Name	Company	Date Submitted
Brian Theaker	NRG Energy, Inc. (“NRG”)	August 15, 2017

NRG strongly supports the CAISO’s proposals to (1) change minimum load costs to hourly bids; (2) put in place a structure that would allow market participants operating non-RA capacity to select which hours that the non-RA capacity will participate in the CAISO’s markets; (3) allow market participants to submit their own reference levels and adjustments to those reference levels, (4) eliminate the 125% cap on commitment costs in favor of a 300% circuit breaker offer cap and dynamic competitiveness assessments and local market power mitigation.

NRG’s comments on the Revised Straw Proposal (RSP) follow.

Actual Costs vs. Cost Expectations. CAISO Footnote 47 (Page 42) states:

> CAISO disagrees with the […] principle from EDF and NRG proposed in comments to [the] issue paper that suppliers should be allow[ed] the ability to recover actual fuel costs under all circumstances. CAISO wants to clarify that cost based offers should be based on cost expectations since when [bids are] submitted into [the] market there is still uncertainty as to actual costs. The market design should support suppliers’ ability to submit their costs expectations and eligible for compensation if awarded as that is their offer if it is a reasonable reflection of expectation. **It is not the role of the CAISO to make suppliers whole when their realized costs are different than their expected costs – this is the appropriate price risk for suppliers to assume to participate in the market. CAISO agrees with stakeholders it is inappropriate for design to limit their ability to submit cost expectations and will address it accordingly in [the] proposal.**

(emphasis added). As the CAISO notes, if suppliers wear the risk that their actual procurement costs may be different than their bid costs – a significant risk where dispatch cannot be predicted or where fuel prices are volatile – when suppliers’ cost expectations should not be unreasonably constrained by the CAISO. The success of the CAISO’s proposal hinges in no small part on how the CAISO interprets the word “reasonable”. Ideally, what the word “reasonable” actually means should not be left to the CAISO’s sole and non-transparent discretion. Instead, the CAISO should clearly define what bounds it intends to put on a supplier’s ability to submit bids that reflect the supplier’s own cost expectations.

Assessment of competitiveness across more than just the binding constraints. As the CAISO notes in the discussion on page 66, assessing and applying market power mitigation to non-binding constraints ***may*** be an improvement over the current system, which assumes that, for the purposes of commitment cost offers, all constraints are non-competitive all the time. If the CAISO mitigates commitment cost bids to levels below those allowed in the current regime, however, then the current over-mitigation will not be remediated – it will be re-shaped. NRG provides additional comment on the CAISO's revised proposal, discussed on the August 11 call, below.

"Locking" commitment bids. The CAISO's proposal to "lock" minimum load bids at the average bid level across the commitment horizon instead of at the level of the supplier's last bid is completely inconsistent with the principle that bids should reflect the supplier's cost expectations. NRG opposes the CAISO's proposal. Should the CAISO move forward with this proposal, the CAISO must detail in the draft final proposal the concern that has led the CAISO to propose to use the average of the minimum load bids rather than last submitted minimum load bid.

Bidding under the locked levels. NRG's supports the CAISO's proposal to allow the market participant to submit bids that are lower than the "locked levels" (Page 97).

Including net buyers in the competitiveness assessments. NRG supports including net buyers' portfolios in the competitiveness assessments for the reasons described at the August 3 working group meetings – that a net buyer can still profit by raising the uplift paid to its resource because the costs of that uplift are not allocated solely to the net buyer.

Reference level principles. The CAISO proposes the following foundational principles for determining reference levels (Pages 29-30 of the RSP):

- There is only one fuel type support for each generating unit.
- There is one procurement location for a fuel region.
- There is one pipeline shipping company (shipper) for a fuel region.
- Next day gas commodity prices are a reasonable proxy for expected procurement costs.

