Submitted by	Company	Date Submitted
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NRG submits the following comments on the CAISO's December 3, 2015 Bidding Rules Enhancements Revised Straw Proposal ("RSP") version 2.

Proposed principles

- 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) are not just and reasonable.

"Conduct and Impact" style mitigation (RSP at 17-19)

In the RSP, the CAISO argues that it should retain the current market power mitigation construct for Start-Up and Minimum Load ("SU-ML") bids for the following reasons:

- Compared to other ISOs, the CAISO has a greater number of load pockets in which it has to mitigate resource bids to prevent the exercise of local market power. While the current SU-ML market power mitigation regime allows for 25% headroom in all circumstances, if the CAISO mitigated resource SU-ML bids under a "conduct and impact" regime, the CAISO would mitigate SU-ML to proxy cost and would provide no headroom.

- Committing a resource to address a constraint may cause the constraint to no longer bind, in which case a resource owner could exercise local market power. While such situations could be addressed by applying a pivotal supplier test, applying that test would likely result in over-mitigation.

NRG has long advocated to the CAISO to move to "conduct and impact" style mitigation because the lagging gas price index used in the CAISO's "bid cap" style mitigation often fails to reflect the actual cost of procuring gas to follow CAISO market awards and dispatch instructions, leaving NRG with gas procurement costs it could not recover under the "bid cap" regime.

The CAISO is clearly reticent to abandon the current "bid cap" mitigation. Further, NRG expects that, even if the CAISO were to embrace "conduct and impact" style mitigation, the costs and time involved in incorporating that new mitigation into the CAISO's market optimization would be substantial.

For all of these reasons, NRG would be willing to keep the current "bid cap" mitigation subject to the following conditions: (1) the "headroom" is not reduced, consistent with the CAISO's position in the RSP and (2) the CAISO provides for after-the-fact recovery of costs above the 25% bid cap level, as provided in the RSP.

Differentiated Bidding Headroom (RSP at 17-19)

NRG supports the CAISO's position to retain the current 25% headroom and not apply different headroom percentages to different components of commitment costs. This position is reasonable given the CAISO's position that market participants must account for some risks, including "cash-out" risk (the risk of having to procure expensive gas and then sell that gas at a loss if the resource's output is curtailed) within that bidding headroom.

Changing Energy Bids in Periods of Inter-temporal constraints (RSP at 21-24)

NRG supports the CAISO's position to not impose specific market rules to address concerns about market participants changing bids after a commitment decision, both in situations in which an inter-temporal constraint applies and in situation in which it does not. NRG supports the CAISO's position to continue to monitor market participants' bids for such behavior and take appropriate action where such behavior is confirmed.

NRG does not support the idea in which market participants would specify, in the Day-Ahead market, a "range" that would limit that market participant's real-time bids. Such a construct would greatly complicate bidding and bidding systems and would require additional validation of the "range".

Changing Minimum Load Bids for Minimum Load Re-Rate (RSP at 17-19)

The CAISO has proposed to use a resource's Default Energy Bid (DEB) to rescale the resource's ML cost if the resource's ML level is re-rated. NRG agrees with the CAISO that the resource's ML cost needs to be changed following a ML re-rate, but does not support this proposal. NRG instead proposes that the ML cost simply be rescaled based on the per-MWh cost in the original ML bid. For example, if a resource had a 50 MW minimum load and a $2500 ML bid (for a $50/MWh cost), if the resource re-rated its ML to 75 MW, the new ML cost would be (75 x $50/MWh) = $3750.

NRG bases this recommendation on two factors. First, if the CAISO were to use the DEB to re-scale the ML cost, the CAISO effectively drops the allowable headroom on the resource's ML bid. Second, using the DEB over-rides the resource's Scheduling Coordinator (SC) judgment in presenting the resource to the CAISO's market optimization. The SC may want to reduce the unit's ML cost to make it more likely that the CAISO will commit the resource; substituting the DEB instead of scaling the ML bid based on the SC's original bid effectively mitigates the SC's bid where no market power has been demonstrated or even alleged.

