

**Stakeholder Process: Flexible Resource Adequacy Criteria –
Must Offer Obligation**

**Summary of Submitted Comments and ISO
Responses**

Stakeholders submitted written comments to the ISO on or about August 15, 2013 regarding the **Second Revised Straw Proposal**.

Version 2 – Includes missing comments

Stakeholder comments are posted at:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleResourceAdequacyCriteria-MustOfferObligations.aspx>

Contents

Alliance for Retail Energy Markets.....	3
California Energy Storage Alliance (CESA)	5
Cogeneration Association of California & the Energy Producers and Users Coalition	7
San Francisco Public Utilities Commission	8
Silicon Valley Power (“SVP”).....	10
EnerNOC, Inc.....	10
California Wind Energy Association	17
Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, CA (“Six Cities”).....	21
Beacon Power LLC.....	28
Comverge, Inc.	30
California Public Utilities Commission - Division of Ratepayer Advocates.....	33
Environmental Defense Fund (EDF).....	35
BrightSource Energy, Inc.	40
Center for Energy Efficiency and Renewable Technologies	43
Bay Area Municipal Transmission Group (BAMx)	48
Calpine Corp.	52
Independent Energy Producers Assoc (“IEP”)	59
Northern California Power Agency (NCPA).....	61
NextEra Energy Resources	64
NRG Energy, Inc. (“NRG”)	66
California Department of Water Resources.....	72
Wellhead	85
EMS for Energy Users Forum (EUF) and the California Manufacturers and Technology Association (CMTA).....	91
PG&E.....	93
Western Power Trading Forum	104
California ISO DMM	106
Southern California Edison	113
San Diego Gas & Electric.....	122
Large-scale Solar Association (LSA	128
Braun Blasing McLaughlin & Smith, PC, on behalf of the California Municipal Utilities Association (CMUA)	133

Company	Date	Submitted By
Alliance for Retail Energy Markets	August 15, 2013	Sue Mara RTOAdvisors, L.L.C. (415) 902-4108 sue.mara@rtoadvisors.com
1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.		
RESPONSE: The CAISO’s proposed process aligns with the current process for determining the Local Capacity Requirements, which seems reasonable.		
ISO Response		
The ISO appreciates the support for the proposed study process.		
b. What measurement or allocation factor should the ISO use to determine an LRA’s contribution to the change in load component of the flexible capacity requirement?		
RESPONSE: The CAISO proposes to move from a peak-load ratio share to a monthly average load factor in calculating the “change in load” component of the flexible capacity requirement. The paper provides no discussion on why this change was made. In discussing the flexibility requirements, the CAISO has stated that peak flexibility needs may occur at different times than energy peaks. In summer months, the time of the two peaks (flex and energy) may differ by only an hour or two. In winter (December to February), the timing of the two peaks may be more significantly different. AReM observes that the “monthly average load factor” chosen by the CAISO for allocation purposes appears to have no relationship to when the flexibility need occurs. However, peak-load ratio shares seem to have a general relationship to flexibility needs for certain times of the years. If it is too complicated to calculate an LSE’s change in load during the expected 3-hour ramping periods during each month, AReM recommends using the peak-load ratio share in the calculation for the interim, while continuing to explore other alternative methods that may better track an LSE’s contribution to the change in load component. For example, AReM requested in its June 26th comments that the CAISO explore an alternative allocation method, which both incorporates cost causation principles and takes into consideration the extent to which the shape of an LSE’s load exacerbates or mitigates the “duck curve.” The LSEs with load shapes that exacerbate the “duck curve” would be allocated the flexible capacity requirements. Those who help mitigate the “duck curve” would be allocated zero flexible capacity requirements, or perhaps receive a “credit” for helping the system. This alternative approach could potentially address the root cause of the flexibility needs and send a price signal to LSEs encouraging action to modify their load shapes, thereby reducing the need for flexible resources. AReM requests that the CAISO explore this and other alternative methods going forward.		
ISO Response		
The ISO’s objective in making the change from peak load ratio share to the “change in load” component was designed to more accurately allocate flexible capacity needs caused by load changes to the LRAs that cause these changes. The ISO has modified the proposal and is now proposing to allocate the changes in load component of the flexible capacity requirements based on changes historic changes in load.		
c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?		
RESPONSE: As AReM has previously noted, a robust policy to address reliability needs should identify the root cause of the reliability needs, develop market-based transparent mechanism to address the reliability needs, and assign equitable cost responsibility based on cost causation principles. Proper cost		

causation ensures that all market participants get the correct price signals. The CAISO's proposed approach does not ensure proper cost causation nor does it implement a transparent, market-based mechanism to address reliability needs. If the CAISO moves forward with its proposal, AReM requests that the CAISO adopt it as an interim measure only and continue to work toward an improved approach, which could include (a) assigning flexible requirements based on cost causation (either to intermittent suppliers or to LSEs whose load shapes exacerbate the "duck curve") and (b) meeting flexible capacity requirements through biddable ancillary services (either as new ancillary services or as new requirements folded into existing ancillary services) combined with a centralized forward capacity market. The implementation of both ancillary services and a centralized forward capacity market would greatly improve the transparency of market prices and better support the ability of market participants to make investment decisions to meet the capacity needs of the system.

ISO Response

The ISO's proposed solution recognizes each LRA's contribution to the net load ramp. The implementation of the flexible ramping product will help manage the dispatch of flexible capacity in the day-ahead and real-time markets. The ISO is also working with the CPUC and other LRAs to design a reliability services auction that would provide an additional opportunity for LSE to procure flexible capacity.

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

RESPONSE: AReM agrees with the CAISO's proposal that LSE's that do not meet their flexible requirements should be subject to backstop procurement by the CAISO and only if the CAISO determines there is a cumulative deficiency in the flexibility requirements (p. 32). However, the proposed allocation to the deficient LSE is somewhat confusing. AReM understands that an LRA may choose to allocate its flexibility requirement to its LSEs using a different method than the CAISO. The CAISO proposes to use the same allocation method as the LRA in allocating backstop procurement costs. AReM suggests that an example or two on how this might work would be helpful. In addition, the CAISO proposes using CPM for procuring flexible capacity, but does not address whether it plans to modify the CPM must offer requirements, the minimum payment term or any other CPM-specific provisions. AReM requests that these additional details be provided in the draft final proposal. AReM also reiterates that, if all of the LSEs have met their flexible capacity obligations, there should be no need for additional backstop procurement authority. Put another way, backstop procurement should be explicitly tied to deficiencies in an LSE's showing. If all LSEs have submitted compliant showings, and the CAISO still feels there is a need for further backstop procurement, that means that there is something wrong with the manner in which the obligation is defined and/or allocated, and those flaws should be remedied instead of incurring costly incremental backstop procurement.

ISO Response

The ISO appreciates the support of the proposal. If all LSEs are sufficient in their month ahead showings, then the ISO would not look to issue backstop procurement based monthly deficiencies for flexible capacity. However, the ISO may issue backstop procurement based on other conditions within the existing CPM tariff (i.e. significant events) if they result from inadequate flexible capacity availability in the day-ahead or real-time markets.

6. Are there any additional comments your organization wishes to make at this time?

RESPONSE: In previous comments (January 10, 2013; June 26, 2013), AReM requested that the CAISO address (a) grandfathering of existing contracts, (b) monthly revisions to an LSE's flexible requirements to reflect load migration, and (c) a long-term solution for qualifying Combined Cycle Units as flexible resources. However, the Second Revised Straw proposal continues to be silent on these topics. AReM intends to pursue these issues as part of Phase 3 of the CPUC's RA proceeding, R.11-10-023.

ISO Response

The ISO has not addressed grandfathered contracts. It is not clear that the ISO needs to provide grandfathering provisions or what such provisions should cover. For example, is AReM requesting that an LSE not be required to meet flexible capacity procurement requirements if the LSE has an insufficient open procurement position to procure enough flexible capacity to meet this need? The ISO does not anticipate monthly revisions to flexible capacity requirements to account for load migration. Finally, the ISO has proposed counting conventions, including those for combined cycle resources, that is consistent with the provisions established in the most recent CPUC RA decision. The ISO will continue to work with the CPUC and other stakeholders to address changes to the counting requirements for various resources.

Company	Date	Submitted By
California Energy Storage Alliance (CESA)	August 15, 2013	Don Liddell & Douglass Liddell liddell@energyattorney.com (619)993-9096
Comments		
<p>CESA welcomes the CAISO's collaborative work with the CPUC and stakeholders to ensure that flexible capacity energy storage resources are available in the very near future to reliably operate the grid while fulfilling state energy and environmental goals. CESA recognizes that to be operationally available to the CAISO markets, energy storage resources must submit economic market-based bids for grid services, as opposed to self-scheduling. CESA will continue to work closely with the CAISO and the CPUC in developing the CAISO tariff changes necessary for the CAISO to adopt flexible RA capacity requirements that specifically include energy storage for inter-hour, load following, and ramping needs.</p> <p>CESA applauds the CAISO's planned market changes underway in conjunction with FERC's Order 764 to better integrate variable energy resources to increase the dispatch frequency by allowing resources to bid and schedule in 15-minute intervals in the real-time market. While this new scheduling approach will use a flexible capacity counting methodology established specifically for the CAISO tariff in the first instance, it is strategically key that it will be designed to be consistent with what is soon to be established by the CPUC as well, and should relate directly to each capacity resource's net qualifying capacity, minimum operating level, start-up time, and ramp rate.</p> <p>It is encouraging that the CAISO's present starting point for discussion of a must-offer obligation for energy storage resources that provide flexible capacity will allow storage resource to either:</p> <ol style="list-style-type: none">(1) Submit economic bids to provide regulation for the time period from 5:00 a.m.–10:00 p.m. as a regulation energy management resource,<i>Or</i>(2) Like demand response, select one of the two time periods for a must-offer obligation to provide a minimum of three hours of energy. <p>However, energy storage resources can effectively provide ramping capability of much less than three hours, and should be able to bid in smaller increments as small as 15 minutes each to build up to the 3 hour requirement. CESA thus supports elimination of an arbitrary duration requirement for energy storage for all services it provides, above a baseline 15-minute commitment, including ramping. A baseline 15-minute commitment would enable energy storage to cost-effectively participate in each of the three categories of need identified by CAISO: intra hourly, load following and full ramp. By procuring resources in smaller increments,</p>		

less overall resource will likely need to be procured resulting in reduced cost to ratepayers.

The proposal to give energy storage resources only two flexible resource adequacy options – especially options equating energy storage with demand response --- is inappropriate. There is no reason that energy storage, that can provide both upward and downward load following, should not be uncritically treated as demand response. For example, demand response resources are located behind the meter, are intended to primarily serve customers through cost savings, and typically entail reduced energy usage.

There are two main reasons that an arbitrary duration requirement of three hours will produce unintended negative consequences for California’s system:

First, as mentioned above, handicapping a flexible capacity resource like energy storage that can easily be dispatched and aggregated in smaller increments by arbitrarily requiring a resource in 3---hour blocks may result in purchasing capacity that is not needed. The same rationale behind FERC Order 755 for regulation also applies to ramping. Faster, more accurate bids are more effective than longer, less accurate bid.

Second, a shorter duration will enable a much larger pool of energy storage resources to bid, increasing competition among energy storage as well as competition among all resources. This will help drive down cost. Indeed, as was the case for FERC Order 755 implementation, CESA respectfully suggests that an incentive payment for ramping accuracy may be good idea.

Diversity of energy storage means that some resources will most economically provide short---duration bids best suited for regulation energy management, others will be mid---duration, and some (such as pumped hydro) will provide longer---duration. Energy storage is an optimal resource class to meet the need for all of these services as products to the CAISO, but will not be able to provide them most economically with an arbitrary three---hour requirement. Indeed, best---fit resources may not be able to provide those services at all with such dispatch requirements. Any must offer obligation for energy storage should be appropriately tailored to the appropriate service, of which energy storage can provide many.

Locational diversity of energy storage will be further amplified if CAISO enables not only stand alone merchant plants to participate, but also energy storage that maybe co located with generation, renewable generation and/or energy storage that is sited behind the meter on customer premises. On the latter point, there is already precedent for this for regulation and similarly allowing behind the meter resources to participate in ramping will encourage greater competition and provide CAISO with tremendous flexibility in location.

CESA appreciates the fact that the must---offer obligation developed in this initiative will be a critical component of the multi---year forward procurement mechanism. Further, CESA agrees with the CAISO that future procurement must consider how to implement separate procurement requirements for aggregation of multiple flexible capacity products, particularly if they are sited behind the meter. It is clear that much further detailed work needs to be done at the CAISO and at the CPUC to produce a robust methodology that will take full advantage of the capabilities of energy storage to competitively deliver reliable and valuable products in the CAISO’s capacity markets. CESA will be an active contributor to the work ahead.

ISO Response

The ISO appreciates the support for this aspect of the proposal.

Company	Date	Submitted By
Cogeneration Association of California & the Energy Producers and Users Coalition		
Comments		
<p>The following comments are provided on behalf of the Cogeneration Association of California and the Energy Producers and Users Coalition. Both organizations represent industrial cogeneration facilities that provide thermal and electrical energy to their industrial hosts and may sell the concurrently-generated electricity to the grid. The primary concern of CHP facilities is that they be allowed to deliver to the grid the amount of electricity generated while meeting their operational obligations to the industrial host. This has been accommodated by the ISO through the self-scheduling procedure. The amount that is self-scheduled cannot be available for dispatch by the ISO.</p> <p>That self-scheduled amount must be considered as inflexible for purposes of a flexible capacity obligation. The Effective Flexible Capacity (EFC) for CHP has to be set so as to preserve the deliverability of the self-scheduled amount and exempt it from dispatch. It would not work to set a CHP facility's EFC as the difference between PMin and NQC (NQC-PMin), since that EFC would presumably all be regarded by the ISO as flexible capacity and subject to the must-offer obligation. The EFC has to be set at a level that categorizes the self-scheduled amount as inflexible. We would propose that individual CHP facilities set their EFC. Their EFC could be no greater than an amount established by their NQC minus Pmin, but could be less based on anticipated operations to related to its site host</p> <p>Another consideration is that some CHP facilities can only generate the amount of electricity allowed by the simultaneous delivery of thermal energy to the industrial host. They may not be able to hold thermal energy output constant while varying the electrical output. Other CHP facilities may have generating capacity integrated with site host operations that require minimum dispatch levels above a facility's Pmin. This is further support for the proposal to allow a CHP facility to set its own EFC.</p> <p>Although an individual facility can determine how much flexible capacity it will contract to provide to LSEs, we are interested in setting the EFC so as to maximize the amount actually available from CHP facilities in real-time. In part, this seems an issue of timing. The EFC must be set in advance to support the LSE annual and monthly showings, but the CHP facility may want to adjust that day to day based on the changing demands of its industrial host. Perhaps there is a differentiation to be made between the EFC determined in advance and used for the annual and monthly showings versus the amount of flexible capacity actually available that may be bid into a reliability services auction or otherwise made available day ahead or real-time.</p> <p>As long as the must-offer obligation is limited to the amount of flexible capacity actually sold to an LSE by a CHP facility, there probably is no need for major substantive provisions in the MOO tailored to CHP. We want to ensure, however, that a CHP facility's obligation to provide flexible capacity is limited to the amount sold in a discrete transaction, and incorporates the ability for a CHP facility to self-schedule generation above its Pmin as part of its must offer obligation. It should also be clear that individual facility operations will determine the amount of flexible capacity that is available and can actually be sold, rather than some proration of the NQC.</p>		
ISO Response		
<p>The ISO is not proposing to require resources to economically bid capacity that is not flexible. For example, if a CHP resource has a firm level of output that must be produced, the resource may still self-</p>		

schedule that output. However, the SC for the resources would still be required to submit economic bids for an amount equal to the quantity of flexible it has sold. The ISO will calculate the EFC in advance. The resource owner would have to assess the operational limitations of the resources and then determine how much flexible capacity it wishes to sell to an LSE. The MOO would only apply to the portion sold as flexible.

Company	Date	Submitted By
San Francisco Public Utilities Commission	August 15, 2013	Michael A. Hyams mhyams@sfwater.org (415) 554-1590

2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA’s jurisdictional LSE’s contribution to the ISO’s largest 3- hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

The ISO should adopt criteria and an allocation methodology that is applied consistently for each resource and in a manner that is consistent with the causation principle. If the ISO is using the single greatest ramp in each month as the indicator of the system ramping requirement and as the basis for allocation, it should apply the contribution of a particular resource or resource type to the net ramping requirement during that ramping period, not try to account for how the resource performs during other ramp periods. For example, if the system ramping requirement is based on an evening ramp for a given month, then the expected contribution of load and the identified resource types during the evening ramp should be considered (whether positive or negative).

ISO Response

The ISO has proposed to base the an LSE’s contribution of load ramp based on historical data and continues to exam the impact of differences in contributions to morning and evening ramps.

b. What measurement or allocation factor should the ISO use to determine an LRA’s contribution to the change in load component of the flexible capacity requirement?

In its June comments on this matter, San Francisco provided two alternative methods for the ISO to consider for determining an entity’s contribution to the change in load component. San Francisco reiterates its proposal below as it believes that both methods would be more consistent with causation than either peak load share or monthly average load factor.

To allocate an LRA’s contribution to change in load, the ISO should either:

(1) calculate each LRA/LSE’s change in load coincident with the interval containing the maximum 3-hour net load change for each month, using the same data the ISO uses for each LSE to build up the combined ISO net load curve for this calculation. Specifically,

Proposed revised load component formula: Δ Load = LSE’s forecasted change in load during forecasted ISO maximum monthly 3-hour net-load ramp

or

(2) the ISO should use historical metered load data to calculate each LSE’s average hourly load curve for the relevant hours (e.g., 5:00 am to 10:00 pm, daily), calculate each LSE’s maximum 3 hour ramp using

this data and then calculate the LSE's share of change in load. Specifically, *Proposed revised load component formula:* $\Delta \text{Load} = \text{LSE's maximum monthly 3-hour load ramp (based on LSE's average hourly load shape)} \div \text{sum of all LSEs' maximum monthly 3-hour load ramp (based on each LSE's average hourly load shape)} \times \text{ISO's total change in load during ISO's forecasted monthly maximum net-load ramp.}$

In its Second Revised Straw Proposal (Revised Proposal) the ISO is proposing to use historic average monthly load factors to allocate the change in load contribution to the flexible ramping requirement (as opposed to the peak load ratio share methodology it initially proposed). While an LRA/LSE's load factor is a measure of its load variability, it is not a good proxy for the entity's contribution to the ISO's maximum 3-hr ramp because it does not indicate the LRA/LSE's ramping requirement, when it occurs, or if it is coincident with the ISO's max 3-hr ramp. Additionally, the ISO's updated proposal provides no information on how the ISO will convert load factor into a share of the change in load component; on page 19, the proposal merely changed the column heading from "Peak Load Ratio Share" to "Monthly Average Load Factor."

While San Francisco appreciates the ISO's efforts to simplify the methodology for calculating each LRA/LSE's contribution to the system net load ramp, this should not be done in a manner that might compromise alignment with the causation principle.

ISO Response

The ISO believes the new proposal for allocating load changes is very similar to option 2 above.

c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

San Francisco supports the ISO's latest proposal for allocating the resource side of the flexible capacity allocation formula. In its June comments, San Francisco observed that the change in distributed energy resource component should be allocated by each LSE's share of distributed generation for the period, similar to the allocation for transmission-connected wind, solar PV and solar thermal (as opposed to LSE load-ratio share times change in DG output). Appropriately, the ISO made this change in its revised proposal and further clarified that the contribution of distributed energy resources would be based on the LSE's percent of total *intermittent* DG, as opposed to all DG, which might include dispatchable resources. The ISO also identified the data collected through its annual DG deliverability study as the source of information on intermittent distributed generation, which San Francisco believes is appropriate.

ISO Response

The ISO appreciates the support of the proposal.

c. Hydro Resources

San Francisco requests that the ISO clarify what it means for a hydro resource to "demonstrate the capability of producing a six hour energy equivalent." San Francisco believes the proposed must-offer obligation for hydro resources should be based on the resource's committed flexible capacity, which should be capped at the resource's Effective Flexible Capacity. Additionally, the ISO should ensure that the flexible capacity counting criteria can accommodate hydro resource owners' other obligations, particularly water-first and environmental requirements. San Francisco believes the ISO's Flexible Capacity Criteria and Must Offer Obligation framework should spell this out clearly to avoid uncertainty that could discourage a resource owner from participating. The Effective Flexible Capacity should be the amount of capacity that the resource is expected to be able to sustain for six hours, which could vary on a seasonal basis or as dictated by a resource owner's operational constraints. The ISO should similarly clarify that the Effective Flexible Capacity can be different from the resource's Pmax.

ISO Response

A resource's flexible capacity obligation is based in the amount of flexible capacity the resource provides and is capped at the NQC. The ISO believes that managing use-limitations and other operational concerns are still within the control of the resource SC control based on the amount of flexible capacity

they elect to sell from a given resource.

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO’s flexible capacity backstop procurement proposal.

On page 11 of the Revised Proposal, the ISO provides a general annual schedule for the flexible capacity requirement assessment. San Francisco believes the process and schedule is reasonable and that the ISO should continue to mirror the use of its backstop procurement authority for flexible capacity on its existing procedures for local capacity. However, the Revised Proposal is unclear about whether the ISO’s backstop procurement authority will also apply to the year-ahead showings (i.e., when LSE/SCs are required to show they have 90% of the upcoming year’s flexible capacity requirement under contract). San Francisco opposes the application of the backstop procurement authority to year-ahead deficiencies and believes the ISO should clarify that it only intends to exercise its backstop procurement authority on a month-ahead basis, when it finds there is a cumulative deficiency.

ISO Response

The ISO has tariff authority to backstop deficiencies in year-ahead RA showings. The ISO is seeking comparable authority for deficiencies in the flexible capacity procurement showings. The ISO will clarify this point in the next FRAC-MOO proposal.

Company	Date	Submitted By
Silicon Valley Power (“SVP”)	August 15, 2013	Ken Kohtz kkohtz@santaclaraca.gov 408-615-6676
General Comments		
The City of Santa Clara, doing business as Silicon Valley Power (“SVP”), appreciates the opportunity to submit comments in response to the California Independent System Operator (“CAISO”) Flexible Resource Adequacy Criteria and Must-Offer Obligation Second Revised Straw Proposal. SVP, which operates in the CAISO as a Load Following Metered Subsystem, supports and adopts the comments submitted today by Northern California Power Agency (“NCPA”) and by the Bay Area Municipal Transmission Group (“BAMx”) in response to CAISO’s revised straw proposal. Rather than reiterate those comments, SVP adopts and incorporates the comments by NCPA and BAMx.		
ISO Response		
The ISO’s responses to NCPA’s comments are provided in the NCPA section of this document.		

Company	Date	Submitted By
EnerNOC, Inc.	August 15, 2013	Mona Tierney-Lloyd Mtierney-lloyd@enernoc.com (415)238-3788
<ol style="list-style-type: none"> 1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process. 2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity 		

requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

- a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?
- b. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

A: Using contribution to peak load does not seem to be the appropriate metric for allocating flexible capacity resource needs to an LRA or, subsequently, an LSE. Peak load contribution has almost nothing to do with flexible capacity needs. It seems like it should be determined based upon a contribution to the maximum 3-hour ramp, which is based upon the net load calculation (gross load less peak solar generation). While admittedly wind can contribute to the ramps, it seems that the largest concern, in the near term, is the generation from solar in the midday.

ISO Response

The most recent ISO proposal recommended using a metric that is a function of an LRA's/LSE's load factor. The ISO made this change because load factor is a measure of change in load. However, the ISO continues to consider other options for allocating flexible capacity requirements caused by changes in load.

- a. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?
2. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited
 - b. Use-limited resources
 1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

c. Hydro Resources

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources

EnerNOC appreciates the efforts that the CAISO has made to accommodate concerns expressed by EnerNOC with respect to a 17-hour availability window and associated must-offer obligation (MOO). In response, CAISO has suggested a choice of one of two availability windows for DR: 6 AM-11 AM or 4 PM-9 PM. EnerNOC offers the following comments relative to CAISO's proposal, with the intention of maximizing the amount of DR available to the CAISO when needed.

In order for DR to serve as a resource to the grid, load has to be available to be reduced when directed. EnerNOC serves commercial, industrial, institutional and agricultural loads. Some of those loads have flexible hours of operation or may have 24 hour shifts; however, most of EnerNOC's customers are available during normal business hours. As such, those businesses are not available to drop load between 6-8 AM and/ or between 7-9 PM, with the exception of emergency lighting, refrigeration and low-level air-conditioning load. Further, load increases and decreases throughout that business day. The commercial and industrial load shape is different from the residential load shape. As load is ramping up or down, during the early and late ramp hours, there is less of a capability to reduce load than during midday hours. Another example is that A/C load is a much more significant part of overall energy use for a business when the sun is shining, but would be less significant in the early morning hours or early evening hours. In short, it may mean that the majority of EnerNOC's C&I DR customers are not driving the early morning or early evening ramping need.

As such, EnerNOC's ability to provide a consistent load reduction across the proposed availability window hours (6 AM - 11 AM and 4 PM – 9 PM) could be addressed in a couple of ways: 1) EnerNOC would offer the "lowest" amount available across the five hour window in order to reflect a decreased capability to reduce load between 6 AM and 8 AM and/or between 7 PM and 9 PM, 2) EnerNOC would offer an average capacity across the 5 hours, with some variability hour-by-hour or 3) EnerNOC would be able to choose a 5-hour availability window from the 10-hours suggested by CAISO over which it could provide a more consistent level of performance. There can also be a combination of 2 & 3. EnerNOC wants neither to overstate nor understate its capabilities. Therefore, even if EnerNOC would face penalties, it may be advisable to submit offers that reflect the available capacity, as opposed to the committed capacity, so as not to send an erroneous signal to the CAISO about the resource capability.