As NRG has noted - the viability of the last assumption that the next day commodity price is a reasonable proxy for actual gas procurement costs depends on whether the supplier can reasonably predict their commitment and dispatch and can procure all the gas for that dispatch they need at the next day price. This assumption may be reasonable where prices are stable, suppliers have flexibility in balancing their gas procurement, and the dispatch is known or can be predicted. This assumption is almost certainly unreasonable where all of those conditions do not apply.

The CAISO has indicated that it will allow suppliers with non-standard or unique cost formulations (e.g., whose fuel procurement cannot be reasonably predicted in order to procure gas in the timely cycle) to negotiate their reference levels (Page 42, principle 5). NRG supports that proposal.

Negotiated reference levels. NRG supports the CAISO implementing the ability for market participants to negotiate commitment cost reference levels. NRG requests the CAISO's final language (which the CAISO says will be similar to the language presented in Appendix B) expressly clarify that all commitment cost bid components detailed in Appendix C are eligible for negotiation.

Thresholds for reference levels adjustments. The CAISO proposes that it will support adjustments to reference levels "…up to a reasonable range for a delivered gas price estimate set by the high of the prevailing market prices excluding lower bound outliers." (Page 82) NRG requests the CAISO clarify what it means by "high" – does it mean the highest price, an average of prices in the upper range, or something else?

The CAISO proposes the following process to assess the reasonableness of reference level adjustments (Pages 82-82):

- Day-ahead supply offers:
  - Establish distribution of market prices aggregating multiple gas products to determine prevailing market price for flows beginning 7AM PT TD by overlaying offers scraped from:
    - Next day gas trading,
    - Custom products traded on an electronic exchange,
    - Off-ICE quotes if meets a liquidity/counterparty requirement of 5-10 price quotes where the quotes cannot be from an affiliate.
  - Establish the high side of the aggregated market price distribution by setting the high after excluding outliers by finding the lower bound fence for outliers as 3rd Quartile + 1.5*Interquartile Range (IQR) where IQR is 3rd Quartile – 1st Quartile.
  - Set the high for prevailing market prices at the lower of the highest offer across aggregated market prices or the lower fence for outliers.
  - If supplier is basing delivered gas price off of procurement locations other than standard procurement location or based on additional costs likely to be incurred due to deliverability or capacity limitation on the fuel system, CAISO will support inclusion of other procurement locations or additional fees for items such as backhauling fees. This support is contingent on supporting the constraint by submitting current line pack levels or other pipeline capacity reports.

- Real-time supply offers:
  - Establish distribution of market prices aggregating multiple gas products to determine prevailing market price for flows beginning 12AM PT TD (ID1), 4PM (ID2), or 8PM (ID3) by overlaying offers scraped from:
    - Custom products traded on an electronic exchange,
    - Off-ICE quotes if meets a liquidity/counterparty requirement of 5-10 price quotes where the quotes cannot be from an affiliate
    - Establish the high side of the aggregated market price distribution by setting the high after excluding outliers by finding the lower bound fence for outliers as 3rd Quartile + 1.5*Interquartile Range (IQR) where IQR is 3rd Quartile – 1st Quartile.
    - Set the high for prevailing market prices at the lower of the highest offer across aggregated market prices or the lower fence for outliers.
    - If supplier is basing delivered gas price off of procurement locations other than standard procurement location or based on additional costs likely to be incurred due to deliverability or capacity limitation on the fuel system, CAISO will support inclusion of other procurement locations or additional fees for items such as backhauling fees. This support is contingent on supporting the constraint by submitting current line pack levels or other pipeline capacity reports.