Allowing rebidding commitment costs where the resource has not received a Day-Ahead Schedule (RSP at 27)

NRG supports this recommendation.

Generating energy bids for non-Resource Adequacy resources (RSP at 27)

NRG supports this recommendation.

Improving the gas price index (RSP at 29-35)

The CAISO has offered this trade-off: to use the Intercontinental Exchange (ICE) next-day gas index price (the index published at 10 AM on the market day that applies to gas that will flow on the trading day) but to move the timing of the Day-Ahead market back from (1) closing at 10 AM Pacific/publishing at 1 PM Pacific to (2) closing at 11 AM Pacific/publishing at 2 PM Pacific.

NRG has long been a proponent of using the single ICE next-day index instead of the other two-day-lagging indices. However, because NRG is greatly concerned about the implications of pushing back the timing of the Day-Ahead market, NRG cannot support this proposal at this time. Specifically, NRG is concerned that moving the DA market back an hour will make it impossible to procure gas in the last next-day intra-day market. That market closes at 6 PM Eastern; if the DA market is pushed back an hour, the CAISO will publish market results at 5 PM Eastern, leaving only an hour to find a counterparty and procure gas within that relatively illiquid intra-day cycle. While NRG would like the CAISO to use the next-day ICE index instead of the two-day-lagging indices in its market optimization, NRG's concerns about moving the Day-Ahead market back an hour leave it unable to support this proposal.

Providing opportunity for after-the-fact cost recovery (RSP at 35-37)

NRG supports the CAISO's proposal to provide a mechanism for recovering gas costs that cannot be recovered through the normal operation of the CAISO's markets.

NRG's understanding of the CAISO's proposal is this: the SC can invoice the CAISO for the cost of gas procured to follow CAISO market awards and dispatch instructions when the cost of that gas is more than 25% above the gas price index used by the CAISO for the relevant operating period. Said another way, the SC is responsible for all gas costs up to 25% of the gas index used in the relevant operating period and may only invoice the CAISO for costs above that level. Further, the SC need not bid SU-ML costs at the cap (125% of proxy cost) in order to invoice the CAISO for gas costs more than 125% of the index price used by the CAISO. NRG requests that CAISO confirm this understanding of the CAISO's proposal. To the extent NRG's understanding is correct, NRG strongly supports the proposal.

NRG also requests that the CAISO clarify how Operational Flow Order (OFO) "penalties" would be treated under this proposal and urges the CAISO to adopt a mechanism to allow market participants to recover OFO penalties. In the past, the CAISO has considered allowing the generator SC to recover such costs from the CAISO, but stopped short of implementing such a mechanism because of concerns about the "moral hazard" implications of doing so. The "moral hazard" argument goes like this: OFO penalties are intended to encourage the generator to not burn gas that they have not nominated (low inventory OFO), or to burn gas that they have nominated (high inventory OFO) to maintain the reliability of the pipeline; if the generator is simply allowed to pass the OFO cost along to the CAISO's markets, the now-financially-indifferent generator has no incentive to behave in a way to promote pipeline reliability, so allowing generators to recover OFO costs will undermine pipeline reliability.

While NRG understands the "moral hazard" argument, exposing generators to incurring OFO costs with no way to recover them either through market bids or through the proposed "after-the-fact" cost

recovery mechanism proposed by the CAISO, is not just or reasonable. In situations in which a generator faces an OFO penalty (or, just as likely, the cost of bilateral gas in which the seller, knowing the OFO is in place, prices the OFO penalty into the price at which they are willing to sell), a rational approach would be for the CAISO, gas company and affected supplier to simultaneously consult and agree on a course of action. Generators would be more comfortable incurring OFO penalties, and the CAISO more comfortable reimbursing generators for those penalties, if all three parties agreed that burning the gas and incurring the OFO charges was the best solution. The conflicting information NRG received from the gas company and the CAISO in the December 2013 and February 2014 gas events demonstrated the huge financial losses and operational problems that can take place when the generator, the CAISO and the gas company are not on the same page. NRG strongly believes that the generator must be able to recover OFO penalties it incurs to follow CAISO markets awards and dispatch instructions, and looks forward to further discussion to refine the CAISO's after-the-fact cost recovery proposal to ensure it can do so.