Option 1 ensures the lowest amount of DR is available to CAISO, but results in a consistent amount across the availability window. Option 2 reflects the fact that load capabilities to curtail vary throughout the day, especially as load is ramping up or down and uses an average capacity commitment, which can vary hour-by-hour. Option 3 would fulfill the resources availability for five hours/day, but would allow the resource to determine the hours in which the resource could provide the greatest availability to the

grid.

Admittedly, EnerNOC's customers may only be contributing partially to the ramping needs. In other words, residential and small commercial customers may be contributing more to the ramping needs than the medium-to-large C&I segment. In that case, EnerNOC's DR can be useful in partially reducing, but cannot fully mitigate that ramping need.

ISO Response

The ISO has proposed MOO for DR resources that would allow the DR provider to determine the hours that best aligned with the underlying load. In previous comments EnerNoc suggested a five-hour block that spanned from 5pm-10pm. The ISO proposed hours that was more likely to align with load. Ultimately, the SC for the PDR resource would be able to assess if the underlying load supports a morning of afternoon MOO. It is unclear how the ISO's previous proposal differs from EnerNoc's Option 3 or how options 2 and 3 can be combined.

1. Storage resources
2. Variable energy resources
3. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.
4. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

This is an interesting proposal of using a carrot, as opposed to a stick, to encourage conformance with the MOO.

ISO Response

The ISO appreciate the support of the proposal.

- a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

b. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate?
2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

5. Are there any additional comments your organization wishes to make at this time?

Yes. See below.

Use Limitations: Despite the limited hours of daily availability for DR resources proposed by CAISO, continuous daily dispatches of DR resources are likely to result in customer fatigue. Therefore, it will be important to limit dispatches to when the resources are truly needed and when it is economic to provide the demand reductions. There are essentially two ways of reducing the potential for resource fatigue: 1) use limitations and 2) pricing. EnerNOC will address pricing in the subsequent section.

There are a few parameters to define use limitations, which were developed with generation in mind. They include: number of starts/day, maximum run hours/start, minimum run hours/start. These use limitations may not be adequate to prevent over-use of the resource. Participants need to be able to specify a maximum number of dispatches and hours of dispatch per month or year.

EnerNOC had previously proposed that another way to get to the use-limited nature of DR is to establish a MOO for DR resources when the actual ramping need on the system is forecast to be within 5% of the maximum ramp identified for the month. This is another way to limit DR dispatches to those hours when they are most needed.

Without the ability to specify use limitations, then DR resources have to rely upon price to limit the dispatches to those hours when it is economic to curtail and when the curtailment is required by the system.

ISO Response

The ISO is currently able to handle daily start and run time limitations. The ISO believes that existing provisions for PDR resources will allow the SC for the resource to manage many use-limitations. The ISO also recognizes that annual and monthly use limitations present unique challenges. However, the ISO is working on a mechanism that would help manage monthly and annual start-limitations.

Opportunity Costs for Monthly or Annual Start Limited Resources:

The opportunity cost proposal contained in the Second Revised Straw Proposal is an interesting approach to limit dispatches to only those hours that are in excess of the opportunity cost. Essentially, the opportunity cost would serve as a strike price. Such a mechanism could be useful for DR resources.

However, there are a few clarifications that would be necessary.

First, the four-step formula on pages 25 and 26 are not necessarily useful for DR and appear to have been directed to generation. Second, the DR resource should define the opportunity cost-not the CAISO and not an independent entity. Third, it would be helpful for the CAISO to clarify the relationship between the default energy bid and the opportunity cost. It would be important for the DR resource to modify or adjust the opportunity cost, and therefore be a dynamic entry, as it may be subject to change based upon changes in customer circumstances.

Determining the opportunity cost for a DR resource is not as straightforward as the calculation for a generating unit. It is not as definitive because different customers have different thresholds as to their willingness and ability to curtail. A DR resource is comprised of many customer sites representing businesses across the economic spectrum. These businesses have different usage and operating characteristics, business cycles, financial targets, environmental and corporate responsibility goals, etc. Also, EnerNOC does not have a lot of experience with managing a DR resource for this purpose. Flexible capacity is a unique resource to the CAISO. Therefore, EnerNOC will need to gain experience with its customers' capabilities to curtail for this purpose, during "odd" hours. It is also unclear as to how the resource requirements will affect recruitment and the existing customer composition. There are many unknowns and therefore there is a need for flexibility for offering DR to CAISO.

It would also be important to know if the opportunity cost will be mitigated. EnerNOC understands that DR will not be subject to local market power mitigation. Resources should be free to specify prices below which they are unwilling to be dispatched, subject only to the system-wide offer cap; but, such offers should not otherwise be constrained, modified or mitigated.

ISO Response

As suggested, proxy demand response resources will be free to calculate their own opportunity costs to include in their energy bids as proxy demand response resources are not subject to local power mitigation (i.e. ISO will not reduce the bid price). The ISO market does not consider start-up and minimum load costs for proxy demand response resources so these caps not applicable to proxy demand response resources.

Determination of Bid Capacity:

It is unclear whether the amount of capacity that a resource is required to bid to fulfill its MOO is the same over an annual period or if it could change monthly, as the amount of flexible capacity requirement changes monthly. It would be preferable to establish a monthly MOO as load availability for curtailment will change based upon many factors, including A/C.

At present, Load Impact Protocols are the basis for determining the DR capacity that can count toward meeting local and system RA requirements. It is not clear if that process or some other process will be used for determining the amount of DR capacity that can be used for flexible capacity resource purposes. Since this is a market, EnerNOC would suggest that it be left to the market participant to decide, along with all of the attendant responsibilities if the market participant fails to meet its commitments.

ISO Response

The MOO would apply to the amount of capacity that is shown as flexible for a given month. Therefore the amount of capacity from a resource subject to the flexible capacity MOO may differ by month. The

amount shown as flexible will in a given month should be determined by the resource owner and the contracting LSE.

Sub-LAP Delivery of a System Resource:

CAISO states, at page 29, that DR Providers can “rotate” dispatches from day-to-day among customers so as not to over-burden any single enrollee. However, the CAISO seems to forget that DR Providers are required to bid, through PDR, on a sub-LAP basis, even to provide a flexible capacity resource, which is a system requirement. The sub-LAP design limits the number of customers that can participate in a resource. The ultimate design of the FRACMOO may reduce the number of customers that are eligible to meet the resource requirements. In combination, it will be difficult to find enough customers to participate in FRACMOO, much less be able to rotate among them for dispatches. Even if we did rotate customers, then the amount of capacity available at any one time is going to be less than if we didn’t have to rotate customers. For the purpose of providing flexible capacity or system resources, the CAISO should consider allowing DR to offer and settle on a DLAP basis.

ISO Response

The issue of PDR granularity is outside the scope of the current initiative.

DR FRACMOO Bids and NBT:

The average energy price on CAISO’s system for the annual period ending with the first quarter 2013 is roughly \$50/MWh. The net benefit test (NBT) threshold is roughly \$50/MWh. By definition, it is uneconomic for DR to participate in the electricity market when the clearing price is at or below the NBT threshold. Therefore, in most hours, DR would be uneconomic or only marginally economic to participate in the energy market. Practically speaking, an energy price of \$50/MWh will not be enough of an inducement for a customer to participate.

ISO Response

The market price is a function of the optimization of resources’ bids.

Dispatch Notice:

By qualifying as a flexible capacity resource, the resource must offer into the D/A and R/T energy markets. Even if the resource’s D/A offer is accepted, the resource is required to offer into the R/T energy market. The DR resource will be paid the D/A energy clearing price plus or minus any deviations to that D/A schedule that result from the R/T market clearing. Market participants will be notified of their dispatch instruction after the R/T market closes and 37.5 minutes in advance of the dispatch interval.

The more advance notice that EnerNOC can provide to its customers of a dispatch instruction, the better. However, the uncertainty between the D/A and R/T market awards will introduce uncertainty in the ability to manage the resource performance based upon the final award. That leaves only 37.5 minutes to ask customers to either perform more or less before the dispatch interval. It is not possible to tell at this moment whether the difference between the D/A and R/T market awards will be significant. However, significant changes from the D/A to R/T will make it difficult for EnerNOC to manage the resource performance and provide adequate notice to its customers.

ISO Response

The ISO relies on DR providers to assess which resources are able to respond in a given time frame. When determining how much flexible capacity the DR provider provides they should consider the risks of changes in market conditions that would lead to a dispatch instruction in the day-ahead market, and a de-commitment in the real-time market.

Complexity and Lack of Market Signals:

Based upon these comments, there are still several areas of concern to work through and the resulting structure may still be complex and confusing. While EnerNOC is committed to providing constructive feedback to the CAISO with the goal of creating a workable framework, and EnerNOC appreciates the CAISO’s responsiveness to date, adopting a flexible capacity resource requirement moves CAISO further and further away from sending market signals to encourage the specific attributes and characteristics that the CAISO wants and needs to reliably manage the electricity system. In so doing, the CAISO model is diverging from other successful market models, like PJM.

ISO Response

Part of the ISO’s goal in the FRAC-MOO proposal is to deepen the pool of resources that provide economic bids. By definition, this should increase the frequency that the prices and dispatch instructions issued will be based on market signals. Further, there are significant differences between the ISO and markets such as PJM (i.e. the existence of a centrally cleared capacity market) that also need to be considered

Company	Date	Submitted By
California Wind Energy Association	August 15, 2013	Darius Shirmohammadi e-mail: dariush@shirconsultants.com phone: 310-858-1174 Nancy Rader e-mail: nrader@calwea.org phone: 510-845-5077

Introduction

The California Wind Energy Association (CalWEA) appreciates the opportunity to comment on the CAISO’s second revised straw proposal on Flexible Resource Adequacy Criteria and Must-Offer Obligation (FRACMOO). CalWEA was not able to submit comments on the CAISO’s June revised straw proposal.¹ Hence, these comments address topics that were more heavily emphasized in the first revised straw proposal.

The fundamental premise of the CAISO FRACMOO proposal is clear. FRACMOO is principally intended to make annual and monthly capacity payments to existing flexible resources, mainly gas-fired generators, for a capability they already have and have been providing to the grid without such long-term capacity compensation in the past. CalWEA understands this premise and supports it. CalWEA understands that a major shift in services from flexible resources is taking place as net load variations are increasing. This shift in services is moving away from providing basic Resource Adequacy (RA) capacity to providing ramping services (flexibility capacity) during certain parts of the day. Hence, even though flexible capacity resources have been providing ramping services without long-term capacity compensation in the past, the RA payment has allowed these resources to operate in a financially viable fashion. However, in an environment where basic RA capacity (as well as energy) needs are increasingly met by renewable resources, the resources needed to meet ramping requirements (caused in part by renewables) are expected to experience significantly reduced RA capacity and energy revenues. At the same time, these same resources will be required to provide more start-and-stop operation as well as

ramping services, incurring more costs due to operation in less efficient zones as well as the added wear and tear. Under these new circumstances, compensating flexible resources for their flexible capacity is not only fair but also necessary to ensure that these resources remain available to provide needed services. Absent this new payment stream, existing resources could potentially cease to operate, leading to a need for new flexible resources likely at a much higher cost to ratepayers. At the same time, under the CAISO FRACMOO proposal, the proper tradeoff for receiving capacity payments would be for these flexible resources to be obligated to offer that flexible capacity as economic bids in the CAISO Day-Ahead (DA) and Real-Time (RT) markets.

While CalWEA broadly supports CAISO's second revised straw proposal, we strongly believe that several critical changes, discussed in detail below, must be made to the FRACMOO proposal:

1. Contingency reserve capacity should not be reserved as part of flexible capacity procurement;
2. The eligibility criteria for hydro resources to provide flexible capacity should be corrected to properly reflect their capability to provide flexible capacity;
3. Imports, especially in light of FERC Order 764 reform, should be allowed to participate in offering flexible capacity;
4. The flexibility of renewable resources built into most power purchase agreements for these resources should be accounted for in the calculation of flexible capacity requirement;
5. The likelihood that some flexible resources, renewable or otherwise, would participate in the DA and RT markets due to existing economic incentives should be accounted for in the calculation of flexible capacity requirement;
6. The allocation of flexible capacity costs to LSEs can and should be modified to correspond to costs caused by such LSEs as a result of their procurement decisions; and
7. CAISO should strictly enforce the obligation of flexible capacity resources to provide economic bids in the DA and RT markets.

ISO Response

The ISO's goal in the FRAC-MOO stakeholder initiative is to ensure that resources procured to provide flexible capacity, regardless of the technology, are, in fact, providing the flexible capacity to the ISO.

The seven items outlined above are addressed in detail below.

1. Contingency reserve capacity should not be reserved as part of flexible capacity procurement

CAISO proposes to calculate the flexible capacity requirement for any month of the year by adding two system capacity needs:

- i) Largest three-hour contiguous ramp during the month; and
- ii) Maximum contingency reserve for that month.

However, the latter term corresponds to capacity that has already been procured and reserved when CAISO ensured that sufficient RA resources (equal to 115% to 117% of maximum monthly load) was procured - that 15% to 17% additional RA capacity beyond maximum load is precisely intended to ensure that there is sufficient capacity available to deal with system contingencies. So, rather than re-procuring the contingency reserve capacity as part of flexible capacity procurement, CAISO should

simply introduce an obligation for RA capacity resources that are eligible to provide contingency reserves, e.g., gas resources, to either schedule their RA capacity in the DA and RT market or to offer that capacity through an economic bid as well as providing contingency reserves in these same markets. Under this circumstance, the calculation of the flexible capacity should be modified to remove the contingency reserve term.

ISO Response

The ISO believes that flexible capacity and contingency reserves will come for a similar pool of resources. Therefore, to not include contingency reserves could lead to a deficiency in meeting flexible capacity needs, contingency reserves, or both. The ISO has provided an example in the next proposal to clarify this. Further, the CPUC has already approved the formula outlined in the ISO's proposal.

2. The eligibility criteria for hydro resources to provide flexible capacity should be corrected to properly reflect their capability to provide flexible capacity

Per the CAISO proposal "a hydro resource will qualify as flexible capacity if it has physical storage capacity to provide energy equivalent to output at Pmax for 6 hours." CalWEA does not understand why a hydro resource should have to provide its Pmax power for 6 continuous hours in order to qualify. Any hydro resource with a reservoir should qualify to offer flexibility capacity equal to the expected daily energy that will be available in its reservoir divided by 6 hours. For example, based on the criteria proposed in the latest FRACMOO proposal, a 100-MW hydro resource (Pmax = 100 MW) would qualify as a flexible capacity resource only for those time periods when its reservoir has 600 MWh worth of energy (Pmax * 6 hours). However, from a physical operation standpoint, if that same 100 MW hydro resource only has 300 MWh of energy in its reservoir, it can readily provide 50 MW of flexible capacity (300 MWh/6 hours). Thus, the eligibility requirement for hydro resources should be modified accordingly to reflect this physical reality.

ISO Response

The ISO has taken this suggestion and changed the proposal accordingly.

3. Imports, especially in light of FERC Order 764 reform, should be allowed to participate in offering flexible capacity

At the last stakeholder meeting, CAISO argued that flexible capacity should be similar to 5-minute load-following capacity with the ability to be sustained for 3 hours and, therefore, imports whose levels change every hour (or 15-minutes in the upcoming CAISO FERC Order 764 Market) would not qualify as flexible capacity. However, by examining the daily net load curve, with its "slow rising" net load value, we can readily see that continuously rising imports, even with an hourly (or better yet, 15-minute) ramp capability, can help meet the net load increases during the morning and late-afternoon hours. Therefore, imports, particularly those scheduled on a 15-minute basis, should be allowed to participate in providing flexible capacity capability to the CAISO.

ISO Response

Resources that are dynamically scheduled or pseudo-tied to the ISO may count as flexible capacity. However, the ISO flexible capacity must be able to respond to five minute dispatch instructions. Inertie resources that cannot respond to five minute dispatch instructions cannot provide the needed level of flexibility to simultaneously ensure the ISO can meet both the load following needs and longest continuous ramping needs. This has been explicitly stated in the third revised straw proposal.

4. The flexibility of renewable resources built into most power purchase agreements for these resources should be accounted for in calculating the flexible capacity requirement

Virtually all renewable resources that have executed PPAs since 2011, and many in the years prior, are required to offer a certain number of hours of unpaid and paid curtailments to their utility buyer.² Such curtailment hours could be judiciously scheduled/bid by these buyers, who are normally the Scheduling Coordinators (SCs) for these same renewable resources, to reduce the net load ramp, and hence the need for flexible capacity. We encourage the CAISO to work with LSEs to explore the use of such curtailment provisions in the PPAs to mitigate the net load ramps at least during those few time periods during the month for which the largest three-hour contiguous ramps are expected to occur, hence reducing the monthly and annual flexible capacity requirement for the entire system in general and that LSE in particular. By reducing the need for flexible capacity requirements, renewable resources can make a significant contribution to resolving the resource need.

ISO Response

The ISO is prepared to work with stakeholders to address these issues in the flexible capacity needs assessment.

5. The likelihood that some flexible resources, renewable or otherwise, would participate in the DA and RT markets due to existing economic incentives should be accounted for in the calculation of the flexible capacity requirement

A certain portion of supply and demand resources, particularly resources without RA capacity designations, has traditionally participated in the CAISO market by submitting economic bids. If these resources continue to participate in the CAISO market in a similar manner as they do today, they will reduce the need for flexible capacity. Even with the changes in the CAISO market resulting from the FRACMOO initiative, there will always be some resources that will continue to participate in the market even if they are not designated and compensated as a flexible resource. Hence, we recommend that this inevitable fact be taken into consideration and properly modeled when determining the annual and monthly flexible capacity requirements.

ISO Response

The ISO believes that the most recent proposal provides an opportunity for flexible resources, renewable or otherwise, to be shown as flexible capacity resources. The ISO believes it is more appropriate to consider their participation as a flexible resource than to lower the requirement because of their participation.

6. The allocation of flexible capacity costs to LSEs can and should be modified to correspond to costs caused by such LSEs as a result of their procurement decisions

The flexible capacity requirement for a calendar month corresponds to the largest three-hour contiguous ramp that is forecasted for that month by the CAISO. This is expected to occur during a single morning or late afternoon ramp event in that month – let’s call this event the “maximum ramp event” for the month. For that maximum ramp event, CAISO should be able to isolate the exact contribution of each LSE to the maximum ramp event via the relationship between the SCs on one side and loads and resources represented by that SC on the other side. This contribution should then be used for allocating the cost of flexible capacity procurement for that month to the LSEs, either directly by the CAISO or via Local Regulatory Authorities (LRAs). The process may be somewhat involved but potentially still less complex than the cost allocation formulas that CAISO is proposing in the revised straw proposal. At the August 1, 2013, stakeholder meeting, CAISO stated that determining the contribution of individual LSEs during the maximum ramp event would be too cumbersome. The stated reason for this position was that the CAISO calculates the maximum net load ramp by first aggregating the impact of sources that contribute to such ramp (load, renewables, etc.) so the link between these sources and the LSEs (and their LRAs) are lost. As stated above, these links can be re-established with some careful

accounting in the settlement system. However, should it be determined that such a task is too difficult to perform, it is still possible to better allocate the flexible ramping cost based on cost causation by a simple tweak to the cost allocation formula that CAISO presents in its revised straw proposal as presented below.

Based on the CAISO statement that it readily has data showing the aggregate impact of each of the various sources (load, wind, solar PV, solar thermal, distributed generation, etc.) on the maximum net load ramp, CalWEA recommends that CAISO compare the contribution of each source, as aggregated above, to the maximum monthly ramp to determine the allocation for that source. These contributions should then be used as weights in the CAISO proposed cost allocation formula, where, for example, the impact of change in wind generation during a month would be multiplied by the contribution of wind to the maximum ramp event as noted above.

ISO Response

The ISO is only proposing to indirectly allocate costs by providing to the LRA the contribution of that LRA’s jurisdictional LSE to the ISO’s flexible capacity needs. Additionally, this allocation must be provided to LRA’s prior to the operating month to ensure compliance. Therefore, a after the fact assessment of each LSE’s contribution is not feasible. The ISO has done the assessment of the contribution of each technology and its contribution to maximum ramp of each day. The results show that the contribution from each technology type to the monthly maximum ramp is not statistically different from the monthly average. However, the ISO is still considering other allocation options.

7. CAISO should strictly enforce the obligation of flexible capacity resources to provide economic bids in the DA and RT markets

CAISO should use its bid validation rules to ensure that flexible capacity resources that were selected and paid to provide flexible capacity submit economic bids into the DA and RT markets. Performance incentives/penalties in the fashion that are used to reward/penalize RA resources for their availability do not apply to their scheduling/bidding obligation but are used to monitor their actual availability for system operation. Performance incentives/penalties could similarly be used for flexible capacity resources based on their unavailability as reported in the CAISO SLIC system.

ISO Response

The ISO believes that a well designed flexible capacity availability incentive mechanism will provide the proper incentives to ensure flexible capacity resources perform as required. This mechanism is fully consistent with other ISO policies.

Company	Date	Submitted By
Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, CA (“Six Cities”)	August 15, 2013	Bonnie Blair bblair@thompsoncoburn.com 202-585-6905
<p>1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.</p>		
<p><u>Six Cities’ Response:</u> The Six Cities support the proposed process for annual assessment of flexible capacity requirements <u>provided that</u> all interested LRAs have the opportunity to participate fully in the</p>		

assessment process.

ISO Response

The ISO will conduct an open and transparent assessment process and encourages full stakeholder engagement.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA’s jurisdictional LSE’s contribution to the ISO’s largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

Six Cities’ Response: Two aspects of the ISO’s 2nd Revised Straw Proposal - - (i) developing flexible capacity requirements on a monthly basis recognizing seasonal differences in contributions to the maximum monthly three hour ramp, and (ii) allowing intermittent resources to provide flexible capacity under a specialized must-offer obligation - - appropriately address the variability of contributions to the net load ramp at different times. Recognizing seasonal differences in resource attributes and usage patterns through development of flexible capacity requirements on a monthly basis will address broad variations in resource contributions to flexible capacity requirements, while allowing intermittent resources to count toward meeting flexible capacity requirements under specialized must-offer obligations effectively will recognize “negative” contributions to the net load ramp on a more granular basis.

ISO Response

The ISO appreciates the support for this aspect of the proposal.

- a. What measurement or allocation factor should the ISO use to determine an LRA’s contribution to the change in load component of the flexible capacity requirement?

Six Cities’ Response: The ISO should base the change in load component of the flexible capacity requirement on changes in load for LSEs subject to each LRA’s oversight during the monthly maximum three hour ramp periods used to establish the monthly system flexible capacity requirements. The data used to determine LSE changes in load during the monthly maximum three hour ramp periods could be historical data for recent years or the forecast data used by the ISO to estimate the monthly maximum

three hour ramps.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

- a. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

Six Cities' Response: As described in response to subpart b above, the Six Cities believe that the method for measuring the change in load contribution to the flexible capacity requirement should be modified to reflect changes in load during the monthly three hour ramp periods used to establish the monthly flexible capacity requirements. Subject to that modification, the Six Cities support the method for allocating flexible capacity requirements described in the 2nd Revised Straw Proposal. The Six Cities also support the allocation of flexible capacity requirements to LRAs rather than individual LSEs so as to accommodate LRA procurement policy to the maximum extent possible.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

- 1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited

Six Cities' Response: The Six Cities support the ISO's proposed must-offer requirements for resources that are not use-limited.

ISO Response

The ISO appreciates the support for this aspect of the proposal.

- a. Use-limited resources

Six Cities' Response: The Six Cities believe that it is in the best interests of both resources and loads to frame the eligibility criteria and must-offer requirements for Flexible RA resources in a way that maximizes the incentives for resources of varying types to make available to the ISO whatever flexible attributes they may have. A central message from the FERC technical conference on July 31 is that operating challenges are evolving, and the operating characteristics that are most useful to the ISO in one year will not necessarily be the most desirable attributes three or more years thereafter. Stated differently, the Flexible RA program itself should remain flexible while providing support for rational and effective development and procurement of resources.

Toward those ends, the Six Cities recommend that the ISO give further detailed consideration to establishing different “buckets” for Flexible RA resources. The bucket concept has been suggested, in greater or lesser detail, by several stakeholders. See the ISO’s Matrix of Comments and Responses on the Revised Straw Proposal at pages 26 (NRG) and 69 (SDG&E). The ISO’s responses to these suggestions indicate that the ISO is “not opposed” to a bucket approach (Comments/Response Matrix at 70) and was “evaluating whether a ‘bucket’ approach might be more efficient than allowing full participation by all use-limited resources with strict must-offer requirements” (*Id.* at 82). As summarized by the DMM, “counting rules and must-offer obligations may need to be tailored to different resource types, while ensuring that the overall mix of resources procured to meet a forward capacity obligation provides the needed flexibility.” (*Id.* at 81). The Six Cities believe that a bucket approach offers the greatest promise for addressing several of the inherently conflicting objectives in flexible capacity procurement.

Conceptually, the bucket approach would allow resources that cannot satisfy requirements for 5-minute or sustained dispatchability to meet some portion of the ISO’s flexibility requirements, while requiring 5-minute dispatchability and the capability for sustained energy production for a defined percentage of the flexible capacity requirements. Establishing different buckets for Flexible RA would provide support for the development of a broad range of resources with different types of operating characteristics, which would reduce the potential adverse consequences (economic, policy, and reliability) of putting all of the reliability eggs in one bucket. If the percentages allowed for each bucket were adjusted gradually from year to year as system characteristics evolve, there would be sufficient durability to support resource development and procurement without locking in a portfolio of resources that may turn out to be unsuitable or inadequate.

