

**Environmental Defense Fund Comments on CAISO Commitment Costs and  
Default Energy Bid Enhancements Issue Paper**

Environmental Defense Fund (“EDF”) appreciates the opportunity to comment on CAISO’s Commitment Costs and Default Energy Bid Enhancements Issue Paper dated November 18, 2016 (“Issue Paper”). In these comments, EDF responds to the questions raised by CAISO in the Issue Paper as well as the Department of Market Monitoring’s comments to the Issue Paper dated November 29, 2016 (“DMM Comments”).

At the outset, EDF would like to express its appreciation for CAISO’s efforts to tackle longstanding stakeholder concerns regarding CAISO market design features impacting suppliers’ bidding flexibility, its efforts to compare CAISO market design features with those of other organized markets, and its willingness to draw on lessons learnt by other organized markets in this regard.

The fundamental question before CAISO is to identify how best to strike a balance between two competing interests:

- (i) guarding against the exercise of market power by market participants; and
- (ii) allowing market participants a reasonable degree of bidding flexibility, including the ability to recover actual fuel costs under all circumstances.<sup>1</sup>

This is a challenging balancing act. Market design elements that err too much on the side of market power mitigation prevent generators from exercising a reasonable degree of bidding flexibility, and recovering actual fuel costs. On the other hand, market design elements that allow generators a high degree of bidding flexibility at the expense of market power mitigation measures could potentially lead to abuse of market power, and expose customers to artificially high prices.

EDF submits that the current CAISO market design is skewed too heavily in favor of market power mitigation measures at the expense of suppliers’ bidding flexibility and ability to recover fuel costs. The remainder of these comments expand on this perspective, by addressing the specific questions raised in the Issue Paper.

**1. Pathways Posing Medium Risk of Exercise of Market Power and Underrecovery of Market Participants’ Costs Are Preferable**

EDF agrees with CAISO’s hypothesis that its current market design imposes an unacceptable risk that suppliers’ cost expectations will not be reflected in the market, by sacrificing suppliers’ bidding

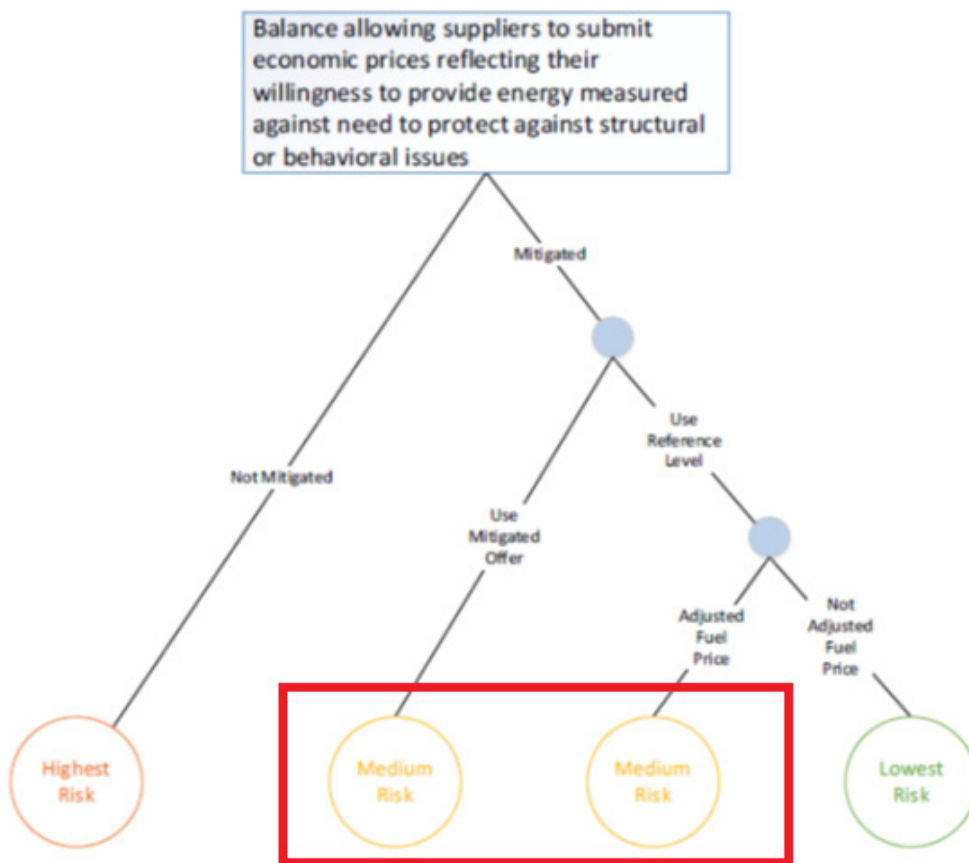
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<sup>1</sup> See *Price Formation in Energy and Ancillary Services Markets Operated by Regional Transmission Organizations and Independent System Operators*, 153 FERC ¶ 61,221 at p. 2 (2015) (finding that the goals of proper price formation, include, among others to “ensure that all suppliers have an opportunity to recover their costs”).