Including gas transportation costs in the gas price index (RSP at 37-40)

NRG supports this recommendation.

Electricity price of auxiliary load in start-up costs (RSP at 40)

The CAISO proposes that the price of electricity used by a generating resource during start be determined by assuming the price of that electricity is the cost that would result from the electricity being generated by a 10 heat rate unit burning gas that is priced at the level of the gas index price used by the CAISO for that period. The value proposed by the CAISO (10 times the gas index price) is significantly less than the costs for start-up power the generator would incur under, for example, SCE's TOU-8-S rate schedule.[1] The energy costs that a generator interconnected at a voltage above 50kV would incur under that schedule are shown below:[2]

Season	Period	Delivery Service	Generation - OG	Generation - DWREC	$/kWh	$/MWh
Summer	On-Peak	0.0227	0.09616	-0.00172	0.11714	$117.14
Summer	Mid-Peak	0.0227	0.05464	-0.00172	0.07562	$75.62
Summer	Off-Peak	0.0227	0.03482	-0.00172	0.0558	$55.80
Winter	Mid-Peak	0.0227	0.05779	-0.00172	0.07877	$78.77
Winter	Off-Peak	0.0227	0.04055	-0.00172	0.06153	$61.53

Ten times current gas index prices, illustrated in this snapshot from the CAISO's OASIS site:

[1] Available at https://www.sce.com/NR/sc3/tm2/pdf/CE334.pdf.
[2] SCE-TOU-8-S at California PUC Sheet 57864-E.

Fuel Prices

Opr Date	Fuel Region	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09	HE10	HE11	HE12	HE13	HE14	HE15	HE16	HE17	HE18	HE19	HE20	HE21	HE22	HE23	HE24	HE25
12/01/2015	CISO	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	
12/02/2015	CISO	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	3.63000	
12/03/2015	CISO	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	3.58000	
12/04/2015	CISO	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	3.55000	
12/05/2015	CISO	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	
12/06/2015	CISO	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	
12/07/2015	CISO	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	3.44000	
12/08/2015	CISO	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	3.47000	
12/09/2015	CISO	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	3.26000	
12/10/2015	CISO	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	3.40000	
12/11/2015	CISO	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	3.39000	
12/12/2015	CISO	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	
12/13/2015	CISO	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	
12/14/2015	CISO	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	3.19000	

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only yields amounts in the $32-36 per MWh range, whereas SCE's TOU-8-S tariff rates range from $56-117 per MWh (plus taxes), so CAISO's proposal would result in generators significantly under-recovering their start-up power costs. The difference between CAISO's proposal and PG&E's and SDG&E's standby tariff rates is similarly large. While NRG does not necessarily object to the CAISO seeking to use a uniform methodology for reimbursing start-up power costs, the CAISO's proposal would result in generators failing to recover these costs.

Two sets of Master File unit parameters (RSP at 41 – 43)

The CAISO's proposal to allow for two sets of master file values – a "design" set that reflects the unit's design capabilities, and a "market" set that may better reflect the resource owner's risk tolerance and engineering judgment, at least with regards to maximum daily starts and ramp rates – is an interesting one, and NRG appreciates the CAISO's efforts to provide for master file characteristics that reflect a resource owner's risk tolerance and engineering judgment. However, while NRG appreciates the CAISO's efforts to allow the unit to be operated to "softer" parameters than the unit's design characteristics, NRG cannot support the CAISO's proposal because of the lead time that is required to change master file parameters. In the event a unit's ramp rate had to be limited because of an outage or change in operating conditions, it could take five business days to change the unit's "market" ramp rate. The CAISO's proposal to allow for differentiated master file characteristics, while intriguing, is unworkable because of the long lead time required to change those characteristics.

While NRG does not support the proposal as presented for the reasons noted above, NRG feels strongly that the resource owner, not the unit's SC, is the right party to submit the unit's master file characteristics. NRG agrees that a resource's characteristics must support the amount and performance of the capacity sold under RA agreements.