Application of a bucket approach also would allow the ISO to manage potential reliability concerns resulting from the relaxation of eligibility criteria or must-offer requirements to accommodate the development of preferred resources. Allowing resources with different flexibility attributes to count toward a portion of Flexible RA requirements is appropriate, but relaxing eligibility criteria or availability requirements on a broad scale could result in threats to reliability or substantial backstop procurement by the ISO. Both consequences would be undesirable, and both could be avoided by implementation of the bucket approach.

ISO Response

The ISO is willing to consider a bucket approach if over reliance on use limited resources becomes a concern that impact system reliability.

1. Please provide specific comments regarding the ISO’s four step proposal that would allow resources with start limitations to include the opportunity costs in the resource’s start-up cost.

Six Cities’ Response: The Six Cities’ previous comments noted that information on historic patterns of LMPs will be necessary to support estimation of opportunity costs. The ISO should assist in the assembly of that information. In addition, as several stakeholders mentioned in their previous comments, determination of opportunity costs must be dynamic to recognize that opportunity costs for start-ups and/or usage subject to energy limitations will increase as start-ups and energy production

approach the established limits. See the Comments/Response Matrix at 27 (NRG), 70 (SDG&E), and 82 (DMM).

ISO Response

The ISO is still assessing the feasibility of implementing dynamic opportunity cost calculations.

1. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

Six Cities' Response: At least two of the Cities (Pasadena and Riverside) require internal resources to maintain distribution system reliability during peak conditions. Self-scheduling of Flexible RA resources should be permitted during periods when those resources are necessary to manage such local reliability constraints that are not modeled in the ISO's optimization program.

ISO Response

The SC of a resource will have to assess all operational limitation of a resource when determining if it is able to provide flexible capacity as well as the risks associated with any potential charges under the SFCP.

- a. Hydro Resources

Six Cities' Response: The Six Cities would support expanded recognition of hydro resources to meet a portion of the flexibility requirements under the bucket concept described above.

ISO Response

The ISO has modified its proposal for hydro resources to include consideration the potential maximum sustainable six-hour output (instead of requiring a six hour output at PMax to qualify for an EFC).

- a. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

Six Cities' Response: The bucket approach described above would allow the ISO and LRAs to apply specialized must-offer requirements to different categories of resources without undue risks to reliability or excessive backstop procurement. In addition to the resource types identified below, one bucket should include imports dispatchable on a fifteen minute or even hourly basis. See the Comments/Response Matrix at 49 (Six Cities) and 56 (Powerex). The ISO also should consider revisions to the intertie import allocation process necessary to enable intertie resources to count toward flexible capacity requirements.

1. Demand response resources

- 2. Storage resources
- 3. Variable energy resources

ISO Response

Because the ISO must address load following and longer duration ramping needs with a single flexibility product it require 5 minute dispatch capability. However, the ISO will continue the potential for inertia resources to address flexibility needs once there additional experience with 15 minute inertia schedules.

- 1. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO’s flexible capacity backstop procurement proposal.

Six Cities’ Response: The Six Cities support backstop procurement of flexible capacity by the ISO only when there is an aggregate deficiency. Implementation of the bucket approach described above should assist LRAs and the ISO in developing Flexible RA requirements that will minimize the occurrence of aggregate deficiencies and the need for procurement by the ISO. To the extent backstop procurement by the ISO does become necessary to address an aggregate deficiency, the Six Cities would support giving the ISO discretion to target such procurement to resources that satisfy full dispatchability requirements.

ISO Response

The ISO believes that the backstop procurement authority sought is consistent with this comment and has been further clarified in the third revised straw proposal.

- 2. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

Six Cities’ Response: In general, the Cities support the concept of an availability incentive mechanism rather than application of generated bids. Another advantage of implementing the bucket approach for satisfaction of flexible capacity requirements would be the ability to tailor availability incentives to the operating characteristics and patterns associated with the resources in the different buckets.

ISO Response

The ISO has added significant detail and examples to the availability incentive mechanism portion of the paper.

- b. The proposed evaluation mechanism/formula
 - 1. The formula used to calculate compliance

2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

Six Cities' Response: Because the ISO does not propose to allow unbundling of flexible attributes from capacity generally, a resource should be subject to only one non-availability charge during a measurement period. If the non-availability charges for flexible capacity end up being different from the non-availability charge under the Standard Capacity Product provisions and both would apply during a measurement period, the higher of the applicable charges should be imposed for that period.

ISO Response

The ISO has added significant detail and examples to the availability incentive mechanism portion of the paper. This additional detail includes a new availability incentive mechanism that values the generic capacity and the flexible capacity separately.

- b. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate?

Six Cities' Response: As part of further evaluation of the bucket approach described above, the ISO and LRAs could consider the appropriateness of applying different dead band values to the resources in the different buckets.

ISO Response

Should the ISO, in conjunction with LRAs, adopt a bucket approach, it would have to assess the benefits of different dead bands at that time.

3. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

Six Cities' Response: The Six Cities support application of the prevailing flexible capacity backstop price to resources that fall below the dead band for the applicable monthly target flexible capacity availability value. Application of the prevailing flexible capacity backstop price is appropriate to minimize the potential that non-availability of resources counted on for Flexible RA could necessitate backstop procurement by the ISO.

ISO Response

The ISO has added significant detail and examples to the availability incentive mechanism portion of the paper. This additional detail includes a new availability incentive mechanism that values the generic capacity and the flexible capacity separately.

c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

2. Are there any additional comments your organization wishes to make at this time?

Six Cities’ Response:

The criteria for determining the epsilon factor must be better defined in the tariff and subject to reasonable bookends. The Six Cities cannot support leaving that error factor completely open-ended.

In addition, as discussed in the Six Cities’ previous comments, the ISO should provide a mechanism for compensating resources that have not been designated as flexible capacity resources when it actually uses such resources to meet system flexibility requirements. If the ISO anticipates that such compensation will be available through the Flexible Ramping Product, it should coordinate implementation of the Flexible Ramping Product and Flexible Capacity Requirement provisions so as to provide appropriate compensation for all resources that actually contribute to system flexibility.

ISO Response

The ISO has provided discussion regarding the determination of the epsilon term in the new proposal and will seek additional comments regarding appropriate bounds on the epsilon term.

Company	Date	Submitted By
Beacon Power LLC	August 15, 2013	Mike Berlinski berlinski@beaconpower.com 978-661-2075

Opening Comments

Beacon Power LLC (“Beacon”), a manufacturer and developer of flywheel energy storage systems, appreciates the opportunity to comment on the CAISO’s Second Revised Straw Proposal on Flexible Resource Adequacy Criteria and Must-Offer Obligation. As CAISO notes in the Introduction, flexible capacity is needed to meet certain operational challenges and maintain grid reliability. Beacon agrees that energy storage in general, and notes flywheels in particular, is an important source of extremely flexible capacity that should be included in the Flexible Resource Adequacy program.

2. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.

The proposed process is a reasonable method to address the issue of inter-hour ramping. The CAISO is encouraged to continue to analyze flexibility needs on shorter and shorter time scales as it works to maintain reliability.

ISO Response

The ISO appreciates the support for the process.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited
 - b. Use-limited resources
 1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.
 2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.
 - c. Hydro Resources
 - d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):
 1. Demand response resources
 2. Storage resources

Beacon supports the inclusion of storage resources in the Flexible Resource Adequacy program and the must-offer obligations proposed. Storage resources generally are extremely flexible in their ability to ramp up and down very quickly (on the order of MWs per second) and to have low minimum operating levels (Pmin of 0 MW).

Due to the unique and varied operating characteristics of energy storage, the ISO offering options for the Scheduling Coordinators of storage resources to meet the must-offer obligations. Because there will be some storage resources with shorter durations, which will likely participate in the CAISO markets in the Regulation Energy Management program, we agree with the proposed must-offer obligation option of the submission of economic Regulation bids between 5am and 10pm as a Regulation Energy Management resource. Similarly, because there will be some storage resources with longer durations,

we agree with the inclusion of an option to select one of the demand response must-offer obligations.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

Company	Date	Submitted By
Comverge, Inc.	August 15, 2013	Colin Meehan Director, Regulatory and Market Strategy cmeehan@comverge.com (512)-998-2207

a. Use-limited resources

1. Please provide specific comments regarding the ISO’s four step proposal that would allow resources with start limitations to include the opportunity costs in the resource’s start-up cost.

Certain types of DR resources may be use-limited over certain periods of time, in which case the opportunity cost calculation will have to be used in the resources start-up cost. It will be important to acknowledge that opportunity costs are likely to differ between resource types and across different time frames. As an example, an aggregated DR resource in which multiple residences have controllable programmable thermostats as well as controllable pool pumps or electric water heaters will have different opportunity costs for multiple starts depending on the time of day. Alternatively a large industrial load may have an opportunity cost that is different at the beginning of the month than it is at the end of the month as a result of business cycles.

ISO Response

The ISO is still developing opportunity cost methodology. However, SC must always assess the costs and benefits from providing flexible capacity in instances where a DR resource may have very different opportunity costs over the month or time of day.

1. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

As discussed above, flexibility in the calculation of opportunity costs will be a necessity in order for use-limited resources to participate in the FRA market. In the case of demand response, Comverge encourages the ISO to look toward “value of lost load” studies as one possible approach to evaluating opportunity costs for loads. London Economics recently presented a survey of these studies to the Electric Reliability Council of Texas that may also be useful for the California ISO’s purposes. The literature review can be found at:

<http://www.ercot.com/content/news/presentations/2013/ERCOTValueofLostLoad-LiteratureReviewandMacroeconomicAnalysis.pdf>

ISO Response

Thank you, we appreciate the reference and will review.

- a. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources

The shift from a 17 hour availability period to two 5 hour periods for the Must Offer Obligation is a critical improvement that significantly increases the ability of Demand Response (DR) to participate in the FRA market. The time frames established in the Second Revised Straw Proposal however are likely to restrict the amount of DR able to participate at a level far below the potential for DR during some parts of the ramping periods identified by the ISO. As an example, residential DR is likely to be available during much of the 4:00pm to 9:00pm time period. If residential DR availability is reduced during any part of that period the ISO risks losing a substantial amount of flexible resource potential from a preferred resource due to the inflexible nature of the must-offer obligation.

Converge proposes two potential solutions to this issue that we believe will enhance the ISO's ability to meet flexible resource adequacy needs cost-effectively while maximizing the use of preferred resources. First, the ISO may look to shift both time frames to hours that more closely fit DR availability profiles for residential, commercial and industrial DR. We believe this could be accomplished by working with DR providers who can help the ISO establish time periods and obligation lengths that would allow DR to participate in flexible resource adequacy procurement.

If the proposed time periods and lengths are not flexible from the perspective of the ISO, we propose allowing specialized resources to offer their services jointly with other resources that can provide complimentary services. For instance a DR provider that is able to meet 4 of the 5 hours proposed for the afternoon obligation period could offer their resource jointly with an energy storage provider who can only provide resource adequacy services for one hour. We certainly support and appreciate the ISO's recognition of different resource characteristics by developing character-specific resource obligations, and we believe the permitting this cross-pollination of resources with differentiated characteristics can strengthen the ISO's approach.

We also believe that the specific morning time frame proposed by the ISO is unlikely to attract significant participation from residential, commercial or industrial DR as it begins at a time when many commercial and industrial customers are inactive while residential AC load is generally low in the morning. This time period does contain several hours in which significant DR resources are likely to be available, however customers are unlikely to participate given the lack of sufficient load in the earlier hours of this period. As discussed above, this limitation need not prevent the participation of preferred resources as flexible resource adequacy providers; we believe our proposals above could help address both morning and afternoon DR periods.

The changes proposed above would greatly improve the technical ability of DR to provide capacity to meet the ISO's flexible resource adequacy needs but we feel that the risk associated with imposing must offer obligations on electric customers' needs to be further mitigated before DR can participate in this program. While it would be extremely unlikely, it appears possible given the ISO's current draft that a

DR resource that is bid into the market for a particular month could be called upon for an unlimited number of weekdays during that month, and for the full period of that obligation. This is of course an extreme example which nevertheless demonstrates the risk DR providers are exposed to under the current draft.

The ISO could substantially limit this risk by establishing maximum thresholds for required starts, days or hours deployed during a monthly procurement period. We understand the ISO's need for these resources to be available during every weekday of the month should the need to deploy that resource arise. However, we believe that by not bounding the number of deployments using some reasonable threshold the ISO imposes unnecessary additional costs to the market while substantially restricting the type of resource that is able to provide flexible resource adequacy capacity.

ISO Response

The ISO has proposed changes to the DR window to better align with the underlying availability of dispatchable energy from DR resources. The ISO does not currently have the functionality to align for the aggregation of DR with other non-generation resources. However, the ISO is considering taking on such an initiative. See http://www.caiso.com/Documents/2013_StakeholderInitiativesCatalog.pdf.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

- a. The proposed evaluation mechanism/formula

1. The formula used to calculate compliance

As discussed in our comments in section 3.d.1 we remain extremely concerned with the nature and design of the must offer obligation, which although improved from the first straw proposal still imparts a great deal of risk to DR providers specifically. While the formula used to calculate compliance seems reasonable given our understanding of the incentive mechanism, our concern regarding the structure of the must offer obligation supersedes any potential issues with the evaluation mechanism.

ISO Response

A great deal more detail regarding the incentive mechanism and the calculation of flexible capacity availability has been added to the third revised straw proposal. Additionally the ISO has changed the window within which DR resources would need to be available.

- a. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

This is an interesting and in some ways elegant proposal, however we are concerned that this assumes a level of symmetry that is not likely to be present between over- and under-performance. If a resource over-performs during a month where no resources under-perform there will be no incentive mechanism. It seems that there could easily arise a misalignment between the ISO needs for flexible

capacity availability and the inability of some providers to be available as bid, since the two are not directly correlated except under this provision.

ISO Response

A great deal more detail regarding the incentive mechanism and the calculation of flexible capacity availability has been added to the third revised straw proposal, including how the funding provided from under-performance is credited to over-performing resources, even if performance levels are asymmetric.

1. Are there any additional comments your organization wishes to make at this time?

Thank you for the opportunity to make these comments. We look forward to continuing to engage with the CAISO and other stakeholders regarding the issues contained in our comments.

ISO Response

The ISO appreciate the engagement in this stakeholder initiative.

Company	Date	Submitted By
California Public Utilities Commission - Division of Ratepayer Advocates	August 15, 2013	Peter Spencer Regulatory Analyst 505 Van Ness Avenue, Room 4103 San Francisco, CA 94102 (415) 703-2109 phs@cpuc.ca.gov

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.

To allow for adequate stakeholder input in the CPUC RA proceeding, the final FCR study should be released no later than the end of April each year. The timeline proposed on page 11 of the second draft calls for posting of the final FCR study in May/June. This is too late in the process as the CPUC RA annual decision to adopt FCR requirements for the following year will be adopted in June with a preliminary decision required in May.

ISO Response

The ISO will release the final study in time for the CPUC to include in the final CPUC RA decision in June. However, the results will be issued prior to the CPUC’s RA proposed decision in May.

1. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings.

Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

DRA agrees with the need to include flexibility capacity backstop authority on a one-year forward basis as proposed.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:
 - a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)
 - b. The use of a monthly target flexible capacity availability value
 1. Is the 2.5% dead band appropriate?
 2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?
 - c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

The flexible capacity availability incentive mechanism is proposed to measure and encourage compliance with the enhanced flexibility must offer obligations. The ISO anticipates that the flexible capacity availability incentive mechanism will not be in place until the 2016 calendar year. DRA supports the adoption of this mechanism, but questions the implementation of the flexible must offer obligation in 2015 prior to implementation of a mechanism to measure and assure compliance. Flexible obligations will likely result in ratepayer costs for which commensurate benefits should be required. The proposal states on page 32 that "the ISO must establish a new availability incentive mechanism and measurements for flexible capacity resources..." This important component of the flexible capacity must offer obligations should be adopted in conjunction with MOO and not independently a year later. The schedule for adoption of the incentive mechanism should be revised to require implementation in 2015 concurrently with the enhanced flexible MOO. Alternatively, but less preferable, adoption of the enhanced flexible MOO should be revised until 2016 when it can operate in conjunction with the

incentive mechanism.

ISO Response

The ISO believes implementing the flexible capacity procurement requirements in for 2015 and the incentive mechanism for 2016 is appropriate to allow resources to gain experience with the new must-offer obligations allowing resources to better understand the risk before implementing availability charges.

1. Are there any additional comments your organization wishes to make at this time?

The current proposal related to a flexible capacity must offer obligation is an evolutionary refinement of the RA program. On page 6 of the proposal, the ISO states that the new MOO is a critical component of a new forward procurement mechanism as proposed in a Joint Reliability Framework issued by the CPUC's Energy Division and the ISO. The Joint Reliability Framework is a highly conceptual idea with few details and has not yet been endorsed by either the CPUC Commissioners or the ISO Board of Directors. The current flexible capacity must offer obligation proposal modifies current policies independent of the concept for a new reliability framework and should be adopted regardless of whether the Joint Reliability Framework moves forward.

This initiative should be kept in context with related efforts to address the dispatchability and availability of flexible resources. In comments submitted CAISO on July 25 on the Joint ISO-ED Joint Proposal for a Multiyear Reliability Framework, DRA noted other ISO initiative currently underway that will further enhance the availability of flexible capacity for dispatch by the ISO. These ISO initiatives include, for example: Energy Imbalance Markets, FERC Order 1000, FERC Order 764, Flexible Ramping Product, CAISO Market Optimization, Energy Bid Cost Recovery, Commitment Costs refinements, Energy Self-Schedule Requirements for Self-Provision of Regulation, Integrated Day Ahead Market, and enhancements for Multi-Stage Generation. DRA urges the ISO to move aggressively on adopting and implementing these initiatives by the end of 2014 at the latest and much sooner if possible.

Page 25 of the proposal suggests using the highest LMPs to help inform bidding resources. The proposal offers a method to maximize resource profits by sharing information on the highest LMP at the resource's node. It is not clear why the ISO would assist resources in forecasting the highest LMPs and it has the potential to raise ratepayer costs without apparent benefits.

ISO Response

The ISO is proposing to use historic LMP's to determine the opportunity cost of dispatching a resource. Allowing a resource to include its opportunity cost in bids will improve the efficiency of dispatch offer a year. Optimal dispatch of resources should provide the lowest cost dispatch and provide benefits to rate payers.

Company	Date	Submitted By
Environmental Defense Fund (EDF)	August 15, 2013	Lauren Navarro, JD

		Regulatory Attorney lnavarro@edf.org David Miller, PhD Consultant to EDF renewableintegration101@gmail.com
--	--	---

Introduction

Environmental Defense Fund (EDF) is a national non-profit consisting of passionate, pragmatic environmental lawyers, economists and scientists who believe in prosperity *and* stewardship, focusing on the most critical environmental problems. EDF appreciates the opportunity to provide comments to the California Independent System Operator (CAISO) on their Flexible Resource Adequacy Criteria and Must Offer Obligation Straw Proposal of July 25, 2013 (FRACMOO Proposal).

To ensure that the utilities follow the loading order, the RPS, AB 32 and the other clean energy mandates as outlined in state law, it is essential to account for the specific use limitations of clean resources – including Demand Response (DR) - in developing new markets. EDF acknowledges the CAISO’s ongoing efforts to engage preferred resources such as wind, solar, and demand response in the evolution of our electrical grid.

Specifically, we recognize that the current version of the Proposal begins to reflect the use characteristics of DR resources, the focus of these comments. The following comments address 1) remaining issues that must be addressed to allow demand response to viably participate in flexible capacity markets, 2) the need to ensure that existing resources are fully accounted for in the development of FRACMOO, and 3) concerns around market complexity.

ISO Response

See responses below.

The Role of Demand Response in FRACMOO

California’s clean energy mandates - including the 33% RPS which has been a key impetus for the FRACMOO contemplate electricity generation that displaces fossil fuels and reduces air pollution and greenhouse gas emissions.¹ The success of these policies ultimately depends on the design of FRACMOO: as noted by the California Counsel on Science and Technology, “if electric generation is predominantly intermittent renewable power, using natural gas to firm the power would likely result in greenhouse gas emissions that would alone exceed the 2050 [GHG] target for the entire economy.”² As an alternative to natural gas, DR can provide a low cost, low-emission mechanism for increasing the elasticity of load and integrating renewable generation. Because of its beneficial attributes, California has made DR a top priority in its loading order, directing its deployment before fossil-fuel generation.

In theory, energy markets alone incentivize generation to meet load in real time simply by providing adequate price signals. But, CAISO’s choice to instead define the characteristics of the flexible ramping resource results in the need for specific allowances for DR, renewable and “use-limited” resources.

¹ SBX1 2, Findings and Declarations, codified at Cal. Pub. Util. Code § 399.11 (West 2013)

² California Counsel on Science and Technology, *California Energy Future - The View to 2050*, 4 (May 2011), <http://www.ccst.us/publications/2011/2011energy.pdf>.

Fortunately, CAISO has taken some steps to allow demand response to be utilized in the FRACMOO, providing the beginnings of a solid foundation to support state law. For DR, the Proposal now begins to allow these resources into the market by permitting them to bid either in the morning (6am to 11am) or afternoon (4pm to 9pm) and limiting the submission requirement to non-holiday weekdays.

These improvements are significant, but aren't enough to overcome the risk to the end-use customers who ultimately supply the DR resource: actual business, industrial, and residential customers that must curtail their electricity use. Thus, without some additional changes, it is quite likely that DR will not be able to participate in the FRACMOO market at all, and that the air-quality and GHG benefits of renewable resources will be overwhelmed by emissions from the natural gas used to integrate them. EDF recommends the following additions/clarifications:

1. Concerns with sub-LAP design of PDR: While flexible capacity is a system resource, the actual vehicle for delivering this DR to the CAISO is through the Proxy Demand Response (PDR) program, which requires DR providers (DRPs) to bid at the sub-LAP level. The sub-LAP design of PDR limits the number of participants able to participate locally in PDR, and will therefore limit the ability of DRPs to aggregate flexible capacity, informing the following comments.
2. Determination of Bid Capacity: Given the seasonal nature of load availability, we request that the MOO be calculated on a monthly, rather than annual, basis.
3. Appropriately defining availability windows: By adjusting the availability window from a single 17 hour window to one of two windows - from 6 AM - 11 AM or from 4 PM to 9 PM - the CAISO has made significant progress in developing rules that allow DR to more meaningfully participate in FRACMOO. However, while some loads have flexible hours of operation, some are only available during normal business hours. Therefore, the current DR availability windows could unnecessarily restrict the DR available to participate in FRACMOO. EDF therefore suggests modifying the availability windows to reflect the characteristics of various types of load participating in these DR programs. Another possibility would be to combine different resources to meet the CAISO's restrictions - for example, storage with DR resources.
4. Start Limitations and Opportunity Cost Methodology: The FRACMOO Proposal recognizes that some resources, including demand response, have "use limitations" such as start limits, and states that DR can manage them through its opportunity cost methodology.³ However, because of the variable nature of the processes of the businesses participating in DR, opportunity costs will vary by hour of day, day of week, and day of year. A static cost-based approach may be insufficient to manage the risks to the individual customers who make up the DR resource primarily because those costs vary significantly by time of day or day of year. Until the CAISO's opportunity cost methodology has been proven to function in practice, we recommend the CAISO append a similar approach to the one discussed for "Monthly or Annual Energy of Environmentally Limited Resources," utilizing an additional layer of "monthly or daily limits, or 'hard stops' on the amount a resource can be dispatched."⁴

In doing so, it may be more appropriate for the Scheduling Coordinator (SC) to establish the resources' opportunity cost instead of the CAISO or a third party. For example, the CAISO could limit the requirements for DR based on the characteristics of the resource, incorporating daily, weekly, and monthly start limitations. Additionally, the CAISO could allow demand response resources and their aggregators to black out certain days when primary business responsibilities render them unable to respond as a system resource, such as peak shopping days for retail outlets. These limitations should be treated as a floor (minimum) for participation, not a ceiling

³ Proposal page 29

⁴ Proposal page 25.

(maximum). Over time, experience will help determine accurate and appropriate opportunity costs for this resource in this market.

EDF also requests clarification from the CAISO as to the distinction between the opportunity cost and default energy bid.

ISO Response

The design of PDR is beyond the scope of this initiative. The must-offer obligations for any resource are based on the monthly RA showings. The ISO has modified the must-offer windows for DR resources. The ISO is still developing the opportunity cost calculations. However, the ISO has also proposed availability thresholds that should help limit the risk of availability charges if a use-limited resource used its use limitation prior the end of the month. The default energy bid is used when a resource is subject to market power mitigation and may include the opportunity cost of a use-limitation.

Defining the Scope of FRACMOO: Study Design

Non-FRACMOO system resources that are able to meet operational needs in real time will continue to exist on the system. These include DR, curtailment, and imports, which may not meet the detailed FRACMOO requirements but will be able to meet the need for the resource. It is absolutely essential that these other resources be taken into account in developing FRACMOO procurement obligations to avoid duplication of unnecessary and costly resources. Thus, non-FRACMOO resources must be fully accounted for in the study methodology that CAISO utilizes to determine flexible capacity requirements (FCR) determined for FRACMOO obligation as determined each year.

Relatedly, understanding and accounting for the temporal distribution of FCR needs in a given month will lead to more realistic and cost effective FRACMOO procurement obligations. Thus, the annual study to determine FCR should examine the number of hours per month that will actually experience this maximum flexible capacity need and the extent it can be met with the existing resources described above. The flexible capacity requirements should then be limited to the remaining, net need.

Additionally, creating a truly equitable allocation of flexible capacity requirements to LSEs is a challenging if not somewhat arbitrary task. For example, the CAISO is proposing to allocate load share to LSEs based on a monthly average load factor. However this monthly average load factor makes no distinction between a perfectly flat net load profile, which could be balanced with a perfectly flat conventional generation profile with zero need for flexible capacity, or a highly variable net load⁵ profile, which would incur significant balancing costs resulting from the need for significant flexible capacity. Ideally, any flexible capacity assessment would more closely reflect the specific need for flexible capacity.