The CAISO has proposed to implement the following conditions that must be in place before a market participant can submit a reference level adjustment (Page 59):

- Market Participants can submit reference level adjustments for Day-ahead supply offers where prevailing prices in next day gas products are trading more than 110% of the index price published the day prior to the CAISO day-ahead market run (GD1)
- Market Participants can submit reference level adjustments for Real-time supply offers where prevailing prices in non-standard products are trading more than 110% above the index price published the morning of the CAISO day-ahead market run (GD2)

If the CAISO believes that the supplier-submitted reference level is the best indication of a supplier's cost expectations, then the CAISO should not condition whether a supplier can submit a reference level adjustment based on an index price that may not be indicative of the supplier's actual costs or cost expectations. After all, there is no guarantee that the supplier will be able to transact gas at the index price. If the CAISO insists that the seller wear all of the price movement risk within the 10% multiplier, rather than conditioning a supplier's ability to change their reference level on a 10% movement in the index price, the CAISO could implement a rule that a supplier cannot submit a reference level adjustment that does not change their reference level by at least 10%. This would put the onus on the supplier to submit reference level adjustments only when the supplier's cost expectation indicated a move greater than 10% - but would not condition reference level adjustments on an index price at which the supplier may or may not be able to transact gas.

Including OFO penalties in reference level adjustments. The CAISO proposes to support supplier submitted ex ante adjustments from its reference levels up to a reasonable range for a delivered gas price estimate that includes a risk margin to reflect this non-compliance risk based on a probability of violating a natural gas pipeline order due to CAISO instructions beginning HE17.

Per the CAISO, real-time supply offers beginning TD HE17 under fuel transport flow orders:

- Must provide documents showing notice of fuel transport flow orders (e.g. OFO/EFO)
- If based on notice of fuel transport flow orders, CAISO proposes a reasonable monetary adjustment would be to adjust the delivered gas price estimate from the next day index used in the cost estimate up by adding the non-compliance charge associated with the specific level of flow order associated with hours between TD HE17 and TD HE24.

(Pages 83-84) NRG supports this proposal. NRG observes that if the CAISO uses the correct same-day gas price, that price should reflect the OFO conditions.

Reasonableness threshold for reference level adjustments. The CAISO has proposed that it will use "statistical expectations" based on observed gas prices on the Intercontinental Exchange to establish the reasonable thresholds for reference level adjustments (Pages 84-85). Once again, depending on a lagging assessment of gas prices to condition whether suppliers' cost expectations for conditions not yet experienced are reasonable is almost certain to ensure that the suppliers' cost expectations will be unreasonably constrained if the future is not exactly like the past. Such an outcome would conflict with the CAISO's statement, expressed in footnote 47, that the market design should not limit supplier's ability to submit bids that reflect the supplier's cost expectations.

Implementation cost analysis. The RSP sets forth (on pages 64-65): *"CAISO wants to make clear that this straw proposal to pursue these enhancements* [market-based commitment cost offers subject to caps] *is contingent upon completion of its evaluation of the feasibility and capital costs associated with enhancements relative to the benefits. CAISO will finalize this assessment and provide information in its draft final proposal."*

Given that the CAISO's willingness to move forward with this initiative hinges on a cost/benefit analysis that stakeholders will not see until the draft final proposal, that cost-benefit analysis must be detailed and thorough, and market participants must be provided an opportunity to thoroughly vet the analysis. NRG respectfully urges the CAISO to post all supporting materials well in advance of the August 30 call and to have the responsible CAISO personnel available to explain and answer questions regarding the CAISO's cost analysis. The CAISO should also consider whether a call will be adequate to allow stakeholders an opportunity to adequately vet the analysis or whether an in-person meeting would be better suited for that purpose.

Implementing tariff language. NRG anticipates that the tariff changes required to implement the CAISO's revised proposal will be extensive and complex, and urges the CAISO to develop and begin vetting the revised tariff language with market participants as soon as possible following the November 2017 CAISO Board meeting.

Documentation supporting reference level adjustments. The CAISO has proposed that the following documentation is required to support a reference level adjustment (Appendix C, Page 81):

- Under fuel market price conditions:
  - Index publisher information (consummated low-mid-high)
  - Electronic platform information (bid-ask spreads)
  - Off-ICE quotes if meets a liquidity/counterparty requirement of 5-10 price quotes where the quotes cannot be from an affiliate.
- Under fuel market or transport availability conditions
  - Current line pack levels or other pipeline capacity reports
  - Notice of fuel transport flow orders (e.g. OFO/EFO)
  - Fuel scarcity conditions (e.g. "can't find counterparty")

NRG notes that the information the CAISO is requesting in the first and second sub-bullets under both sets of conditions is already publicly available.

With regards to the CAISO's proposal that a supplier obtain five to ten price quotes, NRG observes that:

- *First,* given the number of currently active market participants, it may be difficult or impossible to secure quotes from that many (5-10) counterparties.

- *Second,* currently, because no one has storage in the Southern California Gas ("SoCalGas") area, SoCal Gas Acquisition is essentially the only counterparty worth calling on weekends/holidays.

- *Finally,* with regards to providing documents of interactions with counterparties on weekends or holidays, these calls are typically not made from recorded lines because they are made outside normal business hours. Because of this, NRG requests the CAISO clarify whether the expected documentation constitutes recording of the calls, or market participants' records of the calls. As this comment notes – it will be impossible to provide the former under some circumstances. NRG also requests that the CAISO confirm NRG's expectations that, to document a "can't find counterparty" situation, the supplier would have to document conversations – not provide recordings of - with counterparties in which those counterparties had no gas available to transact.

Comments regarding changes presented on the August 11, 2017 call

Applying commitment cost mitigation to binding constraints and "constraints requiring commitment to resolve". Testing constraints that are not binding for mitigation just because they were identified as "needing commitment to resolve" either through on a look-back through historical flow levels or a forward look that will likely be based on conservative, perhaps worst-case conditions, will result in mitigation being applied when it is not warranted, because neither a historical look back nor a forward look-ahead will capture actual conditions at the time. While, as NRG understands, this approach is required because of software limitations, testing this list of constraint for mitigation should still be conditioned on the flow level on the constraint (e.g., not tested if the flow level is below some threshold, perhaps the critical constraint level of 85%). Testing the constraint for mitigation regardless of flow level will ensure mitigation is applied when it is not warranted. If this list of constraints "needing commitment to resolve" is sufficiently focused, conditioning whether to test these constraints based on the current flow levels should improve, not degrade, solution times.

Will the default shadow price always be the maximum actual shadow price? If

$$shadow\ price_{default} = SMEC * SR$$

and

$$SR = \frac{\max(\text{shadow price}_{actual})}{SMEC}$$

Then, substituting the right hand term for SR from the second equation into the first equation suggests that default shadow price will always be the maximum actual shadow price (the SMEC terms will cancel). From the August 11 call, NRG did not perceive that the CAISO always intended to use the maximum shadow price as the default shadow price, but intended to adjust the default shadow price based on the SMEC. NRG requests the CAISO clarify this point.

Accounting for a unit's minimum run time in the calculation of how much capacity it can withhold. NRG supports accounting for a unit's minimum run time when assessing how much capacity a unit can withhold – for example, if a unit has not reached its minimum run time, it cannot withhold its minimum load level from the market because it cannot shut down.

Testing and applying mitigation for energy bids and commitment cost bids separately. NRG supports this proposal.

Deeming all generation that can address a Minimum On-Line Commitment Constraint to be uncompetitive. This assumption seems far too simplistic. NRG supports the CAISO's efforts to eliminate MOCCs in favor of market-based constraints. NRG does not understand, however, the CAISO's blanket statement that "[…] commitments of resources under a MOCC are ***by definition*** uncompetitive and should be limited to a cost based offer" (August 11 presentation, slide 17, last bullet, emphasis added). Does the CAISO know that all MOCCs are non-competitive because all MOCCs address localized issues for which the CAISO has already determined that a competitive supply of counter-flow does not exist? In theory, a competitive pool of generation could exist to address the MOCC, depending on the size and nature of the MOCC. NRG requests the CAISO provide additional information to support that assertion that all MOCCs are, "by definition", uncompetitive.