the bid cap from that 100-percent level to 125 percent may, in some cases, allow the potential exercise of local market power. However, this level is also necessary to allow resources a fair opportunity to recover their costs, thereby resulting in the necessary balance between market power and cost recovery that the Commission historically has sought to achieve. Most resources that may at some time have local market power can currently submit start-up and minimum load bids up to 150 percent of their estimated costs under the registered cost option. DMM’s analysis shows that about 78 percent of all natural gas-fueled capacity, or approximately 23,000 MW, elected the registered cost start-up option in December 2013. Its analysis also shows that these registered cost bids are typically higher than the bids that would be permitted under the CAISO’s proposed new 125-percent proxy cost bid

³³ November 6 letter at 2.

³⁴ Transmittal letter for October 1 tariff filing at 12 (emphasis added).

³⁵ *Id.* at 3, 10-11 & n.32.

cap.³⁶ Thus, the CAISO's proposal should reduce the potential exercise of market power compared to the existing commitment cost recovery framework.

In sum, the CAISO's market monitoring department has indicated that the CAISO's proposal appropriately balances the concerns of providing appropriate cost recovery opportunities and limiting local market power, and that the proposal will improve upon the existing tariff.

III. Request for Shortened Comment Period, Waiver of 60-Day Notice Requirement, and Expedited Decision

As the CAISO explained in the October 1 tariff filing, the revisions proposed therein were designed to be implemented for the upcoming 2014-15 winter season to avoid market inefficiencies and reduce the risk of unrecoverable costs associated with any sudden increases in the price of natural gas, such as those that occurred on a few occasions in California during this past winter. Portions of the United States have already experienced significant cold weather events this fall, including the recent cold snap in the Midwest that has led to increases in natural gas prices in California of approximately 10 percent. In addition, natural gas storage levels are currently lower than at the same time last year, and recent weeks have seen a drawdown as opposed to continued injections.³⁷

It is critically important that the CAISO have in place the mechanisms proposed in the October 1 tariff filing as soon as possible. Therefore, the CAISO is requesting that the Commission provide a shortened comment period of no more than seven calendar days from the date of this filing, *i.e.*, a comment date

³⁶ See DMM's 2013 Annual Report on Market Issues and Performance at 174-75, available on the CAISO website at <http://www.caiso.com/market/Pages/MarketMonitoring/MarketIssuesPerformanceReports/Default.aspx> ("DMM 2013 Annual Report"). Specifically, DMM's analysis shows that the registered cost start-up option was chosen by over 93 percent of steam turbines and 79 percent of combined cycle units, whereas only about 60 percent of gas turbines elected this option. About 63 percent, or approximately 27,000 MW, chose the registered cost option for minimum load bids. The registered cost minimum load option was chosen by nearly 84 percent of steam turbines, about 55 percent of combined cycle units, and about 61 percent of gas turbines. As shown in Figures 7.14 and 7.15 of the DMM 2013 Annual Report, a very large portion of capacity under the registered cost option bid in excess of 120 percent of the proxy cost for start-up and minimum load costs. Under the CAISO's proposal, most of these units would have their bids capped at 125 percent of their proxy costs.

³⁷ According to the Energy Information Administration's Weekly Natural Gas Storage Report released on November 20, 2014, natural gas in underground storage in the West experienced net withdrawals of 7 billion cubic feet (Bcf) between November 7, 2014 and November 14, 2014 to 495 Bcf. This level is 57 Bcf (10 percent) below the one-year average and 35 Bcf (six percent) below the five-year average during the same timeframe. See <http://ir.eia.gov/ngs/ngs.html>.

of December 2, 2014, grant waiver of the 60-day notice requirement, and issue an expedited decision so as to allow the October 1 tariff filing to go into effect on December 9, 2014 or as soon thereafter as possible.³⁸

IV. Request for Confidential Treatment

The CAISO is requesting confidential treatment, pursuant to 18 C.F.R. § 388.112 for Attachment B to this filing. Attachment B contains cost data regarding PG&E's generating fleet that are highly market-sensitive, and should therefore be exempted from disclosure. Attachment B also contains intra-day trading data that the CAISO received from ICE. These data are proprietary to ICE and the CAISO does not have permission from ICE to disclose them.

V. Communications

Communications regarding this response should be addressed to the same individuals that were designated to receive service in the underlying October 1 tariff filing, namely:

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VI. Service

The CAISO has served copies of the instant response upon all parties in the above-referenced proceeding. The CAISO has also served copies of this response on the California Public Utilities Commission, the California Energy Commission, and all parties with effective Scheduling Coordinator Service Agreements. In addition, the CAISO is posting the response on its website.

³⁸ To the extent required, the CAISO requests waiver of the 60-day notice requirement set forth in Section 35.3 of the Commission's regulations, 18 C.F.R. § 35.3, pursuant to Section 35.11 of the Commission's regulations, 18 C.F.R. § 35.11. Good cause exists to grant the requested waiver for the reasons explained above.

VII. Conclusion

The CAISO respectfully requests that the Commission accept this response as fully providing the additional information requested in the Commission Staff's November 6, 2014 letter. The Commission should accept the October 1, 2014 tariff amendment, as supplemented by this response, as just and reasonable, to be effective no later than December 9, 2014.

If there are any further questions or comments, please contact the undersigned.

Respectfully submitted,

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Counsel for the California Independent System Operator Corporation

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for 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 Folsom, California this 25th day of November 2014.

S/ Sarah Garcia
Sarah Garcia

ATTACHMENT A

CORRECTED AND EXPANDED DAY-OVER-DAY GAS PRICE ANALYSIS

This Attachment A provides a corrected and expanded version of the analysis presented in the CAISO's Revised Draft Final Proposal of the day-over-day volatility of gas price indices used in the CAISO markets. Each evening, the CAISO calculates a gas price index averaging the prices from at least two and up to four publications (including the ICE price). The CAISO's gas price index is used in the next day's day-ahead market (for the following trading day) and in the next day's real-time market. This analysis demonstrates that the proposed 125-percent proxy cost bid cap captures the vast majority of day-over-day gas price volatility, leaving the manual process to address the price spikes in excess of the 25-percent price increases. For purposes of this analysis, the CAISO compared day-over-day price changes using: (1) prices calculated with the CAISO's gas price index; (2) prices from the ICE gas price index alone; (3) prices calculated with the CAISO's gas price index for a given day the initial day versus prices reported by ICE for the following day; and (4) prices from the ICE gas price index reported in the morning versus the CAISO's gas price index calculated on the evening of that same day. As shown below, there was little difference in the results of these four comparisons.

The CAISO originally performed this analysis as part of the stakeholder process to demonstrate to stakeholders that the 125-percent proxy cost bid cap was appropriate in response to certain stakeholders that advocated that the 150-percent cap applicable to the registered cost option should be applied to the proxy cost option. However, in preparing this response to the Commission's request regarding Table 1 from the CAISO's Revised Draft Final Proposal, the CAISO discovered a computational error in that table, which the CAISO has now corrected. The original table is reproduced below as Table 1 and marked "Original." The data in the table indicated that, for the period from April 2009 (when the CAISO began operating under its current market design) through April 2014, the CAISO experienced seven days in which the day-over-day increase in gas prices exceeded 125 percent of the previous day's price.¹ The day-over-day increase is calculated by dividing the gas price calculated for a particular day by the gas price calculated for the previous day. For example, if the gas price on January 1 is \$4.00/MMBtu and the price increases to \$4.50/MMBtu the next day, the resultant day-over-day increase for January 2 is 113 percent of the previous day's price (\$4.50/MMBtu divided by \$4.00/MMBtu).

¹ The current market design is sometimes called the Market Redesign and Technology Upgrade, or MRTU for short.

Table 1 from Revised Draft Final Proposal

ORIGINAL - Day-over-day gas price increases over 120% since MRTU

Trade Date	CISO	PGE2	SCE1	SCE2	SDG1	SDG2
10/6/2009	119%	119%	124%	126%	124%	126%
10/8/2009	123%	123%	121%	123%	121%	123%
11/1/2009	198%	198%	200%	200%	200%	200%
11/18/2009	127%	127%	127%	129%	127%	129%
11/24/2009	125%	125%	120%	121%	120%	121%
12/1/2009	122%	122%	134%	136%	134%	136%
11/7/2010	200%	200%	200%	200%	200%	200%
2/3/2011	102%	102%	120%	122%	120%	121%
12/10/2013	120%	120%	156%	159%	156%	159%
2/5/2014	126%	126%	118%	119%	118%	119%
2/6/2014	274%	274%	159%	121%	159%	121%
3/1/2014	105%	105%	121%	122%	121%	122%
3/4/2014	130%	130%	125%	126%	125%	126%

Instances:

>=125%	7	7	7	7	7	7
>=150%	3	3	4	3	4	3
>=200%	2	2	2	2	2	2

When the CAISO reprocessed this data for this response, it discovered that the gas prices for all regions on two days (November 1, 2009 and November 7, 2010) were double-counted. Therefore, there was no day-over-day increase for these days (*i.e.*, the gas price on November 7 was the same as, or 100 percent of, the gas price on November 6), rather than the approximately 200 percent result shown in Table 1. In other words, those two days did not experience a day-over-day gas price increase over 120 percent (*i.e.*, an increase of more than 20 percent from the previous day). In addition, on February 6, 2014, the formulas under-accounted for the gas price increase in the SCE2 and SDG2 gas regions. Applying the correct formula results in an increase on February 6 from 121 percent to 161 percent. Tables R2 and R3 below show the corrected data for all instances of day-over-day gas price increases over 120 percent since the CAISO implemented its current market design in 2009.² Table R2 uses the current CAISO gas price index (“GPI”) whereas Table R3 uses ICE index data only.

² The rest of the tables and figures in this filing are each designated as Table or Figure R[#], with the R indicating that the CAISO is providing them as part of its response to the November 6 letter.

Table R2

GPI day-over-day gas price increases over 120% since MRTU

Trade Date	CISO	PGE2	SCE1	SCE2	SDG1	SDG2
10/6/2009	119%	119%	124%	126%	124%	126%
10/8/2009	123%	123%	121%	123%	121%	123%
11/18/2009	127%	127%	127%	129%	127%	129%
11/24/2009	125%	125%	120%	121%	120%	121%
12/1/2009	122%	122%	134%	136%	134%	136%
2/3/2011	102%	102%	120%	122%	120%	121%
12/10/2013	120%	120%	156%	159%	156%	159%
2/5/2014	126%	126%	118%	119%	118%	119%
2/6/2014	274%	274%	159%	161%	159%	161%
3/1/2014	105%	105%	121%	122%	121%	122%
3/4/2014	130%	130%	125%	126%	125%	126%

Instances:

>=125%	5	5	5	6	5	6
>=150%	1	1	2	2	2	2
>=200%	1	1	0	0	0	0

Table R3

ICE index day-over-day gas price increases over 120% since MRTU

Trade Date	CISO	PGE2	SCE1	SCE2	SDG1	SDG2
10/6/2009	119%	119%	127%	129%	127%	129%
11/18/2009	127%	127%	131%	133%	131%	133%
11/24/2009	124%	124%	120%	121%	120%	121%
12/1/2009	122%	122%	132%	134%	132%	134%
12/10/2013	120%	120%	156%	159%	156%	159%
2/5/2014	126%	126%	118%	119%	118%	119%
2/6/2014	260%	260%	157%	160%	157%	160%
3/1/2014	106%	106%	120%	121%	120%	121%
3/4/2014	130%	130%	126%	127%	126%	127%

Instances:

>=125%	4	4	6	6	6	6
>=150%	1	1	2	2	2	2
>=200%	1	1	0	0	0	0

Tables R2 and R3 show that using the ICE index alone versus using the CAISO's current gas price index provides very similar results in terms of observed price increases. The only notable exceptions were for October 8, 2009 and February 3, 2011, when the CAISO's gas price index averaged a day-over-day price increase of over 120 percent, whereas the ICE index did not cross this threshold. Both methodologies produced the same number of instances greater than or equal

to 150 percent and 200 percent for all regions. With respect to increases between 125 and 150 percent, the ICE index registered one less instance for the CISO and PGE2 regions and one more instance for the SCE1 and SDG1 regions.

The CAISO also analyzed the difference between using the CAISO’s current gas price index versus the ICE price alone. Table R4 below illustrates how the analysis was conducted, focusing on one region and two days. This table shows the day-over-day increase based on the CAISO’s current gas price index (274 percent), the ICE price alone (260 percent), and finally comparing the previous day’s gas index price with the day-of ICE price (259 percent), which is the calculation that the CAISO intends to use to determine whether its proposed alternative price calculation mechanism is triggered.

Table R4

Comparison of Gas Price Index and ICE index for PGE2 (\$/MMBtu)

	GPI	ICE	ICE / GPI
[1] 2/5/2014	\$8.62	\$8.60	\$8.62
[2] 2/6/2014	\$23.58	\$22.33	\$22.33
[3] Day-over-day change	274%	260%	259%

The CAISO repeated this analysis for all days between April 2009 and April 2014 for all CAISO gas regions. Table R5 below shows all of the instances where the day-over-day increase was 120 percent or greater when comparing the price calculated using the CAISO’s multi-index formula with the ICE price reported the next day.

Table R5

ICE versus GPI day-over-day gas price increases over 120% since MRTU

Trade Date	CISO	PGE2	SCE1	SCE2	SDG1	SDG2
9/9/2009	115%	115%	119%	121%	119%	121%
10/6/2009	119%	119%	131%	133%	131%	133%
10/8/2009	123%	123%	127%	129%	127%	129%
11/18/2009	127%	127%	133%	135%	133%	135%
11/24/2009	124%	124%	122%	124%	122%	124%
12/1/2009	122%	122%	135%	138%	135%	138%
12/10/2013	119%	119%	156%	159%	156%	159%
2/5/2014	126%	126%	118%	119%	118%	119%
2/6/2014	259%	259%	157%	160%	157%	160%
2/11/2014	117%	117%	120%	121%	120%	121%
3/1/2014	105%	105%	120%	121%	120%	121%
3/4/2014	130%	130%	125%	126%	125%	126%

Instances:

>=125%	4	4	7	7	7	7
>=150%	1	1	2	2	2	2
>=200%	1	1	0	0	0	0

The results of this analysis in Table R5 are very similar to the results shown in Tables R2 and R3. The exceptions are September 9, 2009, and February 11, 2014, for which the day-over-day price increase was over 120 percent when comparing the ICE price to the CAISO's gas price index calculated on the prior evening. However, neither of these two days experienced price increases over 125 percent, and thus they would not have triggered the alternative price calculation mechanism proposed in the October 1 tariff filing. The methodology used to create Table R5 produced the same number of instances for all regions as compared with either the current gas price index analysis presented in Table R2 or the ICE index analysis in Table R3 for percentages greater than or equal to 150 percent and 200 percent. Between 125 and 150 percent, the ICE-versus-current-gas-price-index comparison (Table R5) registered one more instance in the SCE1, SCE2, SDG1, and SDG2 regions as compared with the ICE index alone (Table R3), and registered one less instance for the CISO and PGE2 regions, two more instances for the SCE and SDG1 regions, and one more instance for the SCE2 and SDG2 regions as compared with the current CAISO gas price index (Table R2).

Figure 1 (not to be confused with Table 1) from the Revised Draft Final Proposal shows the day-over-day percentage change in the gas price index for all days between April 2009 and April 2014 for all regions. The CAISO repeated that analysis and compared the results with the day-over-day change based on the ICE price only. For ease of analysis, the data in Figure 1 from the Revised Draft Final Proposal has been separated out into the data shown in Figures R1 through R6 below, each of which depicts one gas region and compares the CAISO's gas price

index with the ICE price between April 2009 and April 2014 for that region. Figures R1 through R6 are virtually indistinguishable from one another except for the deviations noted above in Tables R3 and R4.

Figure R1

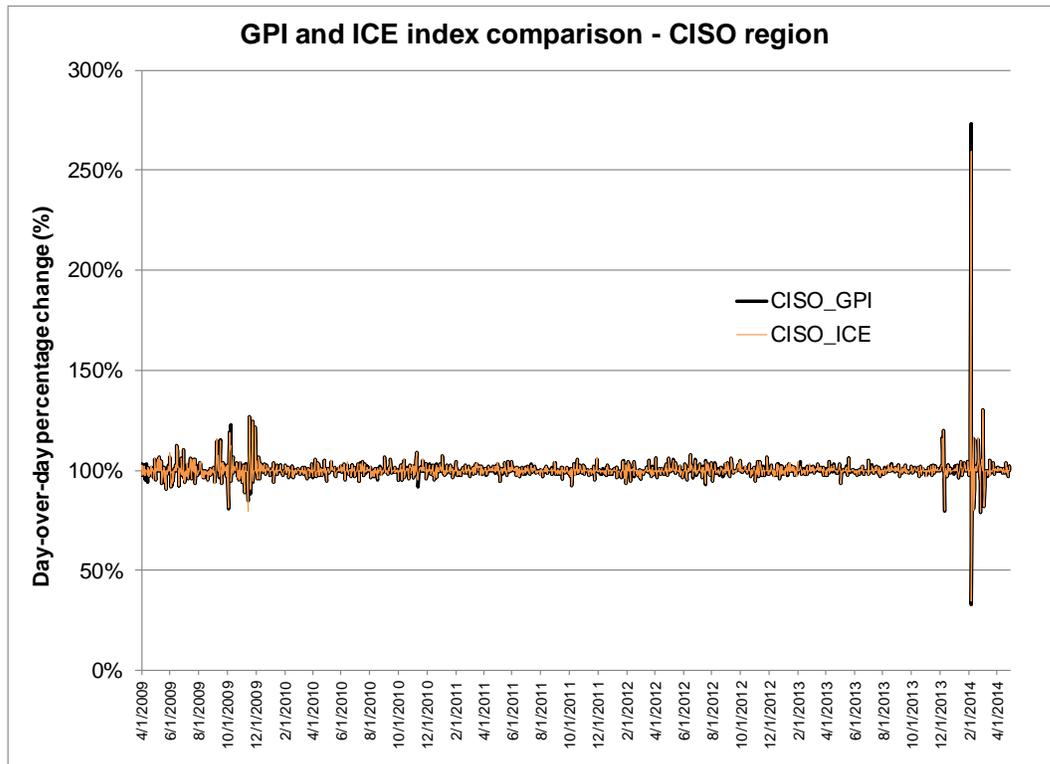


Figure R2

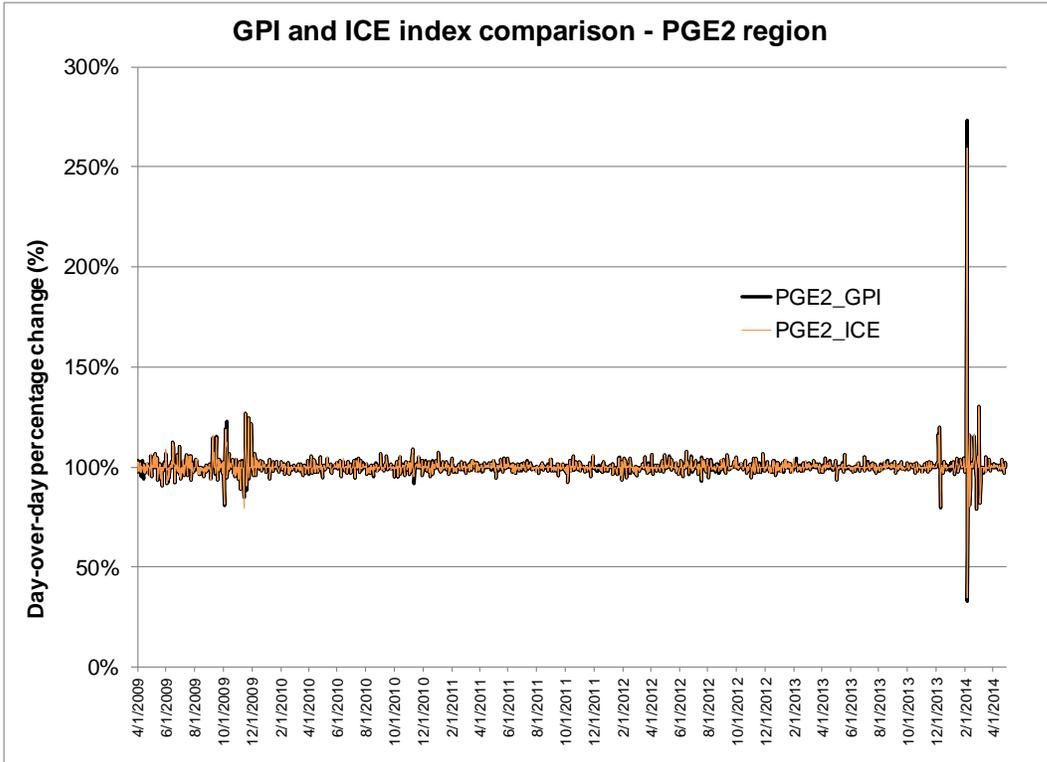


Figure R3

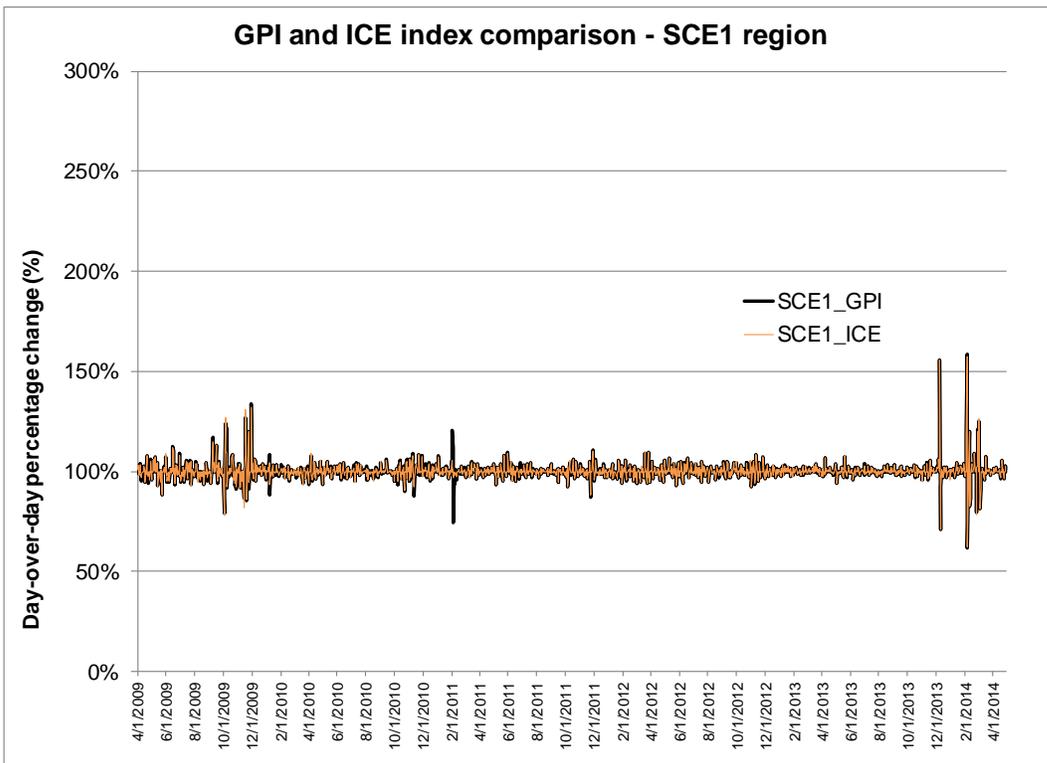


Figure R4

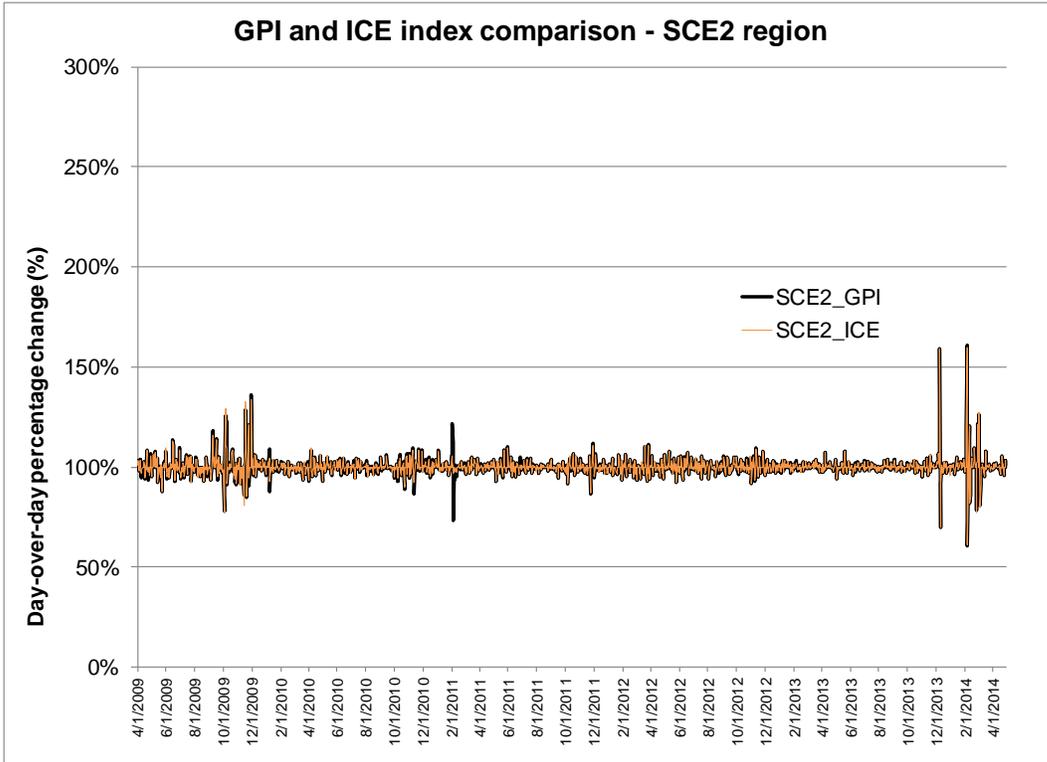


Figure R5

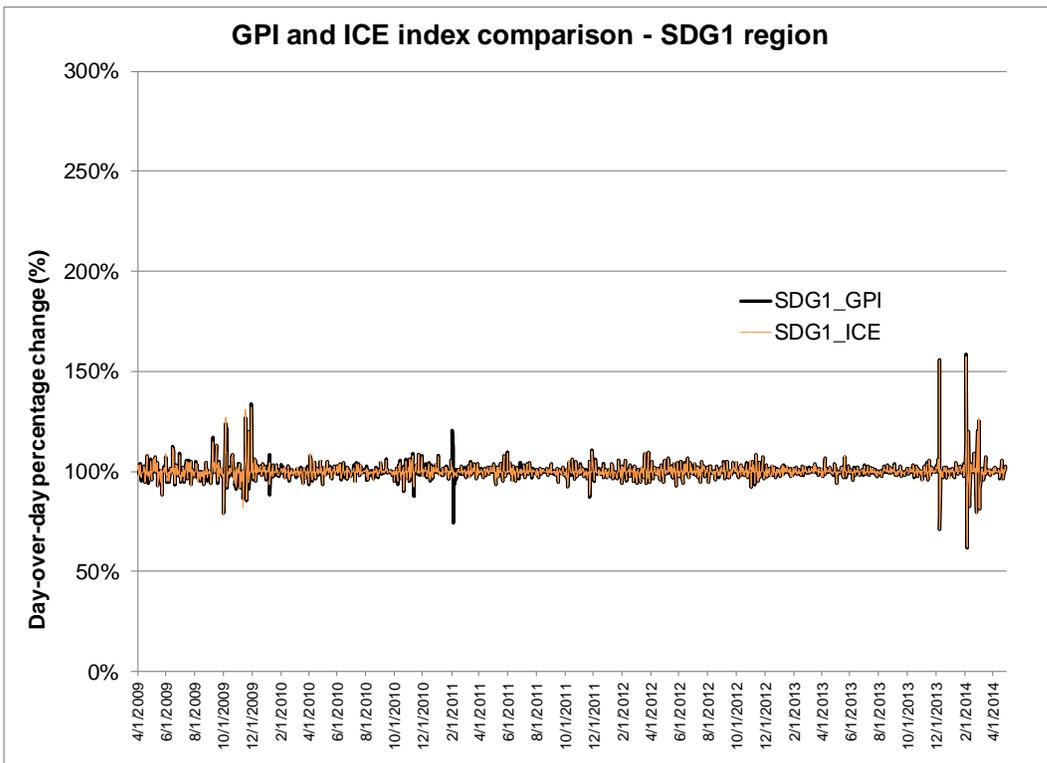
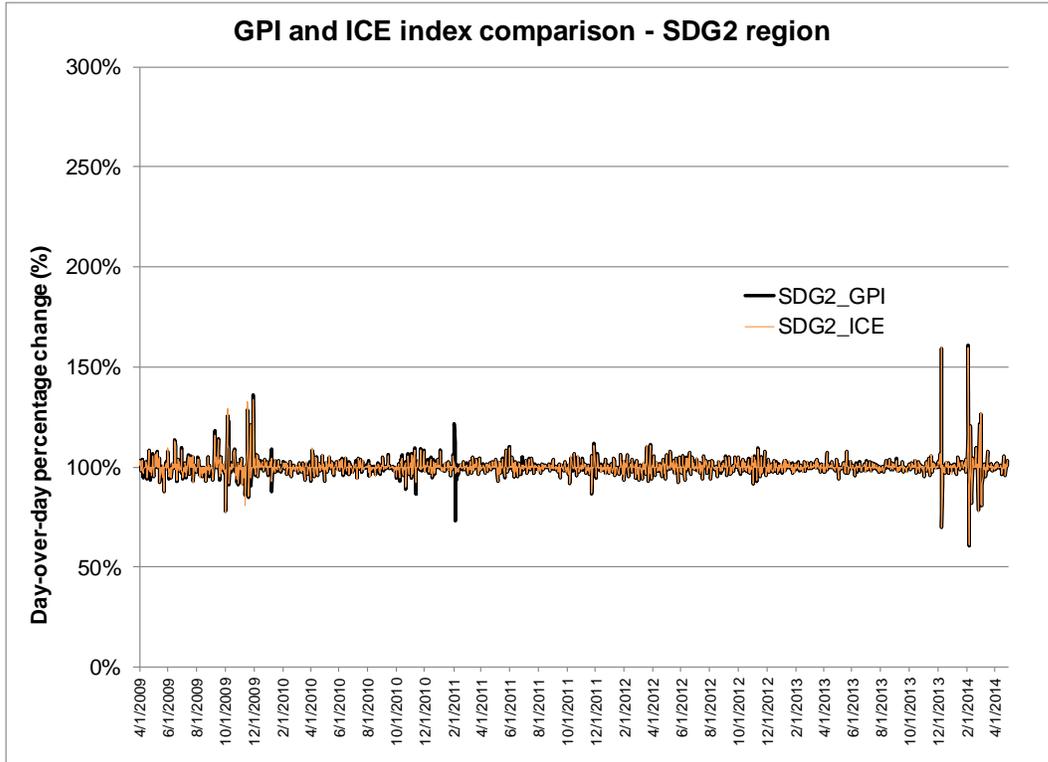


Figure R6



Tables R6 through R8 below separate the day-over-day percentage changes into percentile rankings over two time frames: (1) April 2009-April 2014 and (2) April 2013-April 2014. The percentile rankings divide the data for each time frame into 100 equal parts and rank them from lowest to highest. In Table R6, for example, row [1] shows that in the 5th percentile the day-over-day gas price change is 97 percent for the CISO region. This means that five percent of the data set from April 2009 through April 2014 is comprised of a change of 97 percent or less. Row [6] shows the 99th percentile, which means 99 percent of the data set is comprised of a change of 109 percent or less. Only one percent of the data set reflects a change higher than 109 percent.

Table R6 shows the percentile rankings for percentage changes based on the current gas price index alone. The rankings for April 2009 through April 2014 shown in rows [1] through [6] reflect a very small range of percentage changes between the 5th and 99th percentiles. There is at most a 16-percent change (for the SDG2 region). This reflects the relatively stable gas prices in California over this time frame. However, rows [7] through [12] rank the percentage changes from April 2013 through April 2014 and reflect much more volatility in the 99th percentile at about 120 percent. Though gas prices are generally stable in California, the outliers in the 99th percentile are much higher (120 percent versus 110 percent), reflecting the increased volatility that occurred within the last year.

Table R6

Percentile rank for day-over-day gas price change based on GPI

	Percentile	CISO	PGE2	SCE1	SCE2	SDG1	SDG2
	<i>April 1, 2009 - April 30, 2014</i>						
[1]	<i>5th</i>	97%	97%	96%	96%	96%	96%
[2]	<i>25th</i>	99%	99%	99%	99%	99%	99%
[3]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[4]	<i>75th</i>	101%	101%	101%	101%	101%	101%
[5]	<i>95th</i>	104%	104%	104%	105%	104%	105%
[6]	<i>99th</i>	109%	109%	111%	112%	111%	112%
	<i>April 1, 2013 - April 30, 2014</i>						
[7]	<i>5th</i>	97%	97%	97%	97%	97%	97%
[8]	<i>25th</i>	100%	100%	99%	99%	99%	99%
[9]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[10]	<i>75th</i>	101%	101%	101%	101%	101%	101%
[11]	<i>95th</i>	104%	104%	104%	104%	104%	104%
[12]	<i>99th</i>	120%	120%	121%	122%	121%	122%

The CAISO repeated this analysis in Table R7 using only the ICE index. The results are almost identical, with increased volatility within the last year reaching approximately 120 percent in the 99th percentile.

Table R7

Percentile rank for day-over-day gas price change based on ICE Index

	Percentile	CISO	PGE2	SCE1	SCE2	SDG1	SDG2
	<i>April 1, 2009 - April 30, 2014</i>						
[1]	<i>5th</i>	97%	97%	96%	96%	96%	96%
[2]	<i>25th</i>	99%	99%	99%	99%	99%	99%
[3]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[4]	<i>75th</i>	101%	101%	101%	101%	101%	101%
[5]	<i>95th</i>	104%	104%	104%	105%	104%	105%
[6]	<i>99th</i>	110%	110%	110%	111%	110%	111%
	<i>April 1, 2013 - April 30, 2014</i>						
[7]	<i>5th</i>	97%	97%	97%	96%	97%	96%
[8]	<i>25th</i>	100%	100%	99%	99%	99%	99%
[9]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[10]	<i>75th</i>	101%	101%	101%	101%	101%	101%
[11]	<i>95th</i>	104%	104%	103%	104%	103%	104%
[12]	<i>99th</i>	120%	120%	120%	121%	120%	121%

Table R8 shows the same analysis comparing the ICE price with the CAISO gas price index percent change and indicates very similar results to the ones shown in Table R7 based on the ICE price alone.

Table R8

Percentile rank for day-over-day gas price change based on ICE vs. GPI

		CISO	PGE2	SCE1	SCE2	SDG1	SDG2
<i>April 1, 2009 - April 30, 2014</i>							
[1]	<i>5th</i>	97%	97%	96%	96%	96%	96%
[2]	<i>25th</i>	99%	99%	99%	99%	99%	99%
[3]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[4]	<i>75th</i>	101%	101%	101%	101%	101%	101%
[5]	<i>95th</i>	104%	104%	105%	105%	105%	105%
[6]	<i>99th</i>	109%	109%	111%	112%	111%	112%
<i>April 1, 2013 - April 30, 2014</i>							
[7]	<i>5th</i>	97%	97%	97%	96%	97%	96%
[8]	<i>25th</i>	100%	100%	99%	99%	99%	99%
[9]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[10]	<i>75th</i>	101%	101%	101%	101%	101%	101%
[11]	<i>95th</i>	104%	104%	104%	104%	104%	104%
[12]	<i>99th</i>	119%	119%	120%	121%	120%	121%

The CAISO has also performed this same analysis comparing the ICE price available the morning of the day-ahead market run versus the CAISO gas index price calculated the evening of that same day. Table R9 below shows the percentile rankings based on comparing the indices from the same trade date. The analysis shows that there is very little difference between the volatility associated with the ICE price and the CAISO's gas price index calculated later that day.

Table R9

Percentile rank for the percent change between ICE and GPI for same trade date

		CISO	PGE2	SCE1	SCE2	SDG1	SDG2
<i>April 1, 2009 - April 30, 2014</i>							
[1]	<i>5th</i>	100%	100%	99%	98%	99%	98%
[2]	<i>25th</i>	100%	100%	100%	100%	100%	100%
[3]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[4]	<i>75th</i>	100%	100%	100%	100%	100%	100%
[5]	<i>95th</i>	100%	100%	100%	100%	100%	100%
[6]	<i>99th</i>	101%	101%	102%	102%	102%	102%
<i>April 1, 2013 - April 30, 2014</i>							
[7]	<i>5th</i>	100%	100%	100%	100%	100%	100%
[8]	<i>25th</i>	100%	100%	100%	100%	100%	100%
[9]	<i>50th</i>	100%	100%	100%	100%	100%	100%
[10]	<i>75th</i>	100%	100%	100%	100%	100%	100%
[11]	<i>95th</i>	100%	100%	100%	100%	100%	100%
[12]	<i>99th</i>	101%	101%	101%	101%	101%	101%

Though the gas price volatility that the CAISO market experienced during the 2013-14 winter season was not as extreme as that experienced in the Eastern United States, such volatility may become more common as the Californian and Western markets increase reliance on gas-fired resources for balancing energy. Small constraints, weather conditions outside of the region, and competing demand from heating and other uses may exacerbate a gas price spike. The last 12 months' worth of data shows that a 20 percent increase in gas prices has occurred with greater frequency than in the more distant past. The CAISO has therefore proposed a 125-percent proxy cost bid cap to capture the vast majority of day-to-day gas volatility, as well as other deviations from the proxy cost, along with a manual process to address the much rarer cases in which gas price increases exceed 25 percent.³

³ See transmittal letter for October 1 tariff filing at 10-11.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System)
Operator Corporation) Docket No. ER15-15-001

ATTACHMENT B

**CONTAINS PRIVILEGED
AND CONFIDENTIAL INFORMATION
PURSUANT TO 18 C.F.R. § 388.112**