flexibility to minimize the risk to customers of artificial pricing.<sup>2</sup> As an example of this skewed balance, as CAISO acknowledges in the Issue Paper, *all* organized markets that mitigate to reference levels, other than CAISO, provide market participants an opportunity to request a fuel price adjustment in the reference level calculation.<sup>3</sup>

As CAISO acknowledges in its Issue Paper, a number of solution sets can be employed to address the challenge of balancing the need to guard against exercise of market power with the need to ensure that suppliers' cost expectations are reasonably reflected in the market. Each solution set carries a different set of risks as identified in the decision tree below, extracted from CAISO's Issue Paper:

**Figure 1: Size Risk that Market is Vulnerable to Market Power or Gaming**



CAISO identifies two “medium risk” approaches in the Issue Paper highlighted in the graphic above. EDF agrees with CAISO’s hypothesis that one of the proposed middle paths posing medium level risk of underrecovery of suppliers’ costs and of the exercise of market power is preferable.<sup>4</sup>

<sup>2</sup> CAISO Issue Paper, p. 37.

<sup>3</sup> CAISO Issue Paper, p. 20.

<sup>4</sup> “The California ISO posits that the optimal balance would promote a market efficient solution that results in energy prices reflecting suppliers’ willingness to sell under competitive market conditions and suppliers’ cost

## 2. Considering PJM and SPP's Approaches

In a recent set of comments filed before FERC, CAISO noted that it lacks the expertise to verify cost based bids prior to market runs, and that it will be a challenge for it to discern, on an *ex-post facto* basis, whether or not generator costs were prudently incurred.<sup>5</sup>

Firstly, EDF seeks clarification of CAISO's stance on the issue, given that in its comments to the Issue Paper, DMM suggests that ISO staff prefer an SPP style approach based on pre-validation of methodology but after the fact verification of gas costs.<sup>6</sup> Secondly, EDF submits that the concern expressed by CAISO as to lack of expertise, in and of itself, is not a sufficient basis to reject an alternative market design based on a screening of cost based bids prior to market runs, followed by after the fact verification of costs, given that other organized markets such as PJM and SPP are successfully implementing such a market design, and have developed the capabilities needed to administer an effective cost verification process. In both PJM and SPP, market participants are responsible for developing their cost-based offers in accordance with prescribed guidelines, and submitting such offers into the market.<sup>7</sup>

In their comments to the Issue Paper, DMM staff note that an approach similar to that currently being followed by SPP, based on pre-validation of methodology and after-the-fact verification of gas costs is "much more problematic, less effective, and would require significantly more staff resources on an ongoing basis."<sup>8</sup> A more thorough substantiation and examination of these concerns is needed before it can be conclusively determined if the implementation of an SPP style approach in the CAISO context is infeasible.

EDF submits that the PJM/SPP style approach of allowing generators to submit cost-based offers to the market as opposed to relying on reference levels, while using cost validation methods to protect against the exercise of market power, strikes an appropriate balance between the two competing interests of allowing fuel cost recovery while guarding against exercise of market power.

As noted by other stakeholders<sup>9</sup>, it is imperative that generators be allowed to recover their actual gas costs under all types of market conditions, including unusual circumstances (e.g., gas

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expectations under uncompetitive market conditions. Such a path would likely fall within one of the two middle paths that have a medium risk to both the suppliers and the markets." CAISO Issue Paper, p. 37.

<sup>5</sup> "The CAISO does not currently have a mechanism for verifying cost-based bids prior to clearing the market. Moreover, beyond accounting for increases in fuel costs reflected in available price indices used to calculate default energy bids and other cost-based generated bid values, the CAISO does not believe it has the ability to verify cost based bids prior to running the markets. With respect to *ex-post* verification of the bids, the CAISO is concerned that under the normal course of business it will be difficult for the CAISO to discern whether or not the generators incurred the costs prudently, or whether it is instead using electricity market to manage all of its gas market risk exposure inappropriately." Comments of the California Independent System Operator Corporation, Docket No. RM16-5-000, at p. 2 (April 4, 2016).

<sup>6</sup> DMM Comments, p. 4.