ISO Response

The ISO has proposed a new allocation methodology for changes in load.

Market Design and Complexity

In general, EDF strongly supports the use of market based solutions to address the CAISOs reliability concerns. However, while EDF recognizes the importance of developing markets that provide the CAISO with dispatchable resources for meeting load in real time, we are concerned with their complexity. The proposed rules for flexible capacity, along with the operational flexible ramping product, could

⁵ Net load is system load minus wind and solar.

dramatically increase the complexity of the California energy markets.

For example, while EDF appreciates the CAISO's efforts to develop rules that will allow preferred resources such as DR and renewables as well as non-preferred resources such as storage to participate in FRACMOO, we are concerned that developing carve outs by technology type creates additional complexity that will be challenging to get right the first time. We therefore urge the CAISO to allow for sufficient time to learn and evolve as we develop experience with these new markets.

The complexity arising from the creation of these new markets raises two challenges: First, the market rules being developed may make it difficult for resources to economically and efficiently comply with and operate in these markets and could lead to significant barriers to entry for new market participants. Such a scenario would impede development of the very resources the CAISO is looking to develop. For example, average energy prices in the CAISO's system is roughly \$50 / MWh, while, the Net Benefit Test (NBT) threshold, which is the price below which DR is not economic, is also about \$50 / MWh. Such energy prices and NBT thresholds as are currently being experienced within the CAISO are barely sufficient to encourage market participation. Adding the types of transaction costs and risk associated with FRACMOO will further limit market participation. Second, the complexity of these new markets may give rise to gaming opportunities by predatory market participants.

The costs of these missteps will fall on California ratepayers, both in higher electricity prices and missed opportunities for clean, renewable energy. Accordingly, EDF urges caution in development and implementation of these new markets, and asks the CAISO to look for simple solutions whenever possible. Specifically, EDF asks that the CAISO set a process to revisit the role of clean, preferred resources in FRACMOO every few years to ensure that it takes into account their changing characteristics and those of the system as a whole.

ISO Response

The energy prices in the ISO's market are the result of optimizing the bids submitted bid available resources. It is unclear to the ISO how FRAC-MOO will impose any unnecessary transaction costs.

Conclusion

EDF is concerned that the FRACMOO and associated markets are a move away from sending clear price signals to market participants that establish the types of operational attributes required by the CAISO to meet net load, diverging from other successful markets such as PJM. Approaching the market structure in this way creates the need to define specific rules to allow clean resources like demand response and renewables to play the vital role envisioned in California's clean energy mandates.

EDF would like to thank the CAISO for their ongoing efforts towards developing solutions that take into account the value of these clean resources in meeting the needs outlined in FRACMOO, and requests that this process be revisited every few years. EDF looks forward to continuing to work with the CAISO to integrate renewables in a way that both improves air quality and greenhouse gas emissions and fosters a robust and resilient electricity system.

ISO Response

The ISO has worked to define specific rules that ensure the ISO is able to address the need for flexible capacity. These rules have been designed to facilitate as many technologies as possible without compromising on the need to address a defined need.

Company	Date	Submitted By
---------	------	--------------

BrightSource Energy, Inc.	August 15, 2013	David Schlosberg dschlosberg@brightsourceenergy.com (510) 250-8816
---------------------------	-----------------	--

a. What measurement or allocation factor should the ISO use to determine an LRA’s contribution to the change in load component of the flexible capacity requirement?

BrightSource supports CAISO’s original plan to allocate the portion of the flexible capacity requirement resulting from the monthly maximum three hour net load ramp to LSEs based on each LSE’s contribution to the ramp. If flexible capacity requirements are to be allocated only to LRAs, then the allocation of the portion of the requirement resulting from the three hour net load ramp should be based on each LRA’s contribution to the ramp. The use of LSE / LRA-specific portfolio characteristics for allocation methodologies is most appropriate, rather a generic load share allocation. This approach to allocation creates the incentive for each LSE to minimize operational impacts within its own renewable portfolio to the extent possible. However, we note that ideally, the CAISO and CPUC will coordinate to ensure that all flexible capacity procurement mechanisms utilize the same allocation methods and that improved allocation approaches could emerge over time based on flexible capacity program experience.

ISO Response

The ISO is working with the CPUC to ensure consistency across the two agencies to the extent possible.

b. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

As BrightSource has argued in various proceedings at CPUC, CAISO and FERC, not all Variable Energy Resources (“VERs”) have the same impact on system operations. In particular, VERs that have some degree of operational flexibility should be removed from the intermittent resource portfolios when calculating the three hour ramp component of the flexible capacity requirements. These resources, or the flexible portion of these resources, will respond to market signals, rather than solely natural resource availability, and should not be considered as contributing to net load ramps. If CAISO does not account for the flexibility of these resources in determining the flexible capacity requirement, LSEs will be required to procure flexible capacity in excess of the true need, and the incentive to procure RPS-eligible resources with flexible attributes will be diminished.

Specifically, the Solar Thermal component of the allocation formula should include only Solar Thermal facilities without energy storage capabilities. Solar Thermal facilities with energy thermal energy storage capabilities possess varying degrees of dispatchability depending on plant design. Their daily output profiles will be based on, among other factors, energy and ancillary service market optimization results, current and prior operating day solar resource availability (which influences storage system charge status) and Scheduling Coordinator decisions related to contractual obligations. Therefore, output profiles cannot be predicted based on a uniform, geographically-based solar profile forecast. The dispatchable characteristics are more akin to dispatchable thermal or hydro supply resources, which are also not contemplated as components in the allocation formula.

ISO Response

The ISO is willing to consider the different impacts of different VER technologies. This is why the ISO has split solar PV and solar thermal into separate categories in the flexible capacity requirements assessment. Additionally, the ISO will allow an LSE to submit data regarding any additional dispatchability or curtailment provisions.

- a. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

BrightSource supports the development of must-offer obligations (“MOOs”) for the following resources. The MOO for each resource should ensure that the resource can adequately address the CAISO defined system need. The implementation of these MOOs should not detract from sufficient flexible capacity availability at the time of system need, particularly the morning and afternoon ramps.

ISO Response

The ISO appreciates the support for this part of the proposal.

1. Storage resources

The second Straw Proposal proposes that storage resources that provide regulation bids for 17 hours would be eligible flexible capacity resources, but as written this could be construed to be lieu of the three hour ramp requirement. The CAISO should clarify its intent here.

ISO Response

The ISO is looking to address both longer ramps and load following needs with a single product. Therefore, allowing a storage resource to be used for regulation energy management is not in lieu of a three hour ramping requirement.

1. Variable energy resources

The current proposal prescribes different hours of must-offer obligations for Solar PV, Solar Thermal and Wind. The first principle in establishing these hours of obligation should be system need. As long as this first principle is met, then the must-offer obligation hours could potentially be reduced based on natural resource availability, as proposed for solar resources.

In the case of solar resources, all participating generation capacity should be held to the same must-offer obligation hours, regardless of the expectation for storage incorporation. The Solar Thermal hours should be reduced to reflect the natural resource availability – if the first principle of system need is met – or the Solar PV hours should be increased to match the expectation of storage capabilities.

ISO Response

The ISO has based the must-offer obligation for VERs on a combination of ISO need and the availability of VERs' energy source. If the ISO does not account for the storage capacity of a solar thermal resource, than it has not considered the availability of all energy sources for the resource.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

The Availability Incentive Mechanism proposal does not mention natural resource availability related to flexible variable energy resources. Certain resources (hydroelectric and long-start resources) are proposed to be relieved of their must-offer obligation in certain scenarios and therefore presumably would not be penalized for the inability to submit economic bids. BrightSource encourages the CAISO to consider how the incentive mechanism would be applied to flexible VERs and its effects on program participation and system reliability.

ISO Response

The must-offer obligation window for VERs is designed to handle much of the challenges regarding the energy sources for VERs. The remaining management is with the control of the SC for the VER in determining how much flexible capacity they wish to provide from the resource.

- a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)
 - b. The use of a monthly target flexible capacity availability value
 1. Is the 2.5% dead band appropriate?
 2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?
 - c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.
2. Are there any additional comments your organization wishes to make at this time?

1. The generic Effective Flexible Capacity ("EFC") calculation based on the three hour

ramping capability was developed with conventional resources in mind, and it is ill-suited for energy storage resources with great flexibility in ramp rates and less than three hours of absolute storage capacity at a maximum ramp rate. The formula actually incentivizes slow ramping storage resources. A fast ramping storage resource will use up its stored energy in less than three hours, therefore will not be eligible based on the 3 hour ramp, unless CAISO uses the 3 hour capability as a basis for counting rather than eligibility. The EFC quantity should be based on a CAISO-defined benchmark⁶. The EFC will reflect some fraction of the resource's nominal capacity. The CAISO may need to continue its discussions with firms providing these technologies to refine these rules.

2. Based on PG&E's comments at the August 1st meeting, the CAISO should clarify that the minimum requirement for hydroelectric resources is not a capability of PMax for 6 hours, but rather that 6 hours would be the basis for the maximum credit for a hydro resource. The EFC for a given resource will be based on the maximum output (if less than PMax) that can be sustained for 6 hours. [Note: Elsewhere, CAISO has been inconsistent regarding a sustained output versus ramping requirement for other resources. The sustained output requirement for hydroelectric resources should not necessarily apply to other resources, for which the requirement is based upon ramping capabilities.]

ISO Response

The ISO is working with the CPUC to determine if an EFC methodology must be developed to specifically address VERS. The ISO has modified the proposed valuation for hydro resources such the maximum allowing EFC from a resource is based on what the resource could provide over 6 hours.

Company	Date	Submitted By
Center for Energy Efficiency and Renewable Technologies	August 15, 2013	James H. Caldwell, Jr. jhcaldwelljr@gmail.com 443 621 5168
Opening Comments		
<p>The Center for Energy Efficiency and Renewable Technologies (CEERT) hereby submits comments on the Flexible Resource Adequacy Criteria and Must-Offer Obligation Second Revised Straw Proposal of July 25, 2013, and issues discussed during the stakeholder meeting on August 1, 2013.</p> <p>At the outset, CEERT expresses strong support for the process that led to this Second Revised Straw Proposal. It represents a significant step forward from the earlier Revised Straw Proposal of June 13, 2013, and clearly reflects a genuine openness on the part of the CAISO to incorporate stakeholder comments in this critical program design effort. At the same time, CEERT strongly believes that the process would benefit from at least one more round of Straw Proposal(s) before diving into the gritty details of developing tariff language and specific procurement protocols. In CEERT's view, the following issues stand out for resolution at the conceptual level before proceeding to the next phase of program/product development:</p> <ul style="list-style-type: none"> - How to remain connected to the ongoing RA procurement process at the CPUC as the Straw Proposal 		

⁶ See comments of the Concentrating Solar Power Alliance regarding Effective Flexible Capacity for storage resources: <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M068/K703/68703724.PDF> (pg 6).

evolves away from the Joint Parties Proposal that forms the basis for the latest CPUC RA Decision¹ and the 2014 RA procurement cycle.

- How to account for a “third way” to supply needed flexibility to the grid other than (a) FRACMOO resources explicitly procured forward and subject to ISO dispatch under a must-offer obligation in real time, and (b) load modifications such as targeted Energy Efficiency programs that act to reduce the projected daily ramp and thus the forward procurement target. CEERT believes that a significant “missing resource” principally involving imports/exports, self-scheduled price responsive generation and price responsive demand remains unaccounted for anywhere in the FRACMOO process.
- How to appropriately deal with curtailment of renewable resources AND other currently “must-take” resources as a potential partial solution to the flexibility problem.

We address each of these issues in turn.

ISO Response

The ISO has extended the stakeholder process and hopes to have two or three more iterations.

Coordination of FRACMOO Development with CPUC RA Procurement Process

When the Joint Parties made their proposal in the fall of 2012, the word “interim” was prominently featured. When the CPUC essentially adopted that proposal (as modestly revised to allow hydro resources to count for flexible RA), it explicitly labeled the decision as “interim” for the next three years. Unfortunately, it does not appear that the Proposal will survive unscathed for three months, much less three years. As the discussion proceeded at the August 1 workshop, two issues of significant departure from the Joint Parties Proposal became clear.

First, we are mixing apples and oranges by including projected daily ramps together with contingency operating reserves in the same equation defining the forward capacity procurement target. This mix complicates all aspects of planning, procurement, cost allocation and program evaluation. Resources required to address the daily ramps will be dispatched “often,” have relatively few locational constraints, and can and should have a portfolio of specific characteristics including variable start up/notification times, ramp rates, ramp duration, and availability metrics. There is no established procurement and deployment experience anywhere in the world to draw on. All of these metrics are “under development” and are likely to evolve over several years as experience is gained.

On the other hand, resources required to address operating reserves have existing well-developed, relatively stable metrics and spot markets with a long history of real time use in numerous venues around the world. They will be dispatched “rarely,” but must meet a high bar for availability and assured performance when they are called. In general, there will be a strong locational component to the procurement process. The issue of how to include non-traditional “preferred resources” to provide this existing ancillary service is relatively narrow but gets very confusing when considering “dual use” for mitigating daily ramps.

Cost causation for these very different products have little in common. To the extent that we have decided that, in the future, grid reliability would be enhanced by explicitly procuring at least 50% of the total operating reserve requirement on a year ahead forward basis, we should simply do that as a separate but simultaneous RA procurement with appropriate backstop and monthly true up provisions unique to this product.

Second, as we develop appropriate resource specific counting conventions and must-offer obligation protocols on a comparable but not identical basis for the various “flexible resource” categories, the need to conduct a differentiated procurement and subsequent portfolio analysis becomes clear. As SCE, a principal author of the Joint Parties Proposal, stated in the August 1 workshop, “We need to rethink the use of MCC buckets.” CEERT strongly agrees. As events have evolved, we see no rational way other than

to use the concept of MCC buckets as originally proposed by the CPUC Energy Division, estimate ranges of bucket sizes for the various resource categories in advance to guide a differentiated but simultaneous procurement process, and then conduct a post-procurement portfolio assessment to ensure that grid operators have, in sum, the appropriate tools to deal with the real time implementation issues. This issue needs to be addressed immediately in the CPUC RA proceeding quite apart from the FRACMOO program development timeline. Fortunately, the 2014 RA year flexibility needs are widely acknowledged as being relatively modest, so that there is room for significant uncertainty and experimentation without compromising grid reliability.

ISO Response

The ISO believes that flexible capacity and contingency reserves will come for a similar pool of resources. Therefore, to not include contingency reserves could lead to a deficiency in meeting flexible capacity needs, contingency reserves, or both. The ISO has provided an example in the next proposal to clarify this. Further, the CPUC has already approved the formula outlined in the ISO's proposal. Additionally, the ISO has been and will continue to be an active participant in the CPUC's RA proceeding to ensure that these processes are well aligned.

Development of the Forward Procurement Target

Today, there is no real time "flexibility" must-offer obligation, yet adequate flexibility to ensure reliability is available to the grid operator. There is near universal belief (or at least reluctant acceptance) that, at some point in the future, but within the planning horizon, this will change. From the beginning of these discussions, CEERT has consistently shared this belief. Reliability will be enhanced if the grid operator can be assured, through some form of must-offer obligation, that a sufficiently robust real time dispatch stack will be available to provide "flexibility" to meet a changing net load shape as traditional "dispatchable" fossil resources are retired and replaced with preferred resources -- many of which are non-dispatchable and variable. Further, there is a near consensus that forward procurement of this capability involving capacity payments in return for accepting the must-offer obligation is warranted.

On the other hand, no one really believes that the *only* source of real time flexibility now or at any time in the future will be the real time dispatch stack. Efforts to increase the supply of flexible resources available to the CAISO by appropriately defining the metrics required to meet the must-offer obligation and to have those resources economically bid in the real time dispatch stack on a resource specific basis are a welcome development. This Second Revised Straw Proposal is testimony to that effort. However, there will always be significant flexibility available without an explicit must-offer obligation outside of the real time dispatch stack.

The process outlined by the CAISO in this initiative and by the CAISO and CPUC in the Joint Reliability Framework have a prominent place for examining on an ongoing basis the must-offer obligation protocols to expand the range of resources capable of receiving an effective flexible capacity (EFC) value and, thus, potentially becoming eligible to receive flexible RA payments. The process also contemplates a robust ongoing annual process to develop the net load projection including the role of programs such as targeted Energy Efficiency, in modifying that load shape and thereby reducing the overall demand for flexibility.

However, there is no place in the proposed process to record how flexibility was actually rendered in real time, how that compares with year-ahead projections of the demand for flexibility, and what the role of the must-offer obligation actually was in supplying flexibility. Without this critical feedback loop, opportunities for program redirections based on experience will be lost. Cost allocation schemes will not be evaluated for unintended consequences. In this FRACMOO forum and in the RA proceeding at the CPUC, CEERT has advocated the flexible use of epsilon, or the "error term" in the equation used to develop the forward procurement target. CEERT believes that rather than a small "clean-up" term to capture "forecast errors," epsilon is actually very large and has a negative algebraic value. This negative value is necessary to capture the expected contribution to grid flexibility of at least the following

resource categories:

- Imports/exports from/to the CAISO grid from other WECC balancing authorities. Estimates of the potential magnitude of this category were referenced at the recent FERC Technical Conference² by Michael Milligan of the National Renewable Energy Laboratory.³
- Resources that have an EFC value but fail to clear in the forward procurement process, and thus have no must-offer obligation and receive no flexible RA payments. But they nevertheless bid energy into real time markets and/or self-schedule with the daily ramp to take advantage of real time price variations.
- Resources that have no EFC value and either cannot or will not submit economic dispatch bids but self-schedule with the ramp.
- Actively managed price responsive demand.

CEERT believes that the contribution of these resources is significant and at least as reliable as resources with a must-offer obligation. The role of these resources can dramatically grow over time if nurtured and encouraged, and if barriers to passing through real time market prices to individual resources are systematically reduced. The CAISO tariff needs to be scrubbed of cost allocation metrics that reward adherence to scheduled deliveries even when non-dispatched resources could contribute flexibility by going long on the schedule in times of shortage and going short on their schedule in times of surplus. The tariff needs to reward this behavior and punish the opposite behavior rather than require by rote adherence to schedule in spite of its negative impact on the grid. The CPUC needs to reexamine retail rate designs and ensure that electric consumers can contribute flexibility in real time and be rewarded for this voluntary behavior. These efforts will by their nature be incremental and take some time to implement. The annual FRACMOO update process needs to be expanded to include an analysis of progress in this area. Meanwhile, the epsilon term can be adjusted annually to recognize this ongoing effort and thus avoid systemic over-procurement of FRACMOO resources.

ISO Response

The ISO believes that part of the goal of RA is to ensure the ISO has access to sufficient resources to reliably operate the grid. RA showings are there to ensure these resources have an obligation to be available to the ISO. The FRAC-MOO initiative, along with the ISO's work in the CPUC's RA proceeding are designed to ensure the same availability for flexible capacity.

The ISO's SFCP should provide the proper incentive for resources to actually perform flexibly. The calculation of this metric will show if resources have actually made their flexible capacity available to the ISO.

The ISO has included a brief discussion regarding treatment of the inerties for flexibility to the third revised straw proposal. In short, at the initial phases of implementing flexible capacity into the ISO system, the ISO is relying on one product to address multiple needs. Once we have more experience with 15 minute inerties, the ISO may reexamine the potential contribution of inerties in meeting flexible capacity needs.

Curtailement

Limited curtailment of renewable resources as a potential mitigation measure has arisen in several forums in other CAISO and CPUC studies. The subject was broached in this Revised Straw Proposal and introduced in the last few minutes of the August 1 Workshop. CEERT believes it is time to bring this subject to a head. Although much detailed work would need to be done, CEERT believes that a simple but critical modification to the Straw Proposal will make voluntary curtailment of otherwise must-take resources, including variable energy resources, a viable option. All that is required is to marry the Straw Proposal's treatment of use-limited resources with the proposed treatment of variable energy resources.

There is virtually no way that any project financed variable energy resource could accept an open-ended

curtailment obligation under FRACMOO, regardless of the size of the flexible RA payments it might earn. There is no viable bidding strategy that could, by itself, mitigate the financial exposure that would be acceptable to project lenders. However, if there was an ability to nominate a fixed number of hours per year of curtailment exposure analogous to the hard stop allowed for use limited resources with a fixed number of starts or a maximum number of run hours in its air permit, plus the ability to include, e.g., foregone revenues from loss of the Production Tax Credit in the calculation of opportunity costs, many variable energy resources could participate in FRACMOO and offer voluntary limited curtailment in exchange for RA payments just like any other “use limited” resource. CEERT understands that the CAISO has taken a preliminary look at the value of curtailment to deal with at least “tail events” that, if unmitigated, would result in significantly expanding the forward procurement target under FRACMOO, but would rarely be initiated. It is time to bring this information into this FRACMOO forum and work through the details of how to integrate this mechanism into the portfolio.

CEERT’s responses to the specific questions in the Template are given below.

ISO Response

The ISO is not proposing an “open-ended curtailment obligation.” The ISO’s proposal would allow VERs to accepting a willingness to be scheduled at less than forecast. Additional work on this topic must be discussed in the flexible capacity requirement annual assessment.

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please comment.

See general comments above

ISO Response

See response above.

2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs.

CEERT does not believe that simply allocating costs to LRAs instead of LSEs solves any of the serious issues of *any* cost allocation scheme that attempts a cost causation protocol at this point in FRACMOO development. CEERT remains supportive of quickly working towards that goal, but strongly believes that the uncertainty is simply too large, the risk of unintended consequences too great, the level of detail too much, and the near term benefits too small to risk holding up the entire FRACMOO program over resolution of this issue. Where money changes hands, the leap from ground zero to tariff language is simply too high.

CEERT believes that the productive discussions on this point should continue, and any draft resolution for the 2014 RA year should be given a trial as a shadow cost allocation scheme, examined for unintended consequences in real time, and compared to the load ratio share methodology using actual data before proceeding with tariff language/CPUC protocol development.

ISO Response

The ISO continues to works to develop an efficient and equitable allocation methodology.

3. The ISO has proposed must-offer obligations for various types of resources.

As noted above, CEERT strongly supports the new resource specific accommodations in the Second Revised Straw Proposal. We believe that this step is critical and totally in keeping with established FERC principles of comparability. Although CEERT’s specific interest is in the appropriate treatment within FRACMOO of preferred resources such as Demand Response and storage, the resource specific accommodations for other categories, such as use limited, are important as well.

Other than the curtailment discussion above about the marriage of accommodations for use limited resources and variable energy resources, CEERT, at this time, leaves detailed comments on this issue to those resource developers and grid operators with hands-on real world knowledge of the cost/benefit tradeoffs and with skin in the game. At this point, CEERT is comfortable that the process will be allowed to proceed to an outcome acceptable to most parties, and reserves specific comments until later in the process.

CEERT also believes, as also noted above, that there is a broad spectrum of flexibility characteristics within each resource category. Regardless of where the must-offer obligation line is ultimately drawn for each resource type to calculate an EFC value, there will be significant amounts of “flexibility” left on the table that will not qualify for Flexible RA payments in any forward procurement process. The CAISO will obviously account for the impact of these resources in its real time dispatch process. It is critical that these “left over” resources be also accounted for in the planning process, and that their contribution to grid flexibility is allowed to affect the size of the forward procurement target. Again, CEERT proposes to use the epsilon term as a mechanism to deal with this effect during the “interim” process.

ISO Response

The ISO believes that part of the goal of RA is to ensure the ISO has access to sufficient resources to reliably operate the grid. RA showings are there to ensure these resources have an obligation to be available to the ISO. The FRAC-MOO initiative, along with the ISO’s work in the CPUC’s RA proceeding are designed to ensure the same availability for flexible capacity.

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings.

CEERT agrees in principle with the inclusion of a backstop procurement provision especially in light of the proposed portfolio nature of the forward procurement “front stop.” CEERT has no comments on the specifics of the mechanism at this point in the proposal development process

ISO Response

Thank you.

5. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism.

CEERT agrees in principle with the use of an availability incentive mechanism in lieu of bid validation rules to enforce must-offer obligations. We are not categorically opposed to some limited bid validation rules in special circumstances, and leave further development of this concept to market participants with skin in the game at this point in the FRACMOO program development.

ISO Response

The ISO appreciates the support for the aspect of the proposal

Company	Date	Submitted By
Bay Area Municipal Transmission Group (BAMx)	August 15, 2013	Doug Boccignone dougbocc@flynnrci.com 888-634-7509

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment

would be conducted. Please provide any comments or questions your organization has regarding this proposed process.

All Local Regulatory Authorities (LRAs), including the POU LRAs, should be formally included in the assessment process, on par with the CPUC and CEC.

ISO Response

The ISO will conduct an open and transparent assessment process and encourages full stakeholder engagement.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

For each month, the CAISO should consider the expected contribution of each component during the period that is driving the ramping flexibility requirement for that month. For example, if the requirement is based on the evening ramp for the month, then the expected contribution during the evening ramp should be considered (whether positive or negative).

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

- c. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

The load factor approach proposed in the July 25 Proposal does not reasonably represent an LRA's contribution to the change in load component of the flexible capacity requirement. If anything, higher load factors might suggest lower contribution to change in load, not higher as is implied in the July 25 Proposal. But we do not believe that a load factor approach is a reasonable indicator of an entity's contribution to the change in load component. A much better approach would be to allocate the change

in load component based on each LRA's relative contribution to the change in load. BAMx proposed two alternative approaches in its June 26, 2013 comments, either of which could be implemented using the load data CAISO is proposing to use ("...the most current full year of actual load data and the most current California Energy Commission (CEC) approved load forecast ..." July 25 Proposal p. 12). If a particular LSE can demonstrate verifiable anticipated changes in compliance period load vs. historical load, those changes could be incorporated into the data set.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

- a. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

Consistent with BAMx' June 26, 2013 comments on the first Revised Straw Proposal, the allocation approach must reasonably link the requirement being allocated to the entities that give rise to the requirement. For the resource-related drivers (solar PV, solar thermal, wind and DG), the CAISO's proposed approach is reasonable. For the load component, further work is needed (see above response to 2.b.).

Additionally, some parties have argued for a more simplified allocation approach. While we continue to believe that the CAISO's proposed approach, with the load component modifications we have proposed could reasonably be implemented, if simplifications are needed, they must result in an allocation that is linked to causation. For example, it would be better to use an annual load component allocator based on the methodology proposed by BAMx, than it would be to use a monthly allocator based on load factor or peak load, since the BAMx approach better represents each LRA's contribution to the change in load.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement. This new approach includes the elimination of the DG component from previous drafts.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited
 - b. Use-limited resources
 1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.
 2. Please provide information on any use-limitations that have not been addressed

and how the ISO could account for them.

c. Hydro Resources

The proposed must-offer obligation for hydro resources should be based on the resource's committed flexible capacity, which should be capped at the resource's Effective Flexible Capacity. The Effective Flexible Capacity should be the amount of capacity that the resource is expected to be able to sustain for six hours. The ISO should clarify that the Effective Flexible Capacity can be different from the resource's Pmax.

ISO Response

The ISO has proposed changes that are consistent with this recommendation.

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources
2. Storage resources
3. Variable energy resources

6. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

The CAISO should clarify that it intends to exercise flexible capacity backstop procurement authority only after each monthly showing, consistent with its approach to local capacity backstop procurement.

ISO Response

The ISO has made this clarification.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:
 - a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance

- 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)
 - b. The use of a monthly target flexible capacity availability value
 - 1. Is the 2.5% dead band appropriate?
 - 2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?
 - c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.
- 2. Are there any additional comments your organization wishes to make at this time?

We appreciate the opportunity to comment, and again want to emphasize that the allocation of the flexible capacity obligation must be linked to each entity’s contribution to the overall flexible capacity requirement. We believe that with the changes to the load component described by BAMx in our June 26 comments, the CAISO can meet this test.

ISO Response
 Thank you.

Company	Date	Submitted By
Calpine Corp.	August 15, 2013	Matt Barmack barmackm@calpine.com 925-557-2267

Opening Comments

Calpine does not support many of the changes to this version of the straw proposal. In particular, Calpine objects to the technology-specific must-offer requirements for preferred and use-limited resources proposed in section 7.1. The CAISO went to great lengths to standardize RA performance requirements through the development of the Standardized Capacity Product. It now would undo that good work by creating special and weaker performance requirements for at least five classes of resources, including use-limited resources, long-start resources, DR, storage, and renewables. While Calpine recognizes the potential for different types of resources to satisfy flexible capacity requirements, Calpine believes that to the extent that certain resources are not subject to the same performance requirements as non-use limited, non-long start, thermal generation, such resources should not count the same towards flexible capacity procurement requirements and/or the use of such resources to satisfy flexible capacity procurement requirements should be capped, just as the use of

energy-limited resources to fulfill current RA requirements is limited by the Maximum Cumulative Capacity buckets. If the counting of resources with differentiated performance requirements is not adjusted accordingly, resources with relatively weak performance requirements could be overcompensated and, conversely, resources with the most rigorous performance requirements could be undercompensated.

One possible approach to adjusting how resources that cannot comply with the full flexible RA must-offer count towards flexible RA procurement requirements is de-rating such resources to reflect the number of hours in a month in which they are actually available and have sufficient energy to satisfy flexible capacity requirements. For example, suppose that there are 510 hours—17 hours per day for 30 days—in a month during which the must-offer obligation would apply to non-use-limited thermal resources. A DR resource, for example, that is only available during a four hour window on weekdays, i.e., 80 hours per month, would count, 80/510 of its nominal capacity towards flexible capacity procurement requirements. For the purposes of assessing performance incentives, its availability would be assessed over all 510 must-offer hours but it would only incur availability penalties/receive availability incentives to the extent that its availability fell short of/exceeded 80/510. (Its capacity might be further de-rated to account for energy limits.)

This approach is described in more detail below. In addition, these comments address the flexible capacity availability incentive mechanism.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?
 - b. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?
 - c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

Calpine has no specific recommendations at this time with respect to the allocation of flexible capacity procurement requirements. Calpine generally supports an allocation that is proportional to the contribution of an LSE's portfolio of load and resources to net load ramps.

ISO Response

The ISO appreciates the support for this aspect of the proposal.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:

- a. Resources not identified as use-limited

Calpine does not object to the proposed flexible capacity must-offer obligation for non-use-limited resources, but believes that either other resources should be subject to the same must-offer obligation, other resources should count less than their full EFC towards flexible capacity procurement requirements, and/or the use of resources subject to less stringent must-offer obligations to satisfy flexible capacity procurement requirements should be capped, just as the use of energy-limited resources to satisfy generic RA requirements is capped by the Maximum Cumulative Capacity buckets.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

- a. Use-limited resources

Calpine does not generally object to reliance on use-limited resources to satisfy flexible capacity procurement requirements, but to the extent that use-limited resources are not available to provide a threshold amount of energy, their EFC should be de-rated and/or reliance on use-limited resources to satisfy flexible capacity procurement requirements should be capped. For example, there seems to be limited agreement that six hours per day of energy is sufficient for hydro to count towards flexible capacity procurement requirements. The EFC of other resources without the same amount of supporting energy could be de-rated to reflect energy limits, e.g., a DR program that could be dispatched a maximum of 16 hours in a month relative to the 180 hour (30 days and 6 hours of energy per day) threshold for hydro might count at 16/180 of its nominal capacity towards flexible capacity procurement requirements.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources, particularly in calculating the EFC for these resources. The ISO is not proposing a

weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

Both with respect to the flexible RA must-offer obligation and more broadly, Calpine favors market rule provisions to facilitate the inclusion of opportunity costs in offers. Calpine has several resources for which limits on starts are increasingly likely to bind as the resources cycle more due to deeper penetrations of renewables and other factors. Clear mechanisms to reflect such limits in offers are likely to become increasingly important.

ISO Response

The ISO is continuing to develop the opportunity cost provisions.

1. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

- b. Hydro Resources

- c. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources

As discussed above, to the extent that DR is only available to provide upward flexibility during a subset of hours, either its EFC should be de-rated and/or the use of DR to satisfy flexible capacity procurement requirements should be capped. In addition, if it is energy-limited, the EFC of DR should be further de-rated to account for the fact that it cannot perform during all of the hours during which it is "available."

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources such as DR, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

1. Storage resources

Calpine is not opposed to counting storage towards flexible capacity procurement requirements if it can satisfy the threshold requirements of the flexible RA product as currently defined, i.e., to the extent that it can meet three hour ramps. Calpine does not support the proposal to allow storage to comply with the flexible RA must-offer obligation by offering and/or providing regulation. It is unclear how the provision of regulation assists the CAISO in satisfying three hour ramps. If the CAISO intends to procure regulation-capable capacity through forward capacity products, it should do so explicitly rather than by creating an exception for storage in the must-offer obligation for the three-hour ramping product.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources such as storage, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

1. Variable energy resources

As with other availability- and use-limited resources, if VER curtailments are available only during a subset of hours, either their EFC should be de-rated and/or the use of VER curtailments to satisfy flexible capacity procurement requirements should be capped.

In addition, it is unclear how VER curtailments meet the currently proposed flexible RA product definition. Would only curtailments that could be realized and sustained over a three hour period count towards flexible capacity procurement requirements? How do VER curtailments provide upward flexibility? Are VER curtailments qualitatively different from price-responsive increases in load or storage charging that might have the same impact on net load shapes? Does the CAISO intend to propose similarly special must-offer obligations for these other resources that actually increase net load but flatten net load ramps?

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources like VERs, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources. More specifically, the dispatch of a VER resource at a level lower than the resource's forecasted output would allow the ISO to smooth the net load curve and reduce the net load ramp.

1. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings.

Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

Calpine generally supports the expansion of CPM to cure deficiencies in flexible capacity procurement.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:
 - a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

Suppliers should not be punished excessively, i.e., at a multiple of the cost to procure a replacement resource, when a resource is unavailable due to a forced outage. SCP and flexible capacity availability incentive mechanism penalties could be excessive to the extent that they overlap. The potential overlap is complicated by the fact that the two mechanisms would cover different but not mutually exclusive sets of hours, i.e., the flexible capacity availability incentive mechanism would cover the 5 AM to 10 PM period of every day while SCP covers 1 PM to 6 PM on non-holiday weekdays in the summer and 4 to 9 PM on non-holiday weekdays in non-summer months.

There are at least two potential approaches to address the overlap: First, the penalties could be mutually exclusive so that resources sold as flexible capacity would be subject only to the flexible capacity availability incentive mechanism and not SCP incentives. Under this approach, the CPM price might constitute an appropriate basis for flexible capacity availability incentive payments because it reasonably reflects the cost of a substitute resource. (If the Joint Reliability Framework is implemented, prices from the associated clearing price auctions (RSAs) might constitute an appropriate basis for incentive payments.)

Another potential approach is to assume that the current CPM price that is the basis for SCP penalties reflects the cost of a resource that is able to satisfy both generic RA performance requirements during SCP availability assessment hours as well as comply with the expanded must-offer during the hours covered by the enhanced flexible capacity must-offer obligation. If, under this approach, availability in each hour were deemed equally important, hourly penalties would be inversely proportional to the greater number of flexible RA must-offer hours (510 hours in a 30 day month) rather than the smaller

number of SCP availability assessment hours (100 hours in a month with 20 non-holiday weekdays). The failure to comply with either must-offer would subject a resource to penalties of \$0.011/kW-hour, i.e., the current CPM price of \$5.625/kW-month normalized by the 510 hours of the flexible RA must-offer, outside of any performance dead-bands. One potential problem with this approach is that a generic RA resource that fails to perform in every SCP availability assessment hour in a month would be at risk for less than the full cost of a replacement resource, i.e., it could lose at most 100 hours * \$0.011/kW-hour, i.e., \$1.10/kW-month rather than the full CPM price of \$5.625/kW-month.

ISO Response

The ISO has provided much more detail regarding the SFCP mechanism. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO's preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility.

- a. The use of a monthly target flexible capacity availability value
 1. Is the 2.5% dead band appropriate?
 2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?
 - b. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.
2. Are there any additional comments your organization wishes to make at this time?

Calpine continues to object to the full counting of long-start resources, i.e., resources that cannot be started within the operating day, towards flexible capacity procurement requirements. Calpine supports option 1 of 7.1.3, i.e., not counting resources that cannot start within the operating day towards flexible capacity procurement requirements (or at least de-rating the flexible capacity of long-start resources).

In the event that the CAISO adopts option 2, counts long-start resources fully towards flexible capacity procurement requirements, and considers the flexible RA must-offer obligation for such resources satisfied for a day if they are offered in the IFM and not committed, then Calpine requests that the CAISO clarify and explain Example 6 of the Second Revised Straw Proposal, i.e., that the CAISO would weight availability in the IFM more heavily in the calculation of availability for resources for which the real-time must-offer obligation is waived.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for long-start resource. The ISO is not proposing a weighting methodology at this time. Currently, many of these resources are certified to provide ASW, demonstrating their willingness and ability to be flexible.

Company	Date	Submitted By
Independent Energy Producers Assoc (“IEP”)	August 15, 2013	Steven Kelly Policy Director
<p>1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.</p>		
<p>IEP is supportive of the process for determining an annual flexible capacity requirement assessment. Presently, the proposal is a 90 percent monthly flexibility procurement obligation one year ahead; and, a 100 percent flexibility procurement obligation one-month ahead. This is similar to what exists for “system” RA today. In the context of creating an LSE obligation to make a “showing” in 2014 for 2015, applying the “system” RA percentages makes sense due to limited time. On the other hand, in terms of an on-going flexible RA procurement obligation (either in one year ahead or a multi-year forward context), IEP recommends revisiting these percentages to ensure that they are set at a level to achieve the planning and procurement behaviors necessary to maintain overall grid reliability.</p>		
<p>ISO Response</p>		
<p>The ISO appreciates the support on this aspect of the proposal. Additionally, as the ISO has said numerous times, this is an interim solutions and a longer term more granular solution is needed.</p>		
<p>2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system M&ID/KMeeusen Draft Confidential – For Internal ISO Use Only Page 2 of 5</p> <p>flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA’s jurisdictional LSE’s contribution to the ISO’s largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones.</p>		
<p>IEP supports assigning a flexible capacity procurement obligation on Load-Serving Entities (“LSE”). In addition, allocating the flexible RA based on a local reliability area (“LRA”) to the LSE based on peak-load ratio share seems reasonable. To the extent that other parties offer alternative proposals regarding how to allocate flexible RA among LSEs, we look forward to hearing and discussing other parties’ alternative proposals.</p>		
<p>ISO Response</p>		
<p>The ISO has modified the allocation to LRA’s contribution to changes in load,</p>		
<p>3. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO’s proposed must-offer obligations for the following resources types: a. Resources not identified as use-limited</p>		
<p>IEP requests clarification as to the treatment of self-schedules of non-use limited resources under its proposal to require economic bids for energy in the DA and real-time markets.</p>		
<p>ISO Response</p>		
<p>Clarifications have been made to the third revised straw proposal</p>		

b. Use-limited resources

IEP supports the development of flexible capacity products that are clearly defined and operationally based. Once having expressed these products, all technologies capable of meeting the need, and abiding by prescribed performance obligations, ought to be eligible to compete to provide the product. Given clearly defined, flexible capacity product needs, we recognize that many so-called use-limited resources may have flexible RA capacity available even after taking into account the limitations on use.

ISO Response

The ISO is continuing to develop this aspect of the proposal.

1. Please provide specific comments regarding the ISO’s four step proposal that would allow resources with start limitations to include the opportunity costs in the resource’s start-up cost.
2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

CHP is an additional resource that ought to be treated as a use-limited resource. Depending on their size and operational characteristics, some CHP resources have the ability to provide a flexible capacity product to the CAISO while adhering to associated performance obligations once having sold that available flexible capacity. For example, hypothetically, a 500 MW CHP facility may have 300 MWs committed to match its thermal obligation, and it may have 200 MWs of flexible capacity available to the CAISO. Under this scenario, the proper accounting for the resource’s flexible capacity would not be the difference between resources Pmin and Pmax, since the resource may have a thermal obligation above its Pmin. Rather, the amount of flexible capacity available to the CAISO should properly be defined as the difference between “Pminplus” (taking into account the thermal obligation) and PMax. The FlexMoo program should enable use-limited resources such as CHP to specify their availability to provide flexible capacity in light of their use limitations. This flexible capacity availability would be prescribed in the resource’s CAISO Master File. Accordingly, the resource would (a) specify in its Master File the availability of its flexible capacity, (b) subject to the availability of the resource prescribed in the Master File, the CAISO would call on the resource as appropriate under the FlexMoo Program, and (c) for that amount of flexible capacity sold, the use-limited resource would be subject to the performance obligation similar to resources that are not use-limited.

ISO Response

CHP may provide flexible capacity. However, the SC for the resource will have to consider how much of the resource’s output will be needed to serve native load and how much can be bid onto the ISO markets as flexible capacity. If the resource is set to serve native load, then the SC would likely reduce the amount of capacity they sell as flexible.

c. Hydro Resources

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

While the availability of flexible capacity from use-limited resources may vary from other resources, once use-limited resources have committed to provide a flexible capacity product then they must be subject to performance obligations similar to resources that are not use-limited.

ISO Response

The ISO believes that hydro resources have the ability to provide significant amounts of flexibility and the ISO believes the must-offer obligation is appropriate. The ISO will continue to monitor the reliance on all use-limited resources and will make changes should reliability of the system be jeopardized

because of over reliance on use-limited resources.

1. Demand response resources

2. Storage resources

3. Variable energy resources

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

IEP is not aware of any commercial or technical reason for adopting a different set of performance obligations for flexible RA as exists for generic RA (system and/or local). IEP assumes that the following CAISO Tariff provisions will apply to the provision of flexible RA capacity:

- Section 9.3.1.3.1 (Replacement Requirement for LSEs);
- Section 9.3.1.3.2 (CAISO Replacement Determination for LSE RA Plans);
- Section 9.3.1.3.3 (Replacement Requirement for RA Resources).

We request clarification as to whether these sections will govern the FlexMoo program.

To the extent that CAISO Backstop Procurement is triggered, The CAISO proposes that backstop procurement initially will be through the Capacity Procurement Mechanism (CPM). As a general matter, the CPM mechanism was not designed nor priced in the context of backstopping flexible capacity. However, given the limited duration of the CPM (early 2016), using this backstop mechanism may appear reasonable for the initial program period. Ultimately, the price paid for backstop procurement should be set at a level to dis-incent LSEs from leaning on the CAISO's backstop procurement authority.

ISO Response

The ISO has provided additional detail regarding replacement and substitute capacity. Additionally, the ISO has provided much more detail regarding the SFCP and backstop mechanisms. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO's preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility.

Company	Date	Submitted By
Northern California Power Agency (NCPA)	August 15, 2013	Tony Zimmer 916-781-4229 tony.zimmer@ncpa.com

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment

would be conducted. Please provide any comments or questions your organization has regarding this proposed process.

NCPA believes that all Local Regulatory Authorities (LRA), including the POU LRAs, should be formally included in the assessment process, on par with the CPUC and CEC.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

General Comments: NCPA supports CAISO's overall approach to allocating responsibility for flexible capacity as consistent with the principles of cost causation. NCPA disagrees with commenters, particularly the CPUC, claiming that flexible capacity should be allocated similarly to local capacity responsibility, or that the CAISO's proposed methodology in any way violates California's environmental mandates.⁷

The methodology for flexible capacity allocation should reflect the choices made by LSEs to comply with the state's environmental mandates. California's governmentally-owned utilities are not exempt from the state's Renewable Portfolio Standard, and they have invested heavily in renewable resources, as have CPUC-jurisdictional entities. Indeed, they often did so well before the RPS standard was imposed. NCPA, for example, has invested in both base load renewable resources (such as geothermal plants) which do not impose significant variability on the grid, and in dispatchable renewable resources (such as small hydro, landfill gas plants, and firmed wind and solar), which can and do contribute flexible capacity to the grid.

The fact that the RPS standards apply to all LSEs does not mean that the costs of complying with the RPS should be spread to all LSEs in peanut butter fashion. The fact is that individual LSEs (based on their own decisions or mandated by their LRAs) have made different investment choices in how to meet those mandates. Some LSEs have invested heavily in unfirmed intermittent resources, such as solar and wind, that impose more variability on the grid. Others have invested in base load or dispatchable renewables that minimize the variability they impose on the grid. Still others have invested in a mixture of intermittent and base load (or dispatchable) renewables. LSEs that invested in renewable resources with lower variability should not now be punished by bearing higher costs to pay for intermittent resources acquired by others.

Moreover, if LRAs are to retain a meaningful ability to prescribe resource choices for their jurisdictional

⁷ See CPUC comments of July 2, 2013.

LSEs in the future, they cannot rely on shifting the costs associated with those choices to others. If everyone has to pay for everything, LRA choices or directives become meaningless.

The allocation methodology for Local RA is different, because it is designed to be fair to all LSEs and their ratepayers with reference to choices that were made decades ago. Prior to deregulation, the grid was designed to serve loads at the least cost to all. That often meant locating generation in sparsely populated areas, and serving distant cities using long transmission lines. Restructuring upset that design by threatening to impose different cost consequences on ratepayers depending on where they lived. The need to acquire Local RA stems from the fact that the historical grid design created both load and generation pockets, and sometimes makes it necessary to acquire generation in specific areas for reliability purposes. Allocating Local RA costs to all load recognizes that no ratepayer had effective choice in overall system design in an earlier era, and that certain groups of ratepayers (both IOU and governmentally-owned) should not bear disproportionate costs based on their place of residence or business, just because the rules had changed.

The RPS requirements, by contrast, are of much more recent vintage, as are the decisions of the LRAs that dictated renewable resource acquisition. Like the CPUC-jurisdictional LSEs, government-owned LSEs make investments in renewables that took into account their obligations. Because of the design of its contractual relationship with the CAISO, NCPA specifically took variability and load following capability into account when planning resource acquisition. In short, all LSEs have recently had the opportunity to make investment decisions based on the new environmental laws, and did so. LSEs that made investments to meet those standards and to do so in a way that does not worsen grid variability (and to contribute flexibility when needed) should not have to bear the costs of others that made different decisions. Fundamentally, LSE's should be responsible for the costs their own loads and resources may impose on the grid, and receive payment for the flexible characteristics that their loads and resources may contribute to the grid. This basic equity requires examination of individual load characteristics and resource portfolios.

ISO Response

The ISO agrees and continues to work towards an allocation of flexible capacity requirements consistent with causation principles.

- a. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

To be consistent with cost causation, LSEs should only be allocated a flexible capacity requirement based on their individual contribution to the total change in load at the time the total change in load is measured. The total change in load should be allocated based on a LSE's proportional coincident share of the total change in load during the three (3) hour period used to set the requirement. This will ensure that the total change in load component is allocated in a manner that is consistent with the other contributing factors. To do otherwise risks over- or under-allocating the total amount of flexible capacity requirement.

Regarding CAISO's source of data, CAISO could request that each LSE provide prospective load forecast information to be used by CAISO for allocation purposes as part of the annual process used to establish

the flexible capacity requirement (similar to the local capacity allocation process or CRR process). Alternatively, CAISO could use historical load or load distribution factors to allocate the coincident forecast CAISO is using to calculate net load to individual LSEs.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

a. Hydro Resources

NCPA supports the hydro-specific rules proposed by CAISO, where such rules reflect the particular needs of hydro resources and the reality that hydro resources constitute a significant portion of the fleet flexibility.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

Company	Date	Submitted By
NextEra Energy Resources	August 15, 2013	Kerry Hattevik Regional Director West Government Affairs (510) 898-1847 (office) (510) 221- 8765 (cell)
Opening Comments		
NextEra Energy Resources, LLC (“NextEra”) appreciates the opportunity to comment on the California Independent System Operator Corporation’s (“CAISO”) <i>Flexible Resource Adequacy Criteria and Must-Offer Obligation Second Revised Straw Proposal</i> dated July 25, 2013. NextEra’s comments are limited to a request that the CAISO consider refining its flexible resource adequacy eligibility criteria to ensure the qualification of solar thermal resources with natural gas backup generation and clarifying certain other elements of the second revised straw proposal.		
ISO Response		
Thank you.		
The CAISO should broaden the flexible resource adequacy (“RA”) eligibility criteria to solar thermal resources with natural gas backup		
NextEra is the owner and operator of the Solar Electric Generation Station (“SEGS”) solar thermal facility. The SEGS facility consists of seven units totaling 310 MW of solar thermal capacity. The facility		

also has natural gas back up generation totaling 270 MW of installed capacity. The SEGS facility currently operates under a Qualifying Facility (“QF”) commercial agreement. Although the natural gas generation is co-optimized with the solar thermal generation, the natural gas generation has the ability to operate independently from the solar generation to provide flexible RA. However, the flexible RA must-offer requirement must be refined to address the operating characteristics of a natural gas facility associated with a solar thermal generation plant.

Pursuant to the CAISO second revised proposal, flexible RA resources are generally required to submit economic bids in the day-ahead and real-time markets every day from 5 AM-10 PM. The hours subject to the must-offer obligation for flexible variable resources are differentiated by energy source and technology. It is presumed that variable resources will produce energy to the full availability of their fuel source such that the flexible RA offer is restricted to bids reflecting the resource’s willingness to operate below full output capability. This presumption is reasonable for most intermittent resources. However, it conflicts with variable resources with storage or, in the case of SEGS, natural gas backup capability. A solar thermal facility with natural gas back up will be able to submit flexible RA bids representing: 1) the facility’s willingness to operate below full output for the solar thermal portion and 2) the facility’s ability to ramp up or down from the natural gas portion of the output when solar is operating at less than the permitted interconnection output. The must offer obligations as proposed do not allow for the natural gas output of a hybrid solar resource to provide flexible RA services.

The SEGS units co-optimize the solar and natural gas inputs for each unit up to the nameplate capacity of the resource. Currently, the natural gas portion of the SEGS facility operates at sunset during the summer months. The natural gas cannot supplement output, as noted, while the solar fuel allows the facility to operate at full output, but is capable of operating at increased output before and after those full-load solar production hours. In non-summer months, when the solar collection often does not result in full solar production, the natural gas boiler can complement output and provide flexible ramping (up or down) both during daylight hours and non-peak hours. As such, when the facility is generating energy from solar only, the amount of flexible upward ramping capacity at a given time can be measured as the delta between the solar production and allowed PMax of the unit. For these reasons, NextEra requests that the CAISO consider broader criteria for natural gas generation flexible RA eligibility for a solar thermal facility in order to recognize the ramping capability that such resources can offer.

ISO Response

The ISO has put forward a proposal that would allow all technologies to provide flexible capacity as long as they are able to respond to five minute dispatch instructions. The SC for a resource will be able to make the determination regarding how much flexible capacity they wish to provide. The ISO does not believe there is anything in the FRAC-MOO proposal that would prohibit such a resource from providing flexible capacity.

CAISO should further explain the parameters of the must-offer obligation for flexible variable resources

Pursuant to the second revised straw proposal, variable resources providing flexible RA would have a must-offer obligation for the hours that are differentiated by energy source and technology. For these flexible variable resources, the RA offer would reflect the resource’s willingness to operate below full output capability. For solar PV and solar thermal flexible variable resources the must-offer obligation is during daylight hours that change depending on the time of year. For wind flexible variable resources the must-offer obligation is 5 AM-10 PM throughout the year. While the must-offer obligation for the various technologies appears to have been developed to align the resources’ willingness to operate below full output with the hours that the energy source types are typically producing energy, with

regard to solar, the winter hours do not align with realistic solar production periods. It would be helpful if the CAISO could either revise the offer hours in the winter months or expand on how solar resource owners can manage more limited production in the winter months either through the outage protocols or some other means.

ISO Response

These hours have been adjusted to better align with daylight hours.

CAISO should clarify its assumptions in developing monthly average load factors for flexible RA allocation purposes

The second revised straw proposal states the intent to allocate the flexible RA requirement to the Load Serving Entity (“LSE”) based on changes in load by monthly average load factors. NextEra requests clarification on the assumptions and calculations that will be used to determine the load factors. For example, are load factors based on forward looking projections or historical averages for the LSE? Similarly, NextEra requests clarification on the assumptions used to calculate a LSE’s percentage of contracted wind, solar PV, solar thermal, and intermittent DG. These factors may be difficult to forecast reliably in a competitive environment with potential customer migration and short term procurement of supply contracts.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement. The ISO believes the assumptions used to determine the contributions to wind, solar, and solar thermal are discussed in sections 4 and 5 of the new proposal. It is unclear what additional clarification is sought.

Conclusion

NextEra appreciates the opportunity to comment on the CAISO’s proposal

ISO Response

Thank you.

Company	Date	Submitted By
NRG Energy, Inc. (“NRG”)	August 15, 2013	Brian Theaker brian.theaker@nrgenergy.com 530-295-3305
<p>1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.</p>		
<p>The CAISO’s requirements assessment proposal is reasonable. NRG appreciates the CAISO providing timing details and agrees with conducting this process in parallel with the local capacity requirements assessment process.</p>		

How the error term ϵ will be derived and used warrants additional discussion.

ISO Response

The ISO appreciates the support on this aspect of the proposal and has added additional detail regarding the determination ϵ term.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

Stochastic techniques, which would consider the potential variations over a month, could be used to initially develop the forward allocation. In lieu of stochastic techniques, the contributing factor that creates the maximum demand for flexibility should be used.

ISO Response

The ISO will continue to refine the process by which the flexible capacity requirements are determined. As better approaches are developed the ISO will consider these approaches in the flexible capacity requirements assessment.

What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

Same as above.

ISO Response

See response above.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited

The CAISO's proposal is reasonable. However, NRG remains concerned that a blanket prohibition on self-scheduling any flexible capacity could prove to be too restrictive. While NRG strongly supports mechanisms that encourage all market participants to submit economic bids and not to self-schedule, submitting self-schedules to deter adverse market outcomes or instructions is sometimes prudent and necessary.

Further discussion of the interaction of self-schedules is necessary. For example, will a unit with a start-up time greater than 90 minutes be allowed to self-schedule its minimum load output level and still provide flexibility above that level?

NRG hopes the CAISO will address any market performance issues that encourage market participants to self-schedule their resources to avoid adverse market outcomes.

ISO Response

The ISO understands that some resources may wish to self-schedule their resources. Resources with start-up times of greater than 90 minutes would be allowed to self-schedule to Pmin, but would have to provide economic bids for the amount of flexible capacity they have provided.

a. Use-limited resources

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

The CAISO's proposed approach is reasonable. However, the success of using opportunity cost projections to effectively ration use will depend on the accuracy of the projections. While NRG does not have any specific recommendations for alternate approaches at this time, NRG supports the comments offered at the August 1 meeting that relying on opportunity cost projections as the sole means for rationing use imposes too much risk, especially if reaching use limits could cause the CAISO to impose non-availability penalties. NRG requests the CAISO consider exempting use-limited resources who have reached use limits from any such penalties.

ISO Response

The current proposal exempts use-limited resources that have reached use-limitations from such penalties given they have met certain threshold requirements. The idea is to strike a balance between over-penalizing use-limited resources that are able to provide significant flexible capacity to the grid and under-penalizing resources that are shown as flexible resource adequacy resources, but are unable to provide continued flexibility across the month or year.

a. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources

NRG does not support different offering obligations for resources that are providing the same product (capacity that counts towards meeting monthly flexibility requirements).

The CAISO's concern that DR resources may not be able to provide adequate flexibility if the underlying load is insufficient is a valid concern. However, the solution to this concern is not to allow DR to provide a discriminatorily inferior flexibility product by providing it with a different offering obligation. Instead, the solution is to ensure that there is sufficient load behind the DR to allow it to provide the flexibility it has offered. One possible way to do this would be to allow DR to provide quantities of flexibility that vary hourly, and only to provide flexibility in those hours in which there is sufficient load to support the flexibility offered. While this would add complexity, it would reflect the operational realities associated with DR while avoiding the application of discriminatorily different offering obligations.

NRG does not understand how the CAISO's proposal to allow DR to offer into one of two shortened offering periods (6:00 AM to 11:00 AM and 4:00 PM to 9:00 PM) would ensure that there is sufficient load behind the DR to allow it to provide the flexibility offered. Instead, the CAISO's proposal simply appears to be allowing DR to provide an inferior flexibility product that would still count the same towards meeting flexibility requirements.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources like DR, particularly in calculating the EFC for these resources. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

1. Storage resources

Inasmuch as NRG does not support the CAISO's proposed flexibility offering obligation for DR resources, NRG does not support storage resources choosing the offering obligation proposed for DR resources as an option.

Further, NRG does not support the CAISO's proposal to allow certain kinds of storage resources to satisfy flexibility requirements by offering into the Regulation Energy Management (REM) market. The CAISO's proposed flexibility requirement is based on a three-hour period in which resources are expected to be able to ramp over, or fully ramp within and sustain the final output, within that three-hour period. Having non-pumped-storage storage resources provide flexibility by participating in the REM market – which provides for resources to be charged and discharged over a much shorter time frame than three hours - is not consistent with that design. If hydro resources are required to provide energy over a six-hour period in order to qualify to provide flexibility, it is not clear how storage resources could provide the same flexibility product by participating in the REM market.

The proposed interim flexibility paradigm, simplified to a three-hour ramp, does not lend itself to trying

to force-fit the square peg of storage into a round hole. When the flexibility paradigm is re-visited and re-scoped to cover the maximum ramp, load following, and regulation products, the CAISO should re-visit how storage resources count towards providing flexibility over the appropriate time horizon and in the appropriate market. Once that review is complete, the CAISO and market participants can then work to determine the nature of the offering obligation that attaches to those resources.

ISO Response

The ISO is looking to address both longer ramps and load following needs with a single product. Therefore, allowing a storage resource to be used for regulation energy management is not in lieu of a three hour ramping requirement.

1. Variable energy resources

The CAISO's proposal for allowing variable resources to provide flexibility provides a reasonable platform for these resources. Unlike the CAISO's proposal for assigning a flexibility offering obligation to DR, the CAISO's proposal with regards to VERs reflects the reality that solar VER resources do not have the necessary output behind them to be able to provide flexibility during some hours of the day.

ISO Response

The ISO appreciate the support for this aspect of the proposal.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

- a. The proposed evaluation mechanism/formula

1. The formula used to calculate compliance

The CAISO's proposal to use an availability approach to encourage the submittal of economic bids for flexible capacity is an intriguing way to try to deal with the problems that could be created by inserting "default" economic bids on use-limited resources. However, inserting a bid that properly reflects opportunity cost as proposed by the CAISO if a resource owner fails to submit a bid reflects the opportunity costs would also ensure the resource is offered, but not in a way that would unduly jeopardize use limits. While creating "default" bids that reflect projected opportunity costs is not a panacea – whether bids that include projected opportunity cost will adequately ration the use of use-limited resources will depend on the accuracy of the projected opportunity costs - it may be a less complicated way to ensure that flexible capacity is economically offered than yet another complex system of penalties.

Referring to this as an "availability" mechanism does not align with the purpose of the mechanism, which is to ensure that the operators of resources that count towards flexibility requirements submit

economic bids for that flexible capacity. A resource may be fully available even if a bid is not submitted for it. This should be referred to as an economic offering mechanism rather than an availability mechanism.

ISO Response

The ISO believes that the reliance on the resource to submit a bid and the incentives created in the SFCP provides a superior framework when compared to bid insertion. Resources that fail to submit bids may do so for two reasons 1) they do not wish to be flexible or 2) they are not available. The SFCP should mitigate the frequency of (1) occurring. If (2) is the reason no bid was submitted, then the ISO does not believe it is appropriate to insert a bid and then expect the resource to be available.

1. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

The interaction between SCP non-availability penalties and the proposed flexibility non-availability penalties should be more fully described and discussed. As NRG understands from the August 1 meeting, the CAISO is proposing that resources that are simultaneously providing both flexible capacity and RA capacity would not be subject to both Standard Capacity Product non-availability penalties and flexibility non-availability penalties for the same amount of capacity.

ISO Response

The ISO has provided much more detail regarding the SFCP mechanism. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO's preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility.

- a. The use of a monthly target flexible capacity availability value
 1. Is the 2.5% dead band appropriate?

This dead band value has the ostensible benefit of being the same dead band value as that used in the application of SCP non-availability penalties. However, whether this 2.5% dead band value is appropriate for this use can only be evaluated by examining distributions of SCP availabilities. NRG requests that the CAISO provide market participants with monthly distributions of SCP availabilities to allow market participants to evaluate whether this dead band is appropriate.

ISO Response

Since market participants obviously have much more control as to whether they economically bid or self-schedule than the forced outage rate of a resource, the ISO does not believe a historical measurement of economic bidding has the same relevance that historical forced outage rates do. Rather, the ISO is proposing the 2.5% dead band for the SFCP merely for consistency with the SCP.

1. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

The prevailing backstop price provides reasonable short-term compensation for non-RA resources that meet RA requirements, considering (1) the very short-term nature of the compensation relative to the time frame over which a resource owner must incur costs to remain available to the CAISO and (2) the likelihood that any designation may not be for the full capacity of the unit. However, as a penalty price, and as the CAISO is well aware, the current CPM backstop price is well above the going price for system RA capacity and is likely well above even the going price for local RA capacity. This disparity imposes an asymmetrical risk for parties providing RA capacity, especially in a paradigm in which the CAISO severely restricts a resource owner’s right substitute non-RA capacity to mitigate the forced outage risk. Apart from having two prices (one for short-term compensation and another for penalties), there is no “right” solution to this problem.

ISO Response

The ISO has provided much more detail regarding the SFCP mechanism. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO’s preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility.

- a. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

2. Are there any additional comments your organization wishes to make at this time?

No.

ISO Response

Thank you.

Company	Date	Submitted By
California Department of Water Resources	August 15, 2013	Mohan Niroula Mohan.niroula@water.ca.gov 916-574-0712

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has

regarding this proposed process.

CDWR's response: CDWR appreciates the opportunity to provide comments on the second revised proposal. The annual process appears in synchronization with other relevant Resource Adequacy (RA) processes. CDWR has following comments and questions:

- a. CEC Load forecast in the need assessment: ISO mentioned in the August 1 meeting that Flexible Capacity Requirement (FCR) assessment will include the demand forecast from CEC's Integrated Energy Policy Report (IEPR) data. The FCR assessment is intended to be performed each month, so monthly load forecasts will be needed. However, the CEC IEPR data produces one annual number representing each LSE's coincident peak demand for the entire year; it does not have granularity at a monthly level. How will ISO utilize the CEC IEPR data to derive 12 monthly forecasts of load? It appears that the CEC IEPR requires reporting the last 2 years' historical hourly load data. How is an LSE's annual coincident peak demand forecast from IEPR going to be translated to LSE's monthly demand forecast for FCR assessment purposes?
- b. Annual flex RA demonstration: Is an annual showing of flexible RA only for summer months similar to the current annual system RA showing?
- c. NQC and EFC correlation: The proposal indicates that in March, a list showing Effective Flexible Capacity (EFC) will be prepared. EFC depends on the Net Qualifying Capacity (NQC) of a resource. How does the EFC listing timeline correlate with NQC process including deliverability assessment for the next compliance year? Will the EFC be updated intra-monthly (for increase) as the NQC is today? CDWR believes that EFC should be allowed to be update within the compliance year similar to NQC today as updates become available.
- d. Renewable production profile reporting for FCR assessment: Is there going to be a standard approach for reporting renewable production profiles? CDWR believes production profile can be useful in allocation process also.
- e. Load modifying demand side programs-DR not bid into the market: How does ISO consider an LSE with wholesale load having decreasing load ramps coincident with ISO system need for flexible ramp up capacity (e.g. morning and evening ramp up periods)? Will such an LSE's load profile be recognized during FCR assessment and FCR allocation process? FCR assessment will not see the need for ramp up flexible capacity for such load during the ramp up period; however, allocation should consider the fact that allocation due to change in load for such LSE be recognized for not causing coincident flexible ramp up need but helping the ISO system by reducing ramp up needs. Thus, such loads should not be, at least, allocated FCR for change in load.

ISO Response

The ISO has scaled ISO actual system peak in the previous year to match the CEC's IEPR forecast. Additionally, has scaled all load proportionately. For example, in the results for the 2014 RA scaled 2012 actual load data such that the system peak equaled the forecasted IEPR system peak. All other hours were scaled using the same proportional weighting.

The showings will be required for all 12 months, not just the summer months.

The ISO has modified the process such that the timing of the EFC and the NQC lists will occur at the same time.

The ISO is using renewable production profiles that account for location and technology type. The ISO will use the same profiles for all resource located in the same CREZ for across all LSEs.

To the extent that load modifying DR programs are captured in the load, the ISO will see the impact of these resources. In this way, DR resources not bid into the ISO market can impact the flexible capacity requirements.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

CDWR's response: Assessment of contribution from a resource coincident with the ISO determined FCR is a viable solution. An assessment of contribution to ISO net load ramp should be done coincident with the ISO morning and evening ramp periods; If the ISO 3 hour maximum net load ramp occurs from 4 pm through 8 pm, then the time period should be noted for the month and 5 contributing factors should be assessed at that time period and the morning ramp period for netting. If the resource (such as solar) is helping reduce the ISO maximum 3 hour net load ramp for the month, it should be credited. However, if this resource is contributing to morning net load ramps, it should also be counted. A practical approach to count positive and negative contribution to ISO net load ramps (morning and evening) may be to net the resource's morning and evening contribution to ISO net load ramps (for evening and morning). Netting can be done for average hourly ramps for the period of assessment.

[Example: Month-August](#)

[LSE A portfolio: solar PV, Solar Thermal, Wind, DG,](#)

[FCR assessment hours:](#)

ISO Morning Ramp Up period: 5 am -9 am

ISO Evening Ramp Up period: 4 pm-8 pm

FCR allocation factors for LSE A: Δ Load, Δ Solar PV, Δ Solar Thermal, Δ Wind, Δ DG

Time Period for allocation of FCR:

ISO Morning Ramp Up period: 5 am -9 am

ISO Evening Ramp Up period: 4 pm-8 pm

Morning ramp contribution assessment for LSE A:

Type	Hou 5	Hour 6	Hour 7	Hour 8	Average hourly ramp during the morning assessment period (5 am-9am)	Comments
Load	500	450	400	250	$\{(450-500)+(400-450)+(250-400)\} / 3$ $=(-)150$	These hourly data for a month can be based on LSE's historical hourly load for the month, say for last 3 years or 2 years & on-peak days; Forecast option may be considered but may be less transparent. For entities that have an issue with historical load,

							forecast may be an option.
Solar Thermal	0	0	10	12	$\{(0-0)+(10-0)+(12-10)\} / 3$ = $(+)11$		These hourly data may be based on the LSE provided production profile.
Solar PV	0	0	20	23	$\{(0-0)+(20-0)+(23-20)\} / 3$ = $(+)21$		These hourly data may be based on the LSE provided production profile.
Wind	20	0	0	0	$\{(0-20)+(0-0)+(0-0)\} / 3$ = $(-)7$		These hourly data may be based on the LSE provided production profile.
DG	1	0	0	0	$\{(0-1)+(0-0)+(0-0)\} / 3$ = $(-)0.3$		These hourly data may be based on the LSE provided production profile.

Evening ramp contribution assessment for LSE A:

Type	Hour 16	Hour 17	Hour 18	Hour 19	Average hourly ramp for the assessment period	Comments
------	---------	---------	---------	---------	---	----------

	Load	600	650	700	700	$\{(650-600)+(700-650)+(700-700)\} / 3$ $=(+)100$	<p>These hourly data for a month can be based on LSE's historical hourly load for the month, say for last 3 years or 2 years & on-peak days; Forecast option may be considered but may be less transparent. For entities that have an issue with historical load, forecast may be an option.</p>
	Solar Thermal	15	15	12	6	$\{(15-15)+(12-15)+(6-12)\} / 3$ $=(-)3$	<p>These hourly data may be based on the LSE provided production profile.</p>
	Solar PV	25	25	17	6	$\{(25-25)+(17-25)+(6-17)\} / 3$ $=(-)6.3$	<p>These hourly data may be based on the LSE provided production profile.</p>
	Wind	10	15	12	13	$\{(15-10)+(12-15)+(13-12)\} / 3$ $=(+)0.3$	<p>These hourly data may be based on the LSE provided production profile.</p>

	DG	1	1	0	0	$\frac{\{(1-1)+(0-1)+(0-0)\}}{3}$ $= (-)0.3$	These hourly data may be based on the LSE provided production profile.
--	----	---	---	---	---	--	--

FCR allocation factors for LSE A are the result of netting of morning and evening contribution assessment.

Type	Average hourly ramp during the morning assessment period (5 am-9am)	Average hourly ramp during the evening assessment period (16 pm-20 pm)	Netting results (negative value=credit, positive value=obligation)	ISO FCR need (assumed)	LSE A contribution factors, % of ISO total (assumed)	FCR allocation LSE A
Load	$\frac{\{(450-500)+(400-450)+(250-400)\}}{3}$ $= (-)150$	$\frac{\{(650-600)+(700-650)+(700-700)\}}{3}$ $= (+)100$	(-)50	4000	-1.25%	(-)50
Solar Thermal	$\frac{\{(0-0)+(10-0)+(12-10)\}}{3}$ $= (+)11$	$\frac{\{(15-15)+(12-15)+(6-12)\}}{3}$ $= (-)3$	(+)8	2000	0.4%	8
Solar PV	$\frac{\{(0-0)+(20-0)+(23-20)\}}{3}$ $= (+)21$	$\frac{\{(25-25)+(17-25)+(6-17)\}}{3}$ $= (-)6.3$	(+)16.7	2000	0.8%	16

Wind	$\{(0-20)+(0-0)+(0-0)\} / 3$ = (-)7	$\{(15-10)+(12-15)+(13-12)\} / 3$ =(+)0.3	(-)6.7	2000	-0.3%	7
DG	$\{(0-1)+(0-0)+(0-0)\} / 3$ = (-)0.3	$\{(1-1)+(0-1)+(0-0)\} / 3$ = (-)0.3	(-)0.6	500	-0.12%	1

LSE A total FCR allocation=						(-50+8+16+7+...) 18
-----------------------------	--	--	--	--	--	------------------------

FCR allocation factors for LSE A are the result of netting of morning and evening assessment:

From the example above it is apparent that if a load ramp is negative coincident with ISO ramping periods, total FCR obligation to the LSE may be negative. Whether such LSE should be compensated for negative load ramps is a policy issue; at least, it should be allowed to net against FCR obligation associated with other four factors.

ISO Response

The ISO greatly appreciates the submission of this allocation proposal. However, the ISO does not believe this approach to netting yields an equitable allocation methodology. Contribution to the maximum 3 hour net load ramp is not based on the average of the morning and afternoon contributions, but the contribution to the maximum. The ISO continues to develop an allocation methodology that relies on historic load patterns along with forecasted net-load ramping needs. However, the ISO will still take additional stakeholder input regarding the allocation methodology.

a. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

CDWR's response: CDWR generally supports the CAISO's proposed methodology for allocation of responsibility for flexible capacity costs as consistent with the principles of cost causation. That said, the proposed allocation methodology for FCR attributed to change in Load (Δ Load) is somewhat unclear. As proposed, allocation based on Δ Load will be the product of Monthly Average Load factor and total change in load. The ISO proposal should clarify following questions: How is monthly average load factor

defined? How is it calculated? What is the data involved? How is change in load calculated? A numerical example would be helpful to precisely understand the proposed allocation methodology. While CDWR seeks clarification on monthly average load factor, CDWR proposes a methodology for allocation illustrated in 2(a) above consistent with previous set of comments.

In the previous set of comments, submitted on 6/26/2013, on the revised straw proposal⁸, SWP has suggested an equitable allocation approach for Δ Load (also shown in the above example for Δ Load). SWP reiterates the same suggested approach on allocation of FCR with regard to Δ Load. In principle, an LSE's change in load that contributes to ISO system's 3 hr maximum ramp up need should be measured coincident with the occurrence of the ISO system's 3 hour maximum ramp up. In this second revised proposal, while monthly average load factor definition and calculation is not clear, any inter-hour averaging within 24 hour period that feeds into allocation may not reflect the true cost causation on with regard to ISO 3 hour maximum ramp up needs. An LSE's 3 hour gross load ramp coincident with the ISO maximum 3 hour ramp for the month is the true metric that reflects its contribution and follows cost causation. As an option, an LSE's last 2 years historical hourly load data (a part of IEPR reporting could be utilized to calculate average load for each hour of a day for last 2 years to calculate LSE's monthly 3 hour gross load ramp based on average hourly load). Forecast of hourly load may be used; however it could be complex, erroneous, and less transparent than historical average hourly load.

ISO Response

The ISO has proposed to base an LSE's contribution of load ramp based on historical data and continues to exam the impact of differences in contributions to morning and evening ramps.

- a. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

CDWR's response:

- a. Loads that respond to severity of the ramps during grid operations by shifting loads to less stressful hours and adjusting loads during the ramps should not be allocated FCR obligation as if they were sources of variability. Instead, they should be recognized as a solution to the variable resources' induced variability. When enough generation is available including over-generation, such loads could be very helpful in mitigating reliability problems. Allocation method should identify such loads and not allocate FCR if

⁸ <http://www.caiso.com/Documents/CDWR-Comments-FlexibleResourceAdequacyCriteriaMustOfferObligationsRevisedStrawProposal.pdf>

CDWR proposed methodology under 1 (b):

CDWR proposes the following formula for FCR allocation:

Allocation of FCR to LSE's change in load= (LSE's 3 hour gross load ramp coincident with ISO system largest ramp need \div ISO system change in load (gross load ramp in 3 hours) at the largest ramp up need) \times ISO determined flexible capacity need attributed to Δ Load. *Alternate to LSE's 3 hour gross load ramp may be to use hourly average load ramps during evening and morning ramp periods as shown in the table above with similar effect.*

the contribution from such loads coincident with ISO's maximum 3 hr ramp need is zero and provide credit, if contribution is negative.

- b. ISO described the rationale for necessity of contingency portion of FCR that a resource counted to meet 3 hour maximum ramp may be providing contingency reserve and in the event of contingency dispatch, resources' capacity providing 3 hour max ramp would be reduced. Allocation of such FCR to coincident peak load seems to be a reasonable approach. However, if an LSE's load profile indicates zero or negative load ramps at the coincident peak period, such LSE should not be allocated contingency portion of FCR because the LSE's load does not cause flexible capacity need.

ISO Response

If an LSE shows a zero or negative contribution to load ramp, then that LSE will receive a zero allocation for it's the load portion of the flexible capacity requirement allocation.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited
 - b. Use-limited resources
 1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.
 2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

CDWR's response: CDWR has provided associated use limitations on its resources including participating load resources in its comments on revised straw proposal⁹.

ISO Response

The provision of these use-limitations will enable to the ISO to optimal dispatch resources.

- a. Hydro Resources:

⁹ <http://www.caiso.com/Documents/CDWR-Comments-FlexibleResourceAdequacyCriteriaMustOfferObligationsRevisedStrawProposal.pdf>

CDWR's response: CDWR suggested in its comments on previous straw proposal that any capacity (not Pmax only) that can be made available for 6 hours for any month should be the criteria for flex RA eligibility. CDWR reiterates that this point is important, since it makes no sense to exclude any flexible capacity that might be made available.

ISO Response

The ISO has made modifications consistent with this recommendation.

- a. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

- 1. Demand response resources


CDWR's response: During the stakeholder meeting on August 1, in response to a question from CDWR as to whether the DR resources contemplated in slide 30 included Participating Load resources, ISO indicated that DR resources in the slide referred to mostly Proxy Demand Resources (PDR) and that ISO was working on the treatment of Participating Load. ISO should determine whether the current Participating Load model works for flexible RA or not. How does proposed must offer requirement (5 am to 10 pm with 3 hours of load reduction) apply to the current Participating Load model? To schedule Participating Load, CDWR uses an extended Non-Participating Load model, which is a combination of Load and Pseudo-Gen models. This model allows Participating Load to provide non-spin in the IFM and load drop in the real-time market. How is this going to work in the context of flexible RA?

CDWR's questions above also links to Slide 46 table:

Example of flexible capacity availability incentive mechanism calculation

- Flexible capacity = 40 MW
- Short start resource

Hour	DA Economic Bid Quantity (MWh)	RT Economic Bid Quantity (MWh)	Total Both Markets (MWh)
1	40	20	20
2	40	20	20
3	40	20	20
4	40	20	20
5	40	20	20
6	40	20	20
7	40	20	20
8	40	20	20
9	40	20	20
10	40	20	20
Total Economic Bid (MWh)	400	200	600
Total Economic Bid Requirement (MWh)	400	400	800
Total availability incentive metric			0.75



Page 46

CDWR's understanding is that, in case of a participating load resource, DA economic bid quantity would be the non-spin ancillary services (because the model allows only non-spin in the IFM) and in the RTM, it will be a load drop bid. Does ISO concur with this statement? CDWR believes that the contingency portion of FCR should be allowed with contingency flag (contingent upon reduction of system operating reserve for which contingent FCR is needed). ISO should clarify how existing participating load model fits into the proposed flexible capacity incentive mechanism for DR resources.

ISO Response

The ISO is still reviewing the implementation challenges associated with participating load and will attempt to address this matter in the next draft of the proposal.

1. Storage resources

2. Variable energy resources

2. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

3. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

a. The proposed evaluation mechanism/formula

1. The formula used to calculate compliance

CDWR's response: the proposal indicates that failure to submit an economic bid for the flexible capacity quantity **for any reason** will be considered non-compliant. First, this rule must be subject to use limitations of all the resources. If use limitation is reached, the resource cannot be offered while still being compliant in accordance with use limitation rules. Second, in the case of demand response (DR) resources, if, for some reason, the load associated with the DR resource is not consuming or pumping during some days or hours of the compliance month, there will be no load to drop and hence DR cannot be offered to further reduce load during the proposed must offer hours. If the load has already done what it was supposed to do ultimately (reduce load) during the must offer hours, there should not be any penalty imposed. In case of a wholesale pump load, it may not pump for a number of reasons, such as lack of water demand, during some days or hours of month overlapping proposed must offer hours. During those hours (overlapping with must offer hours) when water demand is reduced, load drop capacity will be reduced or vanish because of no pumping load. Such circumstance is equivalent to "dispatched RA generation capacity" to generate energy and hence should not be penalized by labeling those hours as non-compliant. There should be a mechanism that exempts such circumstances from being penalized under flexible capacity incentive mechanism.

ISO Response

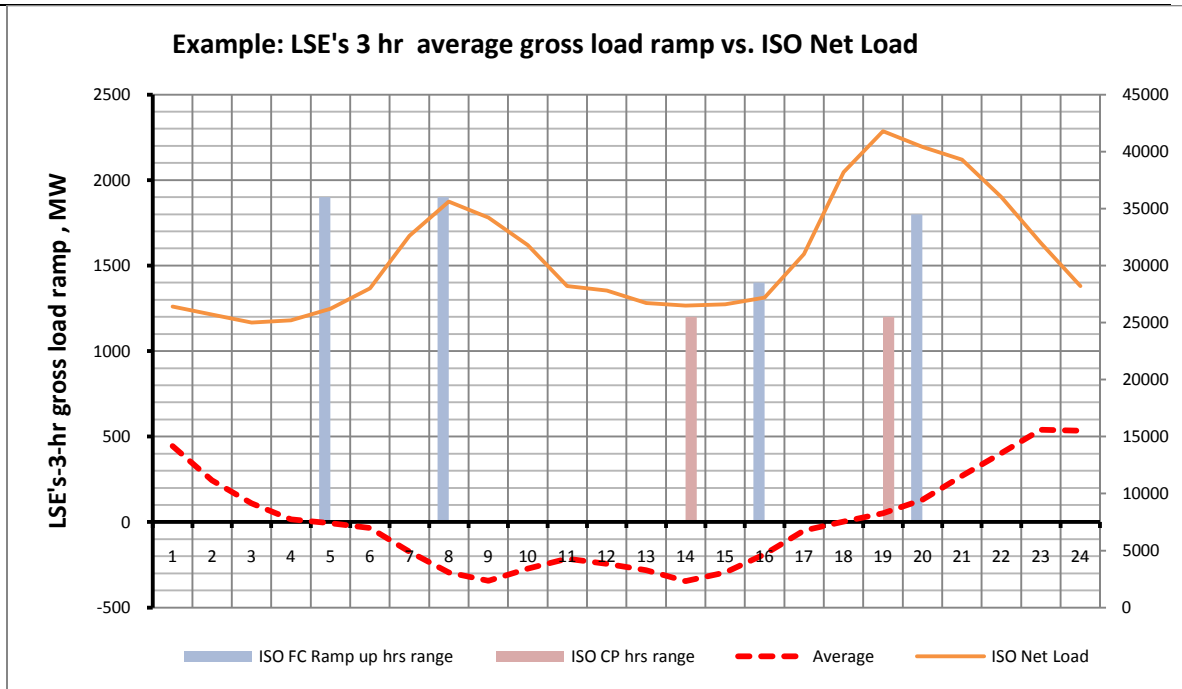
The ISO believes that demand response with no load to drop is more akin to a conventional generator

on outage rather than a generator that has been dispatched. If a demand response resource does not have load to drop than it is unavailable to provide system flexibility.

1. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)
 - b. The use of a monthly target flexible capacity availability value
 1. Is the 2.5% dead band appropriate?
 2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?
 - c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.
2. Are there any additional comments your organization wishes to make at this time?

CDWR's response:

An LSE's contribution to both morning and evening ramp contribution should be evaluated with regard to allocation based on change in load. If the LSE has negative gross load ramps in the morning and has positive gross load ramps in the evening period, the negative load ramps should be credited in some way for helping the system.



As an example, an LSE that has average 3 hour gross load ramp (shown in red dotted line in the chart above) coincident with ISO system flexible capacity (FC) ramp up hours range either in the morning or the evening, should be evaluated. Ideally, negative load ramps should be netted against positive (due to five factors in proposed allocation) to recognize value of negative load ramps coincident with ISO system morning and evening ramp periods. An LSE's load profile that is flat, or has negative load ramps during ramping period should not be subject to FCR allocation. The red dashed line in the chart is LSE's average 3-hr gross load ramps.

ISO Response

The ISO does not believe this approach to netting yields an equitable allocation methodology. Contribution to the maximum 3 hour net load ramp is not based on the average of the morning and afternoon contributions, but the contribution to the maximum. The ISO continues to develop an allocation methodology that relies on historic load patterns along with forecasted net-load ramping needs. If an LSE shows a zero or negative contribution to load ramp, then that LSE will receive a zero allocation for it's the load portion of the flexible capacity requirement allocation. However, the ISO will still take additional stakeholder input regarding the allocation methodology.

Company	Date	Submitted By
Wellhead	August 15, 2013	Grant McDaniel

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has

regarding this proposed process.

Wellhead supports the proposed process at this time.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?
 - b. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?
 - c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

No comment on the specific proposal but Wellhead is generally supportive of reasonable/fair cost causation principles that promote the desired behaviors/actions.

ISO Response

Thank you.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
 - a. Resources not identified as use-limited

There will be (are) variations of each of the identified technologies that will not fit the specific buckets created for them by the CAISO. Wellhead recommends that the CAISO create technology agnostic buckets for resources whose technology does not fit into the specified buckets. In this way the appropriate obligation can be selected by participants with the risk of that obligation being normalized by the incentive. The buckets would be:

- 10 hour energy
- 3 hour ramp
- 10 hour regulation

A resource type may have specific restriction on the quantity of FRA that it can offer (hydro for example), but allowing technology agnostic buckets will allow for the maximum participation on a non-discriminatory basis.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources, particularly in calculating the EFC for these resources. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources. However, as the ISO has noted many times, this represents an interim solution. Ultimately a long term more granular solution is needed in the future. The ISO will consider whether a bucket approach similar to to one proposed represents an appropriate solution at that time.

a. Use-limited resources

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

Wellhead supports the CAISO's proposed methodology provided that the system is dynamically biased on a monthly basis to ensure that the methodology is not over or under shooting the annual limits. The biasing factor should be applicable to operating hours (default energy bids) as well as starts.

ISO Response

The ISO is continuing to develop this aspect of the proposal.

1. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

Many resources have use limitations that are a function of both starts and operating hours. Annual fuel limits and/or emissions limitations are typical of this type of function where the opportunity costs for both starts and operating hours are dynamic based upon how the resource is dispatched. For example,

if a resource has an annual NOx limitation of 15,000 lbs/yr and is permitted to emit 4.0 lbs/hr during normal operation and 20.0 lbs/start, then the resource will be constrained as shown in the table below:

Starts	Operating Hours	Annual NOx Emission (lbs)
-	3,750	15,000
250	2,500	15,000
375	1,875	15,000
450	1,500	15,000
500	1,250	15,000
536	1,071	15,000

This means that the individual opportunity cost for starts and operating hours is changing as a function of the starts/operating hours a unit has incurred to date (each year). Wellhead is recommending that the CAISO allow for the calculation of opportunity costs for units that have dynamic limits at 5% intervals of the starts/operating hour ratio from 0 to 1.0. On a monthly basis, the individual opportunity cost for starts and operating hours can then be updated by the CAISO based upon actual dispatch ratios.

ISO Response

The ISO understands the complication that multiple and interconnected constraints. The ISO is continuing to develop this aspect of the proposal.

- a. Hydro Resources
- b. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

See 3(a) above.

ISO Response

The ISO is continuing to develop this aspect of the proposal.

1. Demand response resources
2. Storage resources
3. Variable energy resources

2. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

Wellhead supports this proposal at this time.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:
 - a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

Standard RA capacity is valued by market participants based upon the risk (availability incentive) of non-performance. The FRA, as we understand it, is to remain a bundled product with standard RA (i.e. a 100 MW unit cannot sell 100 MW of RA to one party and 100 MW of FRA to another party). Therefore, since the standard RA risk is already known, an independent component for FRA must be established. This will allow two separate availability incentives to be applied to the bundled product without conflict.

ISO Response

The ISO has provided additional detail regarding replacement and substitute capacity. Additionally, the ISO has provided much more detail regarding the SFCP and backstop mechanisms. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO's preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility.

a. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate?

Yes, Wellhead supports the 2.5% dead band.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

If the prevailing flexible capacity backstop is intended to cover the bundled standard and flex RA, then no, it would not be appropriate to charge the full bundled value on just the flexible portion. If the prevailing flexible capacity backstop is only to cover the flexibility component, then yes.

ISO Response

The ISO has provided additional detail regarding replacement and substitute capacity. Additionally, the ISO has provided much more detail regarding the SFCP and backstop mechanisms. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO's preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility. The ISO also proposes an alternative solution that would allow for a lower cost solution to deficiencies of flexible capacity showings.

a. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

2. Are there any additional comments your organization wishes to make at this time?

Wellhead encourages the ISO to continue to assess the need for provisions that would limit the amount of baseload and/or PMin as part of capacity showings by publishing a soft target.

ISO Response

The ISO understands that over-generation concerns continue to grow and is constantly studying this problem and looking for potential solutions. Ultimately, a solution for over generation concerns must be a part of any long term flexible capacity solution.

Company	Date	Submitted By
EMS for Energy Users Forum (EUF) and the California Manufacturers and Technology Association (CMTA)	August 16, 2013	Carolyn Kehrein cmkehrein@ems-ca.com 530-668-5600
<p>1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.</p>		
<p>Based on the presentations, questions and answers at the stakeholder meeting, it seems that the CAISO is eager to implement an allocation scheme as quickly as possible without adequate concern for the accuracy of the allocation determinants or whether the signal sent by the allocation attributes cause entities to change their behavior to reduce the amount of flexible capacity needed.</p> <p>During the meeting Doug Parker from SCE and others expressed our concerns well. The CAISO seems in a rush to implement anything, even if it means sacrificing using appropriate and effective allocation and obligations signals. We are concerned that once something is implemented, there will not be adequate impetus to modify the rules to "get it right". Furthermore, adding another "phase" creates additional costs and resource burdens for the CAISO, market participants and other stakeholders. Thus, we do not support the rushed implementation of the wrong solution. It may not be possible to implement an optimal solution, but the solution must be fair and send signals that produce the desired response. Sufficient information was not provided in the meeting to give us confidence that the proposal is fair or creates the right incentives.</p> <p>In theory, for each causal factor (wind change, solar change, load change, etc), the CAISO should determine the contribution of each LSE to the ramp and then sum up the contribution of each LSE to get the total requirements for each LRA. At this point, we do not oppose using the largest 3-hour net load ramp for each month to determine each SCs' share of the requirement for each month. However, there needs to be a discussion about the use of historical information because history may not be representative of the future for each SC and each causal factor. For instance, the amount of in-state intermittent resources in a LSE's portfolio may significantly change from year to year and for smaller LSE's the loss of a significant "peaky" customer could significantly impact how much the LSE's total load changes over the ramping period. Historical data may need to be adjusted if it can be done fairly and accurately</p>		
ISO Response		
<p>The ISO has extended the stakeholder process and hopes to issue two or three more iterations of the proposal. Additionally, the ISO continues to work towards developing an efficient and equitable allocation methodology.</p>		
<p>1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's</p>		

jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

- a. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

For the load component, the CAISO should determine the contribution of each LSE to the ramp and then sum up the contribution of each LSE to get the total requirements for each LRA. However, this is not as easy as it sounds. Is historical or forecast information used? If historical information is used, there should be a process, as there is for other RA requirements, to make adjustments based on load migration. Furthermore, the contributions must be adjusted if the absolute value of the sum of load changes is not equal to the sum of the values (i.e.: one of more LSEs had a load change that went in the opposite direction of the majority) or the total requirement will exceed the CAISO's actual resource need.

As stated above, at this point, we do not oppose using the largest 3-hour net load ramp for each month to determine each SCs' share of the requirement for each month.

During the meeting, staff was not able to describe how the load ramp requirement would be allocated to LSEs. In private conversation toward the end of the day, I learned that the words used in the presentation did not align with what staff was actually considering. The plain meaning of the words chosen actually signaled that the CAISO was considering an inappropriate and inaccurate allocation and the staff presentation was consistent with this incorrect interpretation. I wasted time, energy and brain power in the meeting trying to analyze an allocation methodology that was not what the CAISO was proposing because the written and oral presentation were misleading. Because I was trying to wrap my mind around a non-existent proposal, I lost out on the opportunity to interact on other topics or consider the CAISO's actual proposal and wasted everyone's time asking questions and stating points of fact that were unnecessary.

ISO Response

The ISO is proposing to use historical load data to determine an LRA's contribution to load changes. The third revised straw proposal includes additional detail regarding the ISO's new proposal to allocate load changes based on historic data.

- a. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

A reasonable level of allocation accuracy and the strength and vector of the signal created by the

allocation determinants are more important than an expedient implementation.

ISO Response

The ISO has extended the stakeholder process and hopes to issue two or three more iterations of the proposal.

6. Are there any additional comments your organization wishes to make at this time?

- (a) Get it right, not fast.
- (b) Use allocation determinants that reflect causation.
- (c) Use allocation determinants that are fair and fairly implemented.
- (d) Use allocation determinants that send signals to change behavior (magnitude or force of signal should be aligned with reality).
- (e) To the extent feasible, allocations should reflect the current impact of each LSE, not historical or forecasted impacts.
- (f) Reduce the total requirements to account for overlapping factors, when appropriate.

ISO Response

The ISO has extended the stakeholder process and hopes to issue two or three more iterations of the proposal. Additionally, the ISO continues to work towards developing an efficient and equitable allocation methodology.

Company	Date	Submitted By
PG&E	August 16, 2013	Marie Fontenot (415) 973-4985
		Peter Griffes (415) 973-3335

Opening Comments

Pacific Gas and Electric Company (PG&E) offers the following comments in the stakeholder process for the California Independent System Operator’s (CAISO) Flexible Resource Adequacy Criteria and Must-Offer Obligation (FRAC-MOO) Initiative June 13, 2013 revised straw proposal (Proposal).

In our comments, PG&E provides both recommendations and requests for clarification. PG&E notes that many of the design elements have not been adequately fleshed out and require more discussion than is currently planned for in the stakeholder process prior to presentation to the Board of Governors.

The CAISO plans to post the Draft Final Proposal (DFP) on September 18 with only one more round of stakeholder input on October 8. Then there is a two-month gap between the last round of comments and presentation to the Board on December 18. Typically, initiatives at the DFP stage should be close to complete with only some fine tuning remaining. That is clearly not the case for the FRAC-MOO design. Much detail is missing from the Proposal; numerous items are not ready to be included in the DFP. In particular, the following elements of the Proposal lack clarity or are not fully developed:

- Yearly timeline for determining flexibility requirement – requires further clarity and the addition of when the error term will be identified;
- Calculation of flexibility requirement – elements included in the error term have not been defined;
- Allocation of flexibility requirement – evidence of CAISO’s analysis is required, jurisdiction of requirement is unclear;
- Replacement of flexible RA capacity – unclear if intra-day substitution is allowed;
- Must-Offer Obligation for Energy Storage resources has not been sufficiently developed, encourages resources to provide less flexibility than is needed by the system;
- Must-Offer Obligation for flexible VERs has not been developed;
- Backstop Procurement – requires additional clarity, problems with other elements may lead to unnecessary backstop;
- Incentive Mechanism – requires considerable additional development including discussing the relationship of FSCP and SCP, impact of data limitations.

PG&E also notes that the two-month gap before Board consideration allows for at least one more paper with stakeholder comments before posting the DFP. PG&E strongly recommends that the CAISO take advantage of that time cushion and post a third straw proposal.

Though there are numerous elements that require additional analysis and stakeholder discussion, the following three points are of greatest concern to PG&E:

1. More analysis and discussion of implications of the granular allocation methodology is needed.
2. More clarity is needed on the incentive mechanism.

The calculation to determine the effective flexible capacity of variable energy resources is undefined at this time. This element of the proposal is too significant to lack clarity.

ISO Response

See responses below.

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.

Updating of renewable information from LSEs

The yearly timeline identified on page 11 of the proposal appears to provide a reasonable framework for the flexible capacity requirement calculation and procurement process.

Request for Clarification: Please clarify that the September option for revised RA and flexible capacity obligation will be an opportunity for entities to update the timelines for renewable projects coming online.

Five-years of contractual information made available to the CAISO

The CAISO indicated an intention to collect contractual information from load serving entities (LSEs) extending as far as five years into the future.¹⁰

Recommendation: PG&E asks the CAISO commit to reporting out to local reliability authorities (LRAs) and LSEs a non-binding requirement for years two through five to correspond to the contract data collected and analyzed. If the CAISO does not generate a forecast for these out years, then there is no reason the contractual information is needed by the CAISO for the later years.

ISO Response

The ISO has clarified that build outs may be adjusted in September.

Any studies conducted at this time for years two through five will be only advisory and will be reported to the LRA and LSE alike.

2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA’s jurisdictional LSE’s contribution to the ISO’s largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
 - a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?
 - b. What measurement or allocation factor should the ISO use to determine an LRA’s contribution to the change in load component of the flexible capacity requirement?
 - c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

The implications of the granular allocation as proposed by the CAISO is not well understood

The implications of the current granular allocation proposal are not well understood. This is especially true of the contribution of the intermittent categories which may result in substantial reductions in an

¹⁰ Flexible Resource Adequacy Criteria and Must-Offer Obligation Second Revised Straw Proposal (“Proposal”), page 12.
<http://www.caiso.com/Documents/SecondRevisedStrawProposal-FlexibleResourceAdequacyCriteria-MustOfferObligations.pdf>

LSE's flexibility requirements in some months. More analysis and discussion is needed to fully understand the impact and fairness of this approach. Moreover, the CAISO should provide information to LSEs on forecasted allocation of the peak load ratio share and the more granular method presented in the Proposal.

Recommendation: More discussion of the granular proposal does not need delay the initiative. PG&E suggests the CAISO revert to the simpler peak load ratio share as the basis of allocation for the 2015 requirement. The allocation methodology can be updated at a later time if the CAISO demonstrates an alternative that is materially superior.

Clarification: Does the CAISO plan to reduce the total system flexibility requirement to account for the impact of flexible VERs? If so, how would the impact be quantified?

Clarification: The granular allocation methodology relies on calculating each LSE's percentage of the total contracted capacity for three intermittent categories: 1) wind, 2) solar PV and 3) solar thermal. When calculating these totals, no reduction appears to be made to account for flexible intermittents. How does the CAISO propose to account for an LSE's flexible variable energy resources in developing the LSE's allocation of the requirement?

The proposed treatment of load-following metered subsystems appears to be flawed

The proposed methodology for load-following metered subsystems (MSS) is likely to lead to system-wide insufficiency of flexible capacity. As written in the Proposal, "While MSS load-following LSEs will receive an allocation from the ISO, they will not be required to provide a flexible capacity showing to the ISO."¹¹ This translates to the CAISO intending to allocate a portion of the requirement for flexibility to an entity that the CAISO will not require to submit to the showing of the requirement. The likely result of this discrepancy between calculated allocation and requirement is the need for backstop procurement.

Since load-following MSS are responsible for their load, it is unclear to PG&E why MSS are included in the calculation of the requirement. In many ways load-following MSS should be treated as a stand-alone Balancing Area Authority. Just as the CAISO does not include the requirements of neighboring BAAs, the CAISO should not include the requirements for load-following MSS.

Recommendation: PG&E requests that MSS load-following LSEs be removed from the calculation of the flexibility requirement and their load not included in the calculation of system peak, as used for the calculation of system flexibility requirement. Including the requirement overstates the requirement (since the MSS should be load following). Moreover, inclusion would result in a foreseeable need for backstop procurement, the costs of which would be unfairly borne by the remaining CAISO LSEs' load.

Authority of LRA to set the Flexibility Requirement

Clarification: PG&E asks the CAISO to clarify that the LRAs have authority to set the flexibility

¹¹ Proposal, page 17.

requirement in the same way they set the Local Capacity Requirements. Our understanding is that the CAISO will make a flexibility requirement recommendation to the LRAs. But it is the LRAs prerogative to adopt or modify the recommendation.

Clarification: If an LRA adopts a requirement that is lower than that recommended by the CAISO, would the CAISO backstop the difference between the CAISO recommendation and the LRA-approved requirement? If backstopped, how would the cost be allocated among LSEs?

ISO Response

The ISO believes that the allocation methodology is a core part of the FRAC-MOO proposal and the ISO does not believe it is reasonable to file a proposal at FERC without a complete proposal or one that will need to be revised in one year. However, the ISO has extended the stakeholder process to allow for more time to complete this discussion.

Currently, the ISO is willing to reduce the flexibility requirement based on VERs that have all balancing services covered either by an adjacent BA or by technology installed on site and dedicated to a specific resource. All other VERs have the option to be designated and counted as flexible capacity resources and subject to the must offer obligation detailed in the proposal.

The ISO has provided additional detail regarding the treatment of MSS load following LSEs. MSS load following LSEs' flexible capacity requirements will be subtract from the overall requirement before determining if there is a cumulative deficiency.

The ISO will backstop to its system requirements that it allocates to the LRAs. LRAs will establish rules to allocate their share of the system requirements among their LSEs. Should an LRA adopt a lower procurement requirement in aggregate for its LSEs, the ISO will backstop the difference between its requirement and the LRA's to ensure that the system flexible capacity requirements are met. In such event, the ISO will allocate the cost to the LSEs under the LRA in the same proportions that the LRA allocates its flexible capacity procurement requirement.

3. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:

PGE's comments are focused on demand response, variable energy resources and energy storage. Please refer to the appropriate sections, below.

ISO Response

Thank you.

- a. Resources not identified as use-limited
- b. Use-limited resources
 1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up

cost.

2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

c. Hydro Resources

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

PG&E supports the use of specialized must-offer requirements for preferred resources as long as the CAISO makes sure that the resulting qualifying EFC is usable by the system. The CAISO should avoid creating situations where the resulting qualifying capacity does not avoid the need for additional EFC, and CAISO ends up buying or requiring additional EFC.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

1. Demand response resources

Treatment of demand response is potentially insufficient

The CAISO's proposed treatment of demand response (DR) resources appears to be a good start but potentially does not capture the full capability of DR to address the CAISO's most significant periods of requirement. Pending further analysis of the requirement for maximum ramping, it may be appropriate to extend the current five day schedule (Monday through Friday) to a seven day schedule if analysis shows that weekends also have a high ramping need.

Clarification: PG&E requests that the CAISO clarify the relationship between the use-limitations of a DR resource that are specified in the CAISO's master file and a DR resource's bidding requirements.

Recommendation: Consider a seven day must-offer obligation if needed to meet days with very significant ramps.

ISO Response

The ISO understands the potential benefits of extending the DR product to seven days a week. At this time, the ISO will continue to assess the impact of DR providing flexible capacity as well as the changing grid conditions. Should the need arise, the ISO may reassess the proposal requiring DR to provide flexible capacity from Monday through Friday. Daily limitations can be specified in ISO's Master File and will be respected.

1. Storage resources

CAISO should develop further the requirements proposed for energy storage

PG&E does not support the CAISO's proposal to qualify energy storage that provides regulation energy

management as flexible resources. This proposal gives disproportionate credit to energy storage resources with short durations when compared to long duration storage and non-storage resources that provide flexible capacity. The CAISO's proposal essentially encourages the installation of regulation energy management energy storage resources that provide fewer benefits to the CAISO, yet receive equal credit to storage and non-storage that provide 3 or more hours of continuous energy.

The latest straw proposal needs to be updated to reflect the presentation at the latest stakeholder meeting. In particular, it seems that only storage with three or more hours of energy would be able to qualify.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for storage resources, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

1. Variable energy resources

Clarify how to calculate the effective flexible capacity (EFC) of flexible variable energy resources (VERs)

The proposed hours of availability and corresponding must-offer obligation for flexible VERs appears to be reasonable, however the CAISO has not provided any detail into the methodology it proposes to calculate the EFC of VERs. PG&E requests that this element be specifically addressed in the next proposal.

PG&E also notes that the must-offer obligation proposed for flexible VERs (as well as other resources) addresses the daytime ramping needs of the system, but does not address the potential over-generation that may occur in the early morning hours of low system demand. How does the CAISO plan to provide incentives for flexibility in VERs in such cases?

PG&E requests further clarity as to whether the CAISO will update the requirement and allocation methodologies to reflect VERs that provide flexibility. Three questions in particular:

- 1) Will the CAISO include flexible VERs in the calculation of the system flexibility requirement?
- 2) Will an LSE's allocation of the requirement be reduced to reflect the amount of flexibility provided by that LSE's VER fleet?
- 3) Will flexible VERs be eligible to count toward an LSE's flexibility allocation?

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for Variable Energy Resources, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources. The ISO understands the

upcoming challenges associated with over-generation conditions and continues to work with the CPUC and other LRAs to better understand the reliability risks. The ISO expects that will be a topic of discussion that requires resolution in the near future.

7. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

The proposed backstop procurement suggests flaws in initiative design

As explained in the Proposal, "the ISO will only seek authority to issue a backstop designation if there is a cumulative deficiency." While PG&E appreciates the CAISO's attempts to minimize costs for LSEs, the matter of greater significance is that the CAISO has formulated an equation for allocating the flexibility requirement that it anticipates may contain errors. If the flexibility requirement calculation is correct, it is unclear how a situation could arise where the system would have sufficient flexibility when a contributing LSE is insufficient.

Recommendation: Re-evaluating the allocation requirement may be necessary if a single LSE is insufficient, but the system as a whole has sufficient flexibility. This scenario suggests that the remaining LSEs are, by default, over-procuring flexibility.

ISO Response

Deficiencies would arise from RA showings that do not provide adequate flexible capacity. If all LRAs' jurisdictional LSE have procured the ISO allocated flexible capacity requirement, then should be no deficiencies. The use of a cumulative deficiency to trigger backstop procurement is consistent with the existing trigger for CPM backstop for deficiencies.

1. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:
 - a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

Address functional concerns associated with use of the existing SCP for FSCP

PG&E requests that the CAISO include information on three potential problems that exist in the plan to mirror the SCP model for FSCP. First, please address the plan to apply FSCP to DR and any other resources that are currently not required to meet SCP standards. Second, please explain why the

current FSCP charges exclude weekends and holidays. Third, additional clarification is necessary on the CAISO's proposal to "avoid double counting"¹² of SCP and FSCP charges.

Recommendation: PG&E requests discussion and examples of the interaction between the two mechanisms be included in the next proposal. Please confirm that resources under FSCP would be capped at a level of payments received for over-performance, in keeping with the practice under SCP.

ISO Response

The ISO has added significant detail to the SFCP proposal. The ISO believes that each of these items has been addressed

a. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate?

FSCP dead band should be greater than 2.5 percent above and below the target

PG&E is concerned that applying the 2.5 percent dead band from the SCP to FSCP may be overly punishing for resources that are operating dramatically differently from the historical operations. For this reason, PG&E suggests the CAISO apply a higher dead band to FSCP for the first three years the incentive mechanism is operational. After that time, lowering the dead band to correspond with SCP would be appropriate.

Recommendations:

- Utilize a dead band between four and five percent (above and below target) for the first year and decrease the dead band to correspond with SCP over time.
- The dead band, as described by the CAISO in the Proposal is a "five percent dead-band" (2.5% on either side of the target)¹³. Referring to the dead band in this space as a "2.5% dead band" is comparable to its definition in the SCP tariff development. In the interest of clarity, PG&E requests the CAISO define the dead band in a consistent manner through this initiative.

ISO Response

The ISO is proposing a dead band of 3.5% around the target for the first year.

1. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

Leave SCP and FSCP tied at the same price

At this time, PG&E supports the CAISO's proposal to tie flexible standard capacity product (FSCP) charges to the existing standard capacity product (SCP) charges, which in turn are tied to the effective capacity procurement mechanism (CPM) rate. Setting an equal or comparable price mitigates potential gaming opportunities that could arise in relation to managing resource outages. Flexibility needs to be a premium charge and be tied to the backstop rate. And FSCP must be sufficient to incent parties to meet their obligations and only submit resources as flexible that are, in fact, able to fulfill the obligation of the

¹² Proposal, page 33.

¹³ Proposal, page 36

flexibility they offer into the market.

Recommendation: Leave FSCP, SCP and CPM at the same price.

ISO Response

The ISO has added significant detail to the SFCP proposal. Including a SFCP adder price and details regarding the interaction of SCP, SFCP, and CPM.

- a. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

Substitution impact on SCP

The CAISO has not yet addressed the issue of flexible resource substitution. If a flexible RA resource must be unavailable – either as a result of a planned or forced outage – the CAISO must allow LSEs the option to substitute a flexible RA resource of the same MW capability for the resource on outage.

Recommendation: Allow substitution of flexible resources in the day-ahead and real-time without penalty, provided that the total number of flexible MWs bid into the system meets the allocated requirement.

Address impact of data limitations

PG&E understands existing data limitations as the basis of using historical SCP data, however PG&E stresses the importance of updating FSCP to include all flexible days and hours when such data becomes available. A potential alternative to the current proposed methodology would be for the CAISO to only include resources in the 2010 – 2012 timeframe that currently have an effective flexible capacity (EFC), as opposed to all resources, in the calculation of the FSCP until data is available from actual flexible RA resources.

ISO Response

The ISO has included provisions for substituting flexible capacity that is on forced outage.

8. Are there any additional comments your organization wishes to make at this time?

Address the impact of FRAC-MOO on the flexible ramping constraint

PG&E requests the CAISO discuss the relationships between forward flexibility obligation and spot products, including flexibility products. The impact of FRAC-MOO on the Flexible Ramping Constraint and future Flexible Ramping Product is unclear, thus discussion and analysis will be valuable to avoid any potential redundancies.

The error term (ϵ) requires definition

The timing and methodology for calculating the annually adjustable error term to account for load forecast error and variability has not been identified in the timeline laid out by CAISO as represented on page 11 of the Proposal. The error term calculation should be consistent with the Step 1 calculation in CAISO's renewable integration studies. Results of the epsilon (ϵ) calculation must be provided in a consistent timeframe each year and must include the opportunity for stakeholders to study the CAISO's

underlying assumptions, ask questions and provide feedback.

Further the CAISO has not discussed what factors will be considered in the determination of this epsilon error term.

Recommendations:

- PG&E requests the CAISO indicate the process by which the error term will be defined as well as the criteria and methodology for calculating ϵ on an annual basis. The definition of the error term should be addressed in this stakeholder process.
- PG&E notes that this matter is being addressed in the current phase of the CPUC RA proceeding and suggests that the ϵ be treated consistently in both forums.
- PG&E recommends the CAISO engage a robust discussion regarding the determination of the error term and principles that should be used in its determination.

The CAISO should anticipate needing to extend the capacity procurement mechanism tariff beyond 2016 in the event that a replacement is not ready

The capacity procurement mechanism (CPM) expires in 2016. The CAISO has indicated its expectation that a replacement will have been developed in advance of its expiration. PG&E requests the CAISO consider the possibility that a replacement may not be available prior to CPM's expiration. The CAISO should prepare to extend the tariff on CPM for one to two years, if needed.

Clarify the incorporation of opportunity cost into default energy bids

PG&E requests greater detail in the CAISO's proposal to incorporate opportunity cost into default energy bid (DEB). In particular, is the CAISO suggesting that the calculated opportunity cost become a resource's DEB or would it be a factor that is added to the existing DEB? PG&E sees the possibility that if opportunity cost were used as the sole element of DEB there could be instances of that value being lower than the actual cost to operate a resource. Demand Response and Energy Storage resources would be especially vulnerable to this approach.

Additional remaining questions in relation to the incorporation of opportunity cost in DEB include:

- Will the CAISO allow market participants to modify DEB on a more frequent basis given that opportunity costs will be based on forecasted models?
- Are all DEBs to be calculated based on the same methodology or do market participants have the ability to work with the CAISO or Potomac Economics to develop the appropriate methodology on a case by case basis?
- Confirm that the use of economic bids and the incorporation of opportunity cost into DEB be used only to optimize a resource's run and that use-limited resources' daily energy limits will be the respected, regardless of bids. As described on page 5 of the Proposal, this point is unclear.¹⁴

Recommendation: The CAISO should make clear in the next proposal the process by which use-limited

¹⁴ Proposal, page 5, "The ISO anticipates that the majority of use-limitations for (sic) can be managed through constraints modeled in the ISO market or through appropriate energy bid prices and/or start-up costs that reflect these limitations..."

resources' daily and *monthly* limits will be respected as "hard limits" (as indicated by the CAISO) and are relied upon as the primary method of limiting runs of these resources.

ISO Response

The ISO, with a deeper pool of economic bids should be able to reach a more efficient market solution. The ISO expects that this will reduce the frequency that the flexible ramping constraint binds.

The ISO has added additional details regarding the determination of the ϵ term. At this time, the ISO is not able to provide parameters regarding the reasons the ϵ term might be non-negative. However, the ISO will have an open and transparent process to discuss the development of the ϵ term on an annual basis.

Consideration of the extension of the existing CPM mechanism is beyond the scope of this initiative.

Daily limitations can be specified in ISO's Master File and will be respected. The ISO is still developing other aspects of the implementation of opportunity costs.

Company	Date	Submitted By
Western Power Trading Forum	August 15, 2013	Ellen Wolfe Resero Consulting for WPTF 916 791-4533 ewolfe@resero.com
Opening Comments		
WPTF appreciates the opportunity to submit comments on the CAISO's July 25, 2013 Second Revised Straw Proposal for flexible RA capacity and MOO ("FRAC MOO"). We offer comments in the following areas.		
ISO Response		
Thank you.		
Alignment of the FRAC needs determination process with the local capacity requirement process seems reasonable		
WPTF supports aligning the processes and timelines between flexible RA requirements and local RA requirements. Combining the two processes would seem to offer an efficient process.		
ISO Response		
We appreciate the support for this aspect of the proposal.		
Allocation of FRAC requirement to LRAs requires fine tuning		
WPTF requests the ISO reconsider its proposed allocation of the net 3-hour maximum ramp needs to LRAs, especially in recognition that CPUC may adopt a similar allocation to further allocate the requirements to LSEs. The latest proposal – to allocate to load share – would allocate to parties inconsistent with the contribution to the overall ramping need. Instead the ISO should consider an allocation policy based on the sum of the LSEs' coincident contribution to the overall max ramping need. This would allocate the ramping need consistent with the derivation of the need itself.		

ISO Response

The ISO is working with the CPUC and other LRAs to ensure consistency across the two agencies to the extent possible and is not proposing to allocate to LSEs at this time.

Product definitions, counting rules and must offer requirements must be aligned to ensure just and reasonable treatment

There are three elements of the FRAC policy design that are necessary to clearly understand the product, how it will count toward the ISO's ramping needs, and the performance requirements/incentives/risks associated with the product. These are: (1) the product definition, including what resources qualify and which do not, (2) the counting rules (e.g., how much of what resources contributing in what proportion to meeting the ISO's needs and the extent to which their MWs of capacity can be compensated for FRAC), and (3) the performance requirements and risks, incentives, and penalties.

Without a clear simultaneous definition of these three attributes the FRAC mechanism is incompletely defined and impossible to evaluate.

The ISO's proposal presents a single product definition inclusive of many technologies yet with different performance requirements/risks/incentives. While the ISO's proposal includes counting rules for non-energy limited conventional generation and hydro, counting rules for some resources (such as storage and VERs) are not defined.

The ISO's proposal does however propose unique offer requirements for some resources. WPTF is concerned that without addressing counting rules it is impossible to judge the efficacy of the ISO proposal. For example, a policy that has a single 3-hour ramp offer obligation yet different must offer requirements could result in inequitable compensation between resource types, if for example all resources were counted to FRAC obligations equally.

WPTF is open to policies that encourage broad participation, but discriminatory compensation through disparate offer requirements/risks for a single product design could create significant distortions. We further object to the proposal because the ISO has offered relaxed requirements for some resources while not recognizing the operating limits of others – such as those Combined Heat and Power (“CHP”) or Qualifying Facility (“QF”) resources operated by WPTF members. Ideally, all market products, including flexible capacity, should have standard, consistent performance requirements across all technologies. To the extent that performance requirements cannot be standardized across all technologies, the CAISO should articulate clear principles for differentiating performance requirements, e.g., rules that specify how all resources with limits on their availability will be treated rather than specific rules for only certain availability-limited resources.

WPTF urges the ISO to reconsider its design and develop assumptions and/or guidelines regarding counting rules to ensure that providers of FRAC are treated comparably while considering their contributions to the needs defined by the ISO (currently established as a three-hour ramping product). This is critical to ensuring an effective product design and necessary to ensure non-discrimination across providers.

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources like VERs, particularly in calculating the EFC for these resources. The ISO is not proposing a weighting methodology at this time. The ISO believes that it possible to utilize different resources in different ways to ultimately address flexible capacity needs. The ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources. Additionally, use limited resources such as DR or VERs that do not perform under the SCP will have a higher per hour charge than a non-use-limited resource because of the number of hours considered in the resource's SFCP assessment.

WPTF supports the proposed change away from populating bids for MOO, but the performance incentive requires a different basis

WPTF agrees with the ISO that an offer incentive plan is easier to implement and desirable over the ISO’s prior proposal of populating bids as part of the MOO for resources that neglect to bid. However, ISO’s proposal to use CPM as the basis for the incentive requires reconsideration. To penalize a resource that is unable to submit bids on a few occasions at the CPM rate would be inconsistent with cost causation, as it could be the case that the ISO finds it unnecessary to procure any more flexibility during times of less than full bidding.

If the ISO continues to wish to apply a financial penalty during instances of no bidding, WPTF advocates for the use of the Reliability Services Auction (“RSA”) clearing price. That price would reflect the cost of procuring additional flexible capacity.

ISO Response

The ISO has provided much more detail regarding the SFCP mechanism. This detail includes that different methodologies the ISO considered, the preferred approach, and examples and discussion regarding the interaction with the existing SCP. The ISO’s preferred approach is designed to value the availability of the capacity separately from the availability of the flexibility. This proposed design should allow the ISO to the RSA, once it is developed, as a means of pricing the additional value of flexible capacity.

Company	Date	Submitted By
California ISO DMM	August 21, 2013	Department of Market Monitoring

Opening Comments

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. We also appreciate that the ISO has put significant effort into this 2nd revision of the draft proposal, and added many elements and made improvements to those parts that were already in place. These changes represent a real improvement in the proposal, and a significant step along the way to making the proposal a reality.

As an initial matter, DMM notes that many of the questions asked in the comments template have different answers depending on the exact purpose of this initiative. Is this initiative intended to only cover the flexibility needs of the projected maximum 3 hour continuous ramp for each day? Or, is this measure meant to help manage variability in net load overall, where the 3 hour ramp is a proxy for the shorter term flexibility needs such as those that will be met by the flex-ramp product and contingency response constraints being developed? The answer to that question has implications for how we should treat must-offer obligations for VERs, DR, storage, and hydro resources, as well as thermal resources with energy, regulatory or operating limitations that limit the ability of these resources to actually provide operational flexibility. Currently, some aspects of the proposal seem tailored to the three hour ramp, while others seem intended to handle more general variation in net load. DMM hopes that the ISO will clarify this issue as the proposal moves forward.

Provided below are DMM’s comments on a variety of other specific issues relating to ISO’s 2nd revised Straw proposal.

ISO Response

The challenge of this that the measurement is designed to address both longer sustained ramps as well as 5-minute uncertainty. The ISO does not believe that there is a need for a more granular solution that

specifically focuses on each of the needs identified. However, it is extremely challenging to procure capacity that can meet both of these needs in a bilateral capacity market. The ISO is working with the CPUC and other LRAs to develop a long-term solution that is more granular and has a procurement target for each of these needs individually.

Allocation of flexible capacity requirements

The ISO has asked for comments on how the different components of the requirement should be divided among the LRAs. DMM believes that it is important to use a similar allocation factor for each of the need components. The correct factor to use may differ depending on the answer to the question posed above about the purpose of this initiative. If the initiative is strictly targeted at the projected maximum 3 hour continuous ramp, then the projected contributions of each LRA to the changes that create that ramp are the appropriate factors for allocating the requirements. If the broader goal of managing net load in general is relevant, then it may be appropriate to explore allocation factors that consider a longer time period (such as a day).

ISO Response

The ISO continues to develop the allocation methodology. As noted above, the ISO is attempting to address two needs simultaneously. The three hour ramp requirement is designed to provide the ISO with sufficient flexible capacity to address both. Therefore, it is reasonable to use a measurement that is longer than the five-minute need, but shorter than the longest continuous ramp.

Must-Offer Obligations

The latest version of the straw proposal includes more detail on possible MOOs for a variety of resource types. DMM appreciates the time and effort that the ISO has put into expanding and detailing this part of the proposal. However, some questions remain. One involves timing of the MOO for DR and VERs, and again relates to the question asked in the introduction to these comments. If the target of FRACMOO is to handle three hour ramp, then the appropriate hours for MOO are the hours of the three ramp, and a few on either side to ease grid management. If the goal is broader management of net load, then DR should be able to choose which part of the day it offers in, as long as the morning and evening ramps are both potentially constrained. Additionally, if the goal is broader net load management, DR and VERs could be used by the ISO to handle over-generation situations that have often arisen in the early morning hours by expanding the MOO for VERs to a 24 hour obligation, and adding a DR possibility to increase load in the overnight hours.

ISO Response

The ISO understands the upcoming challenges associated with over-generation conditions and continues to work with the CPUC and other LRAs to better understand the reliability risks. The ISO expects that will be a topic of discussion that requires resolution in the near future. Additionally, the ISO reiterates its response to the previous questions. The ISO is proposing new windows for DR and VERs that more directly corresponds to the availability of their energy source.

Opportunity cost-based bid limits

DMM is supportive of the concept of including opportunity costs associated with physical use limitations in bid limits for start-up and minimum load costs, conditional on an all-hours must-offer obligation. DMM has been working with the ISO and some members of the MSC on enhancing the methodology and offers the following five general principles as the ISO continues to refine its approach.

1. DMM suggests the ISO consider limiting the direct application of the ISO's proposed opportunity cost calculations to instances when local market power occurs and requires the use-limited resource to provide counter-flow to resolve the local constraint. When units were 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). DMM believes this approach could limit the potential impact of over or underestimating the true opportunity cost using whatever standard methodology is developed. The methodology currently envisioned by the ISO is based on a mix of historical and anticipated market conditions. Should actual market conditions differ, this may result in the need to either modify opportunity costs or to backstop the process with further limitations, such as monthly or daily limitations as the ISO has proposed. Allowing participants to manage their own opportunity costs using whatever data and technique they believe is most appropriate, subject to mitigation, minimizes the need to continually modify opportunity costs or use backstops in the event that actual conditions differ from anticipated conditions. With this approach, DMM believes it will continue to be necessary to limit start-up and minimum load bids even when local market power mitigation provisions are triggered. This is because under certain predictable conditions specific units may often need to be committed at minimum load to meet minimum on-line constraints or to meet other non-modeled reliability requirements that the ISO continues to meet through exceptional dispatch. This type of local market power is not mitigated by the ISO current automated local market power mitigation procedures for energy.

2. Opportunity-cost based bid limits use limitations should be available for verified physical use limitations only. Specifically, DMM believes that use limitations for thermal resources are primarily limited to units with a strict number of unit starts or run hour-limitations based on environmental permits. This provision should exclude units with use limitations limited to economic considerations such as staffing limitations or major maintenance (which is may be included in minimum load and energy bids through a separate adder). To provide clarity, the ISO should explicitly identify as many of the specific use limitations that would (and would not) apply under these provisions as possible. This could be done by requiring all existing resources to submit information on such potential limitations as part of this stakeholder process. Furthermore, the ISO should develop a process to evaluate and verify use limitations to ensure that only resources with the appropriate physical use limitations receive the use limited opportunity cost adder.
3. Given that the proposed methodology relies on forecasting market conditions including energy prices and variable costs, DMM encourages the ISO to propose a method for evaluating and reporting on the effectiveness of the opportunity cost calculation on an ongoing basis. 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. To address this, the ISO has proposed including monthly or daily backstops. However, as DMM suggests, limiting the use of the calculated opportunity cost to instances where local market power occurs would reduce the impact of potential estimation errors when actual conditions differ from anticipated conditions.
4. DMM encourages the ISO to calculate opportunity costs in as transparent manner as possible by providing a description of the data sources and estimation techniques used in these calculations that is detailed enough to be replicated by market participants.
5. DMM offers the following suggestions on the proposed opportunity cost calculation for monthly or

annual energy or environmentally limited resources:

- a) The ISO may consider adapting this methodology for units with run times greater than one hour. Currently, all of the use limited gas resources with NDEBs have minimum run times of exactly one hour – so the existing methodology works, but both the population of use limited resources and the characteristics of these resources may change.
- b) The ISO has proposed two opportunity cost methodologies: the monthly or annual energy or environmental limited resources (7.1.2.2) and the start-limited resources methodology (7.1.2.3). The first methodology (7.1.2.2) is inconsistent with the start-up cost methodology (7.1.2.3) if variable costs are different per unit of output or start-up, and minimum online costs are significant, which is likely under most circumstances. The ISO may wish to consider more consistent methodologies for the different types of limitations. Specifically, the ISO may want to consider making first methodology (7.1.2.2) more consistent with the start-up cost approach (7.1.2.3).

DMM is supportive of the ISO's efforts to develop an opportunity cost based methodology and anticipates further detail in the next stage of policy development. Specifically, a more detailed proposal should include specification of the components of both revenue and costs included in the gross margin calculation (e.g., revenues associated with ancillary services). Also, to the extent that the ISO uses forecast data such as gas costs or forward electricity prices, the ISO should clearly specify how this information would be used in the calculation. 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.

Most of the gas units with use limitations are peaking resources which can start multiple times in a day. For these units, the opportunity cost of a start could be calculated on per start basis rather than a daily basis. DMM has noted this to the ISO and MSC and they are currently considering how to adapt the model to account for this characteristic.

Units with start limitations are often subject to run-time limitations as well. DMM encourages the ISO to ensure that the opportunity cost methodology is broad enough to account for multiple limitations that occur at the same time without overestimating opportunity costs.

There may be a number of limitations that are too complex to fit into the opportunity cost structure outlined above. Delta Dispatch, which includes combined limitations on air emissions, cooling water volume and temperatures for a set of plants, is one example. The existence of such limitations does not invalidate the development of the ISO's opportunity cost approach, though the ISO should identify and evaluate these limitations during the design process to determine if the limitations are consistent with the proposed methodology.

ISO Response

Thank you for this detailed response. The ISO has significantly revised the use-limited must-offer section taking many of these comments and internal discussions with DMM in account.

Backstop procurement

The backstop procurement aspect of the proposal requires additional clarification before constructive comments can be formed. DMM requests additional clarification and/or more explicit specification of the following issues:

- Factors that were considered in determining that the existing CPM price (typically local generic capacity) is the correct backstop price for flexible RA.
- How will compensation for flexible backstop RA recognize existing generic RA compensation while respecting the distinction between flexible and generic products? For example, does the flexible backstop resource that is RA, but has not sold flexible RA, still receive the full CPM compensation on top of their (generic capacity) RA.
- What will be the capacity basis for flexible backstop payment? Will resources that have no RA contract receive the CPM for minimum load up to a capacity that includes sufficient flexibility to meet the requirement or will the capacity basis be based only on the flexible portion of the resources capacity needed to meet the requirement?

What specific incremental costs (related to capacity provision) is the proposal referring to in the statement from the most recent presentation “incremental costs from economic bidding should be included in energy bids.”¹⁵ DMM is concerned that a potential pricing inaccuracy or inefficiency in the proposed backstop mechanism is being forced into the energy market where it can have a much broader impact on market efficiency and cost. The only costs that are appropriate to include in a competitive energy spot market are those that are incremental to energy production. If these incremental costs referred to in the presentation are marginal to energy production the ISO should make clear the specific nature of these costs.

ISO Response

The ISO has modified the proposal regarding backstop procurement authority. The third revised straw proposal includes discussion regarding the options the ISO considered, why the preferred option was selected, and the reason for the flexible capacity price chosen. As such, the ISO has is proposing a backstop mechanism that values the generic capacity and the flexible capacity separately. In terms of incremental costs that might be incurred, the ISO is referring to any legitimately incurred costs (i.e. variable operating and maintenance costs) from increased ramping frequency or start-ups and shut downs.

Standard flex capacity product and availability incentive

The proposal applies equal weights to offer obligations in the day-ahead and real-time markets in determining compliance with the economic bid portion of the must offer requirement. This does not adequately penalize non-provision of flexibility and may undermine the effort to increase flexibility in real-time. For example, if a resource bids all of its flexible capacity in the day ahead, and then self schedules all this capacity in real time, the resource would be deemed 50% compliant. This is better than crediting the resource for 100% compliance, but it is not clear that the resource has provided any flexibility to the system with those actions. Given the very open nature of what the ISO considers an “economic bid” (essentially any bid with a price, so any price between the soon-to-be floor of - \$150/MWh and the ceiling of \$1,000/MWh is considered an “economic bid”) the need to self-schedule should be small, and will most likely represent capacity that is not actually flexible. DMM recommends that the proposal count any MW of capacity that is self-scheduled in either the day-ahead or real-time markets as not in compliance (e.g. 0% compliance factor).

ISO Response

The ISO believes this suggests will enhance the compliance incentives and has changed the proposal accordingly.

Unit operating characteristics

¹⁵ See ISO presentation “Flexible Resource Adequacy Criteria and Must Offer Obligation” p. 38 at <http://www.caiso.com/Documents/Presentation-SecondRevisedStrawProposal-FlexibleResourceAdequacyCriteriaMustOfferObligation-8113.pdf>

To ensure that resources being relied upon to provide operational flexibility are fully available, unit characteristics used by the ISO market software must reflect the actual full operational flexibility of resources. This will require changes and clarifications to the ISO's current tariff, BPM and policies/practices. One such change is removing the option for resources to bid-in their ramp rates. Ramp rates are a physical characteristic of resources more appropriately recorded in the ISO Master File and only altered through SLIC if limited by actual temporary physical conditions. The ISO has included this in its corrective capacity initiative.¹⁶

DMM strongly recommends that the ISO implement similar changes and clarifications for other unit characteristics, including start-times, minimum load levels, minimum up times, