Comments on the 4th Revised Straw Proposal for Flexible Resource Adequacy Criteria and Must-Offer Obligation
Department of Market Monitoring
December 9, 2013

The Department of Market Monitoring (DMM) appreciates this opportunity to comment on the newest version of the ISO's proposal for Flexible Resource Adequacy Criteria and the Must-Offer Obligation. While DMM appreciated the responsiveness that the ISO displayed in drafting the 3rd revised straw proposal, some of the changes between the 3rd and 4th proposals represent a step backwards.

Following are DMM's comments on specific issues:

Evaluation of compliance with the Must-Offer Obligation

In the original proposals for FRAC-MOO, the ISO had suggested that compliance with the Must Offer Obligation would be measured by averaging the share of flexible capacity that had been bid into each of the day ahead and real time markets. DMM pointed out that this original weighting would allow resources to self schedule in real time with relatively little penalty. In other words, resources that bid only in day ahead and self scheduled in real time could still be credited for at least 50% of their obligation, even though they did not provide much meaningful flexibility to ISO operations.

The ISO changed the proposal to count only the smallest share of capacity bid in to either the day ahead or the real time market. In other words, if a resource bid 100% of their capacity into the day-ahead market, and only bid 50% into the real time market, they would be credited with 50% compliance. Under the original 50-50 weighted scheme, the same strategy would result in 75% compliance.

In the fourth revised straw proposal, the ISO has returned to a weighted scheme where there is an 80% weight on the real time, and a 20% weight on the day ahead market. No matter what the weights are, the weighted scheme protects resources that intend to self schedule in one or more of the markets. Using the example in the previous paragraph, the resource would be credited with 60% compliance under the new weighting scheme.

The proposed weighting scheme serves to protect resources that intend to sell flexible capacity, and then restrict their flexibility in the spot market by submitting self schedules for a portion of that

capacity. This is counter to the stated intent of FRAC-MOO. It is also counter to the explicit rules that have been designed, such as the must-offer obligation spelled out in Section 7.1.1: "Thermal resources with no use-limitations will be required to submit economic bids for their RA capacity for the period 5:00 a.m. through 10:00 p.m. for every day (including all holidays and weekends)." Providing an incentive to restrict spot market availability of forward procured flexibility limits the market efficiency benefits that are the intent of the FRAC-MOO provision. There may be reasons why a resource would find self-scheduling beneficial, and resources remain free to do so, however the extent to which their flexible capacity can count toward meeting the requirement should reflect the extent they are actually providing that flexibility in the spot market. The weighting scheme proposed diminishes this relationship. DMM recommends that the weighting scheme be eliminated, and the definition of compliance from the second and third revised straw proposals be retained.

Flexible capacity availability incentive mechanism price

There is still disagreement regarding the price for the Standard Flexible Capacity Product (SFCP). While there are arguments to be made against using the Flexible Ramping Constraint price, DMM believes that this is equivalent to the real time replacement costs for flexible capacity. This cost for replacement is an appropriate minimum penalty to impose on resources that fall short on their commitment to be available for flexible capacity.

Regulation Energy Management resources

The proposal suggests that energy storage resources may count as flexible RA by bidding into the regulation market as Regulation Energy Management. The proposal and discussions at stakeholder meetings have indicated that the flexible capacity requirement is specifically to provide "load following" service. This is counter to the purpose of Regulating Reserve, which is not to be intentionally used as a load-following service. While it is clear that there are more needs being satisfied in FRAC-MOO than the primary three hour load following service, DMM believes that all resources included in the eligible pool should be able to contribute to the three hour load- following need. DMM does not support counting storage resources that only provide regulating reserve to meet flexible RA requirements.

Off-peak offer requirement for wind resources

DMM would like to reiterate that extending the must-offer obligation for Variable Energy Resources that provide flexibility to the overnight hours would provide the ISO with a significant tool to manage changes in net load that frequently lead to over generation. DMM has noted this in all sets of

comments we have submitted on the FRAC-MOO initiative, and was explored in detail in a study conducted by DMM in 2011.[1]

Dispatchable Gas-Fired Use-Limited Resources

As DMM has noted in previous comments on this proposal, DMM supports the ISO's effort to improve the use-plan submission process as described in section 7.1.2.2. In particular, DMM agrees that the opportunity cost adder should be available only for resources with current and verified physical or regulatory use restrictions on file with the ISO ***and*** that the use-limitations the ISO takes into account should be limited to this verified set of resources and use restrictions. This verified set of use restrictions should be the only use-limitations the ISO takes into account when calculating opportunity costs.

Daily start limits

DMM also suggests that the ISO extend this requirement to encompass daily use limitations, and clarify and enforce existing requirements concerning daily use limitations. The BPM for Market Instruments defines the maximum daily start limit as the "maximum number of times a Generating Unit can be started up within one day, due to environmental or physical operating constraints." [2] However, the ISO does not currently require any documentation of these limits or have a procedure to verify daily start limits entered by participants. In practice, DMM understands that numerous participants may be utilizing a daily start limit entered in the ISO Master File as a way of preventing unit cycling and/or managing annual or monthly limitations rather than because it reflects an actual daily physical or environmental limitation. DMM understands some participant may be using other daily limits submitted to Master File including start time and minimum down time in a similar manner.

At the November 13, 2013 stakeholder meeting, ISO staff indicated that under the ISO's current proposal participants could continue to use daily start limits to manage annual or monthly limitations (slide 25). However, DMM believes this would be inconsistent with the concept of including opportunity costs related to such limitations in start-up and minimum load bids. Since constraints on daily starts can clearly have a major impact on a unit's availability for energy and flexible capacity, the ISO should clarify and enforce existing requirements concerning these daily use limitations. In addition to preventing potential abuses of this constraint, this would provide a more equitable way of ensuring that units receiving capacity payments for flexible capacity are actually available to provide this capacity.

[1] http://www.caiso.com/Documents/Over-supply%20and%20shortage%20of%20downward%20ramping%20supply%20in%20off%20peak%20hours

[2] See Appendix B2 of the Market Instruments BPM, page B-3: http://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Instruments/BPM_for_Market_Instruments_v30_clean.doc

Option for bid cost limits

As noted in our response to the 3rd Revised Straw Proposal, DMM believes that it is difficult to assess the best approach for applying opportunity cost calculations into minimum load and startup costs until the ISO has developed the methodology by which it will calculate these opportunity costs and has assessed how well this methodology will work when applied to actual generation units and market data. For instance, if the ISO's analysis suggests that this methodology yields highly accurate results (i.e. will not significantly over- or underestimate opportunity costs and will, at least, result in efficient unit commitment), these costs could be directly incorporated in start-up and minimum load bids. However, if the analysis suggests it is difficult to develop standard methodologies to estimate these costs for some units or scenarios, it may be appropriate to modify the manner in which these estimates are used to set limits for startup and minimum load bids.

Because this analysis has not yet been completed, DMM cannot at this time comment further on the two methods outlined in the ISO proposal. However, DMM notes that based on clarifications from ISO staff, the approach described as method B in the ISO's proposal was intended to reflect an approach previously suggested by DMM for consideration. With this approach, the ISO's proposed opportunity cost calculations would be directly applied (with no adders) when local market power mitigation is triggered and requires the use-limited resource to provide counter-flow to resolve a local constraint. When units are subject to local market power mitigation, the ISO's calculated opportunity cost-based bids would apply to bids for minimum start-up costs, minimum load costs and default energy bids for energy above minimum load. In all other instances, scheduling coordinators could include their own assessment of opportunity costs associated with use limitations within specified bounds (e.g., 200 percent of the opportunity cost-based bids calculated by the ISO).

If this is the approach that method B is designed to reflect, DMM suggests that the ISO restate the description of method B so that it is consistent with this proposal as originally intended. Section 7.1.2.2 page 34 point 2 should be revised to state (changes **bold**):

- *Method B: (1) Allow resources to daily bid-in their start-up and minimum load cost with a higher cap (**200%**) and (2)mitigate start-up and minimum load bids to proxy costs (**including a measure of** opportunity cost **calculated by the ISO**) in the event the market's local market power mitigation process is triggered. This would be a change as the current local market power mitigation process only mitigates bids for energy above minimum load.*

The rationale for this approach is that using bids based directly on the calculated opportunity costs only when local market power mitigation is triggered would reduce the impact of potential estimation errors when actual conditions differ from anticipated conditions. Calculated opportunity costs that are consistently lower than the true opportunity cost of the use limitation would undervalue each limited hour or start, which could result in exhausting the use limitation too quickly.

DMM looks forward to reviewing these and other potential options once additional details and analysis of the methodologies for determining opportunity costs is completed.

Opportunity cost methodology

The framework outlined by Dr. Ben Hobbs in the November 15, 2013 MSC meeting and ensuing discussion indicate that significant progress has been made toward developing a more detailed methodology for calculating opportunity costs. However, DMM notes that additional details still need to be developed and that the approach being discussed is increasing significantly in complexity.

As described in the 4th revised straw proposal, opportunity costs will be calculated based on forecasts of real-time energy prices. Opportunity costs should be based on a measure of foregone revenue. As such, it may be appropriate to include ancillary service revenues, as discussed in the November 15, 2013 MSC meeting. Furthermore, the ISO's proposal should also clearly state how it accounts for run-time, downtime, ramp rate, initial conditions, starts-per day, multi-stage generator optimization and other operational parameters in its calculation of optimal dispatch.

In addition to comments on the written draft proposal, DMM would like to offer comments on an idea introduced in the ISO's November 13, 2013 stakeholder presentation. On slide 27, SCs are asked to convert annual limitations into monthly limits for the purpose of calculating opportunity costs.[3] DMM believes this is inconsistent with the optimization approach described by Dr. Hobbs, assuming this optimization is performed over an annual period. Including any additional limitation other than the true limitation cannot provide a more optimal dispatch and is thus inconsistent with the optimization approach as outlined at the MSC meeting.

With the approach described by Dr. Hobbs, costs incorporated in each unit's bids would be designed to ensure that the units were only dispatched under the market conditions (and months) that were projected to be the most profitable given the units annual and monthly constraints. While results of this optimization would provide an indication of how many starts a unit might be expected to utilize each month, the opportunity costs resulting from this optimization would be designed to effectively "ration" the number of starts a unit actually incurred any given month. It would be entirely inconsistent to include these opportunity costs in a unit's bids and to then also allow or require SCs to put limits on the actual number of starts each month.

As discussed in both the MSC meeting and the ISO's November 13, 2013 stakeholder presentation (slide 26), because actual market conditions may change over the course of the year, it will be necessary to update and adjust opportunity cost calculations on an ongoing basis to reflect changes in past market conditions and future expectations. With this approach, it is unnecessary and inefficient to allow or require SCs to put limits on the actual number of starts each month unless there is an actual monthly limit due to regulatory limitations.

[3] http://www.caiso.com/Documents/Presentation-FourthRevisedStrawProposal-FlexibleResourceAdequacyCriteriaMustOfferObligation.pdf