<sup>7</sup> See generally Joint Comments of PJM Interconnection L.L.C. and Southwest Power Pool, Inc., *Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Docket RM16-5-000 (April 4, 2016).

<sup>8</sup> DMM Comments, p. 4.

<sup>9</sup> "Resource owners must be able to recover their gas costs in all circumstances. Mitigation schemes that allow the resource owner to recover costs in normal circumstances but not under abnormal circumstances (e.g., gas

curtailment or price volatility events). In its comments to the Issue Paper, DMM notes that there are a small number of instances where the current bidding headroom in the CAISO market may not cover upward gas price variability.<sup>10</sup> It is precisely in these “very small number of instances” that the bidding rules should accommodate gas price variability.<sup>11</sup>

#### DMM Phase 1 (Fall 2017) Recommendations

While DMM’s recommendations for an initial phase of measures to be implemented by fall 2017 (e.g. permanently updating natural gas indices used in the day ahead market, updating natural gas indices used in the day ahead market for the first trading day etc.) may help address the risk of underrecovery of fuel costs to some degree, they simply don’t go far enough in addressing this risk. When natural gas supplies are tight, the price of natural gas can vary significantly from day to day. Under such circumstances, there may be insufficient independent, timely information on gas-fired generators’ costs, and generators may use fuel brokers to procure natural gas via transactions that are not conducted on an indexed, transparent natural gas trading platform.<sup>12</sup> Therefore, under these conditions, gas price indices may not fairly represent market participants’ fuel procurement costs.

#### Timing and Implementation Challenges

DMM argues that in exploring available solution sets that will allow CAISO to strike a better balance between the need for increased bidding flexibility and the need to guard against the exercise of market power, implementation challenges and the timeline necessary to make substantial modifications to the software as well as additional staffing requirements associated with any changes to the market design must be considered. Administrative considerations such as implementation challenges and staffing requirements should not be put forth as a roadblock to making necessary market revisions that are likely to substantively improve market efficiency.

DMM further notes that the technical challenges associated with implementing an enhanced process by which generators can request use of gas costs in excess of updated gas indices plus the 25% headroom for commitment costs and the 10% headroom for default energy bids already incorporated in ISO market rules, such an approach is unlikely to be implemented earlier than fall 2018. The Commission has been requesting CAISO to make these longer term market changes

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curtailment or price volatility events) are not just and reasonable.” NRG Energy, Inc. Comments on Bidding Rules Enhancements Revised Straw Proposal, December 2015, available at [https://caiso.com/Documents/NRGComments\\_BiddingRulesEnhancements\\_RevisedStrawProposal.pdf](https://caiso.com/Documents/NRGComments_BiddingRulesEnhancements_RevisedStrawProposal.pdf), at p. 1.

<sup>10</sup> “DMM’s analysis of gas markets has consistently shown that the current bidding headroom in the ISO markets covers most upward gas price variability. However, we acknowledge that there are a very small number of instances that are not currently covered and that improvements can be made to address the variability of natural gas costs.” See DMM Comments, at p. 1.

<sup>11</sup> “Market participants should not be put in the position of being able to recover their gas costs most of the time; the CAISO should provide a structure that allows market participants to recover their gas costs incurred from participating in the CAISO’s markets and following CAISO dispatch instructions and market awards all of the time.” See NRG Energy, Inc. Comments on Commitment Cost Enhancements Phase 2 Straw Proposal at p. 2 (November 19, 2014).

<sup>12</sup> Comments of ISO New England Inc., *Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Docket No. RM16-5-000, at p. 4-5.

since 2014.<sup>13</sup> DMM’s suggestion that long-term changes “be implemented no earlier than the fall of 2018 or beyond” means that an unacceptably long interval - nearly a half a decade – will have passed before CAISO has addressed these market inefficiencies.

#### Excluding Certain Cost Components from Gas Costs to Calculate Bid Caps

DMM recommends that certain cost components (e.g. gas penalties, imbalance charges) be excluded from natural gas costs used to calculate bid caps, as these do not typically represent hourly marginal costs and cannot be reasonably estimated in advance. DMM’s recommended approach conflicts with the fundamental principle outlined earlier in these comments – CAISO rules should allow market participants to recover gas costs incurred in following CAISO dispatch instructions and market awards under *all* circumstances.<sup>14</sup> DMM’s recommended approach imposes an unduly high risk of underrecovery of fuel costs on suppliers – an outcome that is likely to be exacerbated by the ongoing limited operability of Aliso Canyon, which has increased the likelihood of OFO situations and the imposition of penalties.

The market effects stemming from the limited operability of Aliso Canyon, and the implications of the Aliso Canyon leak for the function of gas storage in California’s electricity markets provide additional impetus for market enhancements. California’s historically robust gas storage capacity has, in significant measure, obscured the cost and value of firm pipeline transportation services and sub-day (e.g., hourly) supply, and thus provided a basis for CAISO’s fundamental pricing assumption that “next day gas commodity prices are a reasonable proxy for expected procurement costs.”<sup>15</sup> At the same time that gas demand is increasing in volume and variation, power plant fuel supply needs are becoming more intermittent and uncertain on both daily and sub-day levels.

Aliso Canyon and other gas storage facilities have allowed power generators to pay only for interruptible transportation services, while receiving service equivalent to far more expensive firm transportation - meaning that the cost reflected in the electricity market for generators to avoid gas delivery curtailment was minimal, if not obscured, in hourly offers and clearing prices. Likewise, gas storage has allowed the market to avoid pricing of natural gas in a manner that reflects real-time demand fluctuation and the costs attributable to operational elements of responding to rapid changes in gas flow.

The availability and cost of gas storage in California are now in flux as policymakers assess its role considering environmental and climate policy objectives.<sup>16</sup> At its core, a pricing policy which

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<sup>13</sup> Cal. Indep. Sys. Operator Corp., 149 FERC ¶ 61,284 at P 32 (2014) (“we expect CAISO to abide by its commitment to consider longer-term market design changes for commitment cost bids in conjunction with the bidding rules enhancements stakeholder initiative.”).

<sup>14</sup> WPTF Motion to Intervene, Protest, and Comments, Docket No. ER16-1649 at 19, n. 47 (May 16, 2016) (“CAISO’s gas multipliers may be insufficient to cover penalties for gas costs”); Limited Protest and Comments of the NRG Companies, Docket No. ER16-1649 at 7 (May 16, 2016) (“The Commission should require that, at a minimum, the CAISO eliminate the 200% hard cap on Default Energy Bids, and instead mandate that the CAISO utilize applicable OFO charges and relevant gas procurement costs in its calculation of Default Energy Bids”).

<sup>15</sup> CAISO Issue Paper, p. 22.

<sup>16</sup> Provision 14 of the Governor's Proclamation of a State of Emergency issued on January 6, 2016 (available at <https://www.gov.ca.gov/news.php?id=19263>) envisions that the California Council on Science and Technology shall

presumes that next day index prices reasonably approximate hourly fuel procurement costs does not accurately reflect the costs of hedging against and mitigating curtailment risk. Aliso Canyon amplifies the need for CAISO to adjust its energy bid cost policies so that the market reflects the cost of avoiding curtailment, and stimulates the investment necessary to do so.

#### Opportunity to Seek Fuel Price Adjustment

To the extent that CAISO ultimately decides to retain the use of administratively calculated reference levels, at a minimum, generators must be granted the opportunity to seek fuel price adjustment in order to reduce the risk that mitigated prices will not reasonably reflect suppliers' cost expectations. As CAISO acknowledges in the Issue Paper, all other organized markets that mitigate to reference levels grant suppliers the opportunity to request a fuel price adjustment in the reference level calculation, and approve requests to revise gas commodity prices in reference levels if the default gas commodity price used does not fully reflect prevailing gas market prices or actual costs to the supplier.<sup>17</sup>

### **3. The Serious Implications of Failure to Reflect the Full Costs of Fuel Procurement in the Market**

Other organized markets are grappling with the same balancing act as CAISO, and are noting the need to ensure that the full costs of fuel procurement are reflected in the market so that accurate price signals can be generated. This is illustrated in a recent set of comments filed by PJM before FERC:

“Policymakers must understand the full and complete costs of natural gas generation relative to other competing fuel types. Fuel Cost Policies that prevent the market from reflecting the true and complete costs of one fuel type distort any comparison of how competitive one resource type is relative to the next.”<sup>18</sup>

It is imperative that market participants understand the full costs of natural gas generation as compared to other competing fuel types. In an order issued earlier this year, FERC found that “[p]roperly functioning markets should allow natural gas generators to recover actually incurred costs without regular intervention by the Commission and should incent the development of sufficient generation and storage resources to ensure the reliability of CAISO’s system.”<sup>4</sup>

If generators’ actual fuel costs are not reflected in the CAISO market, accurate price signals calling forth the resources needed to ensure electric reliability cannot be generated. A market that does not reflect the true costs and value of flexible resources hinders investment in alternatives, as such alternative resources have no pricing benchmark from which to make investment and market

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undertake a study to provide the state with an up-to-date, technical assessment of its thirteen natural gas storage fields. The assessment will include a broad review of the potential health risks and community impacts associated with their operation, fugitive gas emissions, and the linkages between gas storage, California’s current and future energy needs, and its greenhouse gas reduction goals.

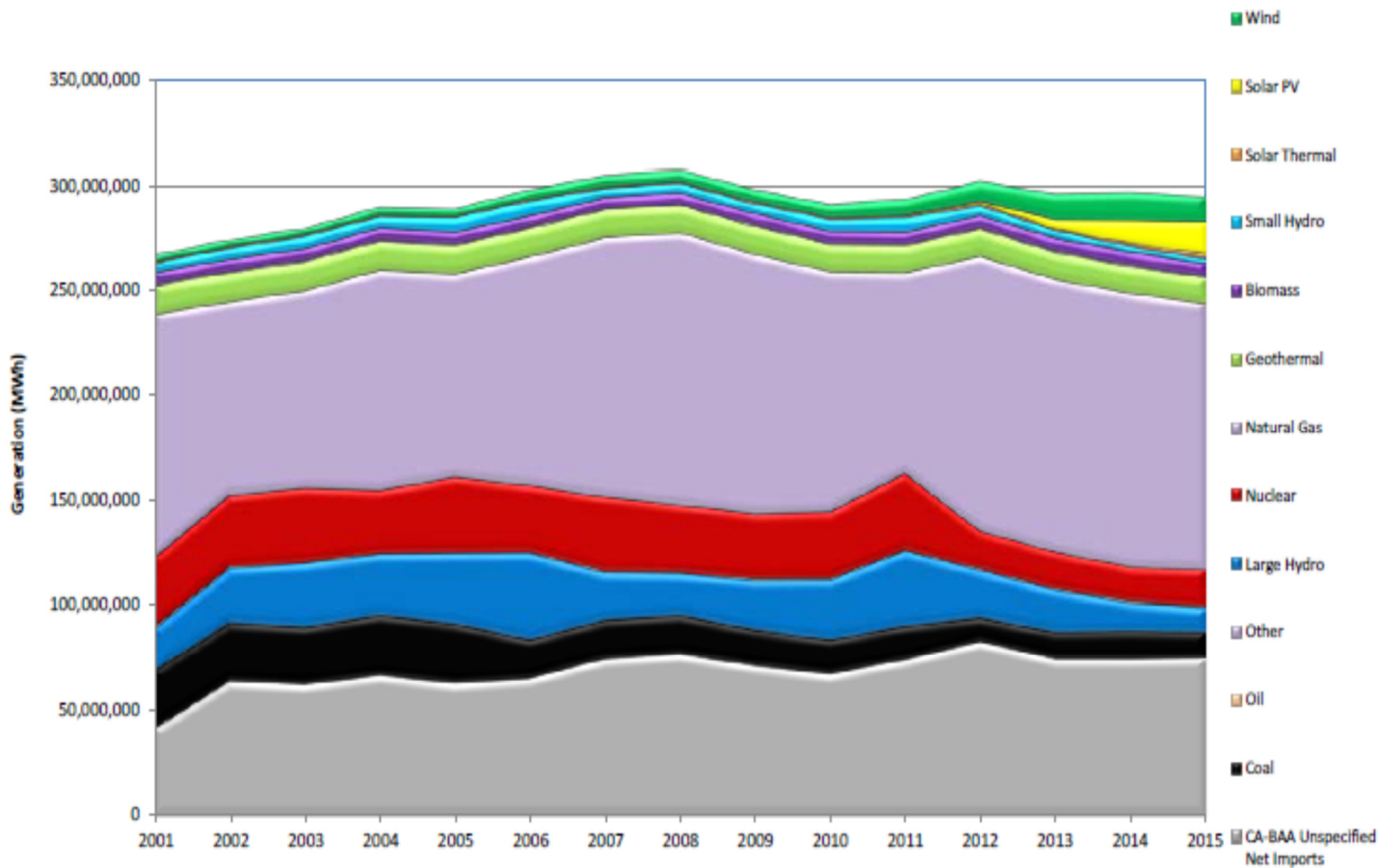
<sup>17</sup> CAISO Issue paper, p. 20, 25.

<sup>18</sup> Answer of PJM Interconnection, LLC to Protests and Comments, Docket No. ER16-372 at page 4 (October 7, 2016).

participation decisions. These larger market efficiency implications must be considered by CAISO in considering its current market design and evaluating alternative solution sets.

It is especially critical to ensure that fast-start gas-fired generators have the capability to recover actual fuel costs, given that CAISO is reliant on fast-start units to provide the ramping capability needed to meet load when renewable generation drops off in the evening hours.<sup>19</sup> The graph below<sup>20</sup> reflects these trends. As CAISO notes in its Issue Paper, it is likely to continue to be reliant on gas generation as the volume of generation needed during the evening peak hours to meet load cannot currently be provided by the amount of storage capacity online.<sup>21</sup>

**Figure 2: Electric Generation in California by Fuel Type (2001-2015)**



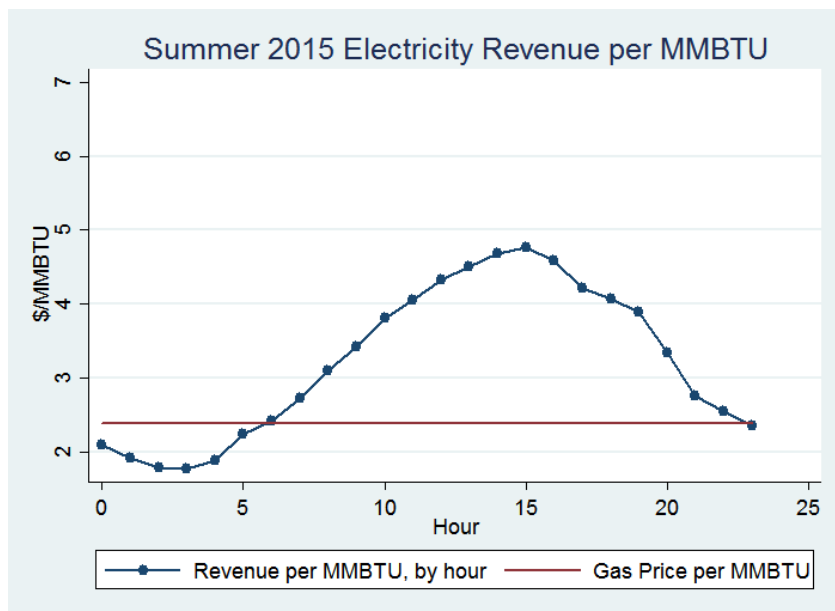
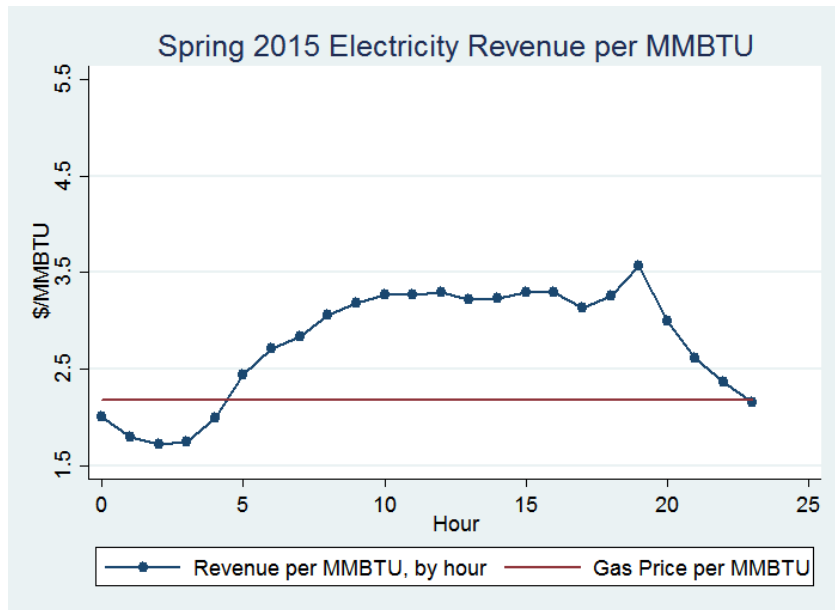
In this context, it is worth highlighting a market misalignment arising from a conflict between CAISO’s day ahead construct and the intra-day procurement of gas by generators. Typically, gas-fired electric generation does not run at the same level of output every hour of the day. Generators must often buy intra-day gas supplies to meet these needs, the costs of which are not properly reflected in any daily gas index

<sup>19</sup> CAISO Issue Paper, p. 26.

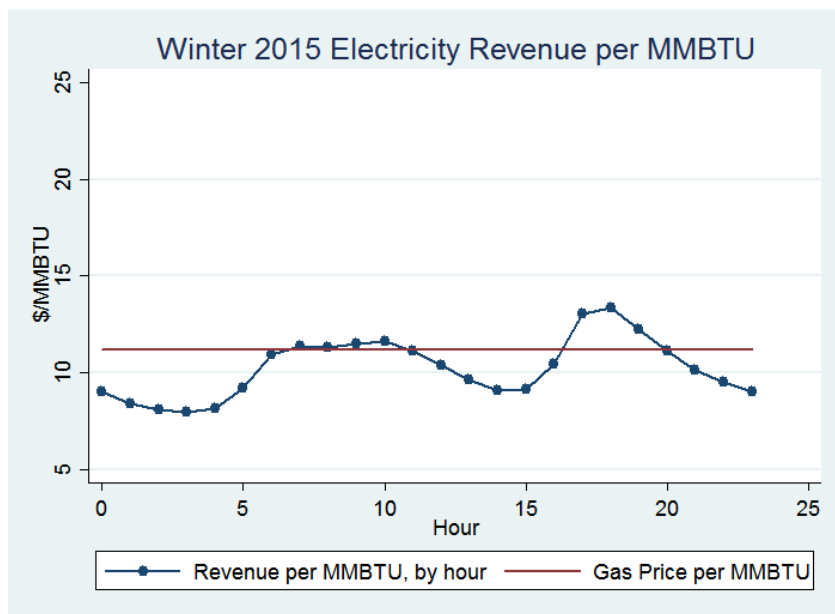
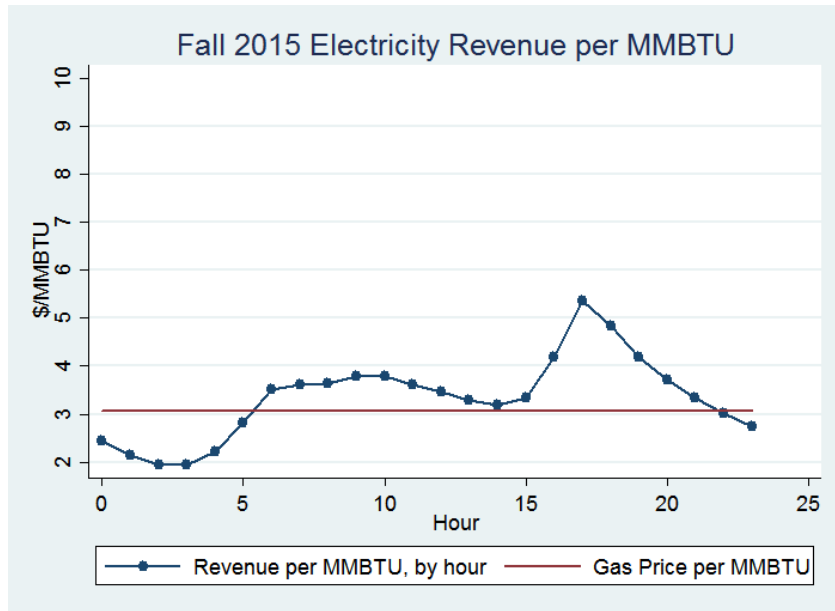
<sup>20</sup> California Energy Commission, “Draft 2016 Environmental Performance Report of California’s Electrical Generation System”, July 2016, available at [http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-03/TN212338\\_20160718T142510\\_Draft\\_2016\\_Environmental\\_Performance\\_Report\\_of\\_California's\\_Ele.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-03/TN212338_20160718T142510_Draft_2016_Environmental_Performance_Report_of_California's_Ele.pdf), at p. 24.

<sup>21</sup> CAISO Issue Paper, p. 6.

used by the CAISO to calculate its market bids. This market misalignment exists not only in CAISO's market but also in other RTOs/ISOs such as ISO-NE. The following graphs illustrate this issue, depicting, for spring, summer, fall, and winter 2015 respectively, the average Algonquin Citygate daily gas price per MMBtu contrasted with the average hourly electric revenue per MMBtu for an average ISO-NE gas-fired generator for all hours of each day. These graphs demonstrate persistent differences between the value of gas-generated electricity (priced hourly in the electricity market) and the cost of delivered gas (priced daily in the gas market). The reality of the variability in generators' intra-day gas needs exacerbates the problem of relying on a flat daily index price for the calculation of market bids, and is a barrier to economically efficient market outcomes.







Market rules that restrict generators' offers to daily index pricing can have significant practical implications. For instance, in the 2013/2014 winter timeframe, this market efficiency left the NRG companies with unrecoverable natural gas costs totaling close to \$5 million.<sup>22</sup>

<sup>22</sup> NRG purchased different volumes of same-day gas for dispatch on February 6, 2014 between \$15-40/MMBtu, but under the Proxy Cost methodology, its Minimum Load Costs and Start-Up Costs would have been calculated by the CAISO methodology based on a natural gas price closer to \$10/MMBtu. Comments of NRG Companies, Docket No. ER15-15 at p. 3 (October 22, 2014).

#### 4. Possible Paths to Enhance Market Power Mitigation

EDF supports CAISO's exploration of dynamic market power mitigation methodologies, and its efforts to examine stakeholder concerns that its current market power mitigation methodologies may result in overmitigation of units by assuming uncompetitive market conditions where none exist.

Other stakeholders have previously advocated for the adoption of a "conduct and impact" test in CAISO's market.<sup>23</sup> In its Issue Paper, CAISO notes that stakeholders have advocated for relaxing the conduct threshold and applying an impact threshold.<sup>24</sup> Regardless of the approach ultimately adopted by CAISO, two overarching points are worth emphasizing at the outset. First, any changes introduced by CAISO should not be so broad as to result in mitigation of market participants who do not pose any market power concerns. Second, the CAISO should apply objective criteria when deciding to mitigate bids.<sup>25</sup>

In general, structural market power mitigation approaches (e.g. pivotal supplier test) are more restrictive than conduct and impact approaches as they assume that a supplier with the ability to exercise market power has the incentive to do so, whereas the conduct-and-impact approach provides for mitigation only when there is evidence that market power has been abused.<sup>26</sup> EDF recommends that CAISO consider best practices<sup>27</sup> and lessons learnt<sup>28</sup> from the implementation of these approaches in other jurisdictions in evaluating and comparing the two approaches. Finally, EDF notes that the two approaches, structural and conduct-and-impact, need not necessarily be viewed as substitutes for each other. Rather, a blended approach incorporating elements of both may also be considered. As noted in a report by the Brattle Group<sup>29</sup>:

"Structural screens can benefit from an added conduct-and-impact assessment that avoids mitigation actions if market behavior does not suggest that significant market power is being exercised. Similarly, a conduct-and-impact screen can benefit from the inclusion of an additional structural screen that can identify market conditions or geographic regions where significant market power concerns exist. Applying a fully integrated approach using both conduct-and-impact and structural screens also allows the RTO to more easily engage in self-assessments of the effectiveness of the market monitoring process. For example, if the conduct-

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<sup>23</sup> "In the longer term NRG would prefer to see the CAISO move away from the current proxy/registered bidding system to a "conduct and impact" system such as those employed by the eastern ISOs."

NRG Energy, Inc. Comments on Commitment Cost Enhancements Phase 2 Draft Final Proposal, available at [http://www.caiso.com/Documents/NRGComments\\_CommitmentCostEnhancementsPhase2-DraftFinalProposal.pdf](http://www.caiso.com/Documents/NRGComments_CommitmentCostEnhancementsPhase2-DraftFinalProposal.pdf).

<sup>24</sup> CAISO Issue Paper, at p. 39.

<sup>25</sup> See WPTF Comments, Docket No. ER16-1649, at p. 13-15 (May 16, 2016), <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14249953>.

<sup>26</sup> The Brattle Group, "Review of PJM's Market Power Mitigation Practices in Comparison to Other Organized Electricity Markets", 2007, available at [http://www.brattle.com/system/publications/pdfs/000/004/868/original/Review\\_of\\_PJM\\_Market\\_Power\\_Mit\\_Sep\\_14\\_2007\\_Final.pdf](http://www.brattle.com/system/publications/pdfs/000/004/868/original/Review_of_PJM_Market_Power_Mit_Sep_14_2007_Final.pdf), at p. 9.

<sup>27</sup> *Id.*

<sup>28</sup> FERC, "Price Formation in Organized Wholesale Electricity Markets", Docket No. AD14-14-000", Staff Analysis of Energy Offer Mitigation in RTO and ISO Markets, October 2014, available at <https://www.ferc.gov/whats-new/comm-meet/2015/031915/E-20.PDF>.

<sup>29</sup> *Supra* note 24, at p. 107.

and-impact screen finds many instances where there is no significant exercise of market power occurring when a particular structural screen indicates cause for concern, then the RTO may choose to consider alternative structural screens. Similarly, by examining the structural conditions under which market power mitigation is warranted under a conduct-and-impact approach, the RTO can develop an appropriate “early warning” structural screen to identify conditions that raise cause for concern. This will increase the effectiveness of mitigation and reduce the costs imposed by the mitigation process.”

Thank you for considering these comments. Please feel free to reach out with any questions or comments.

Sincerely,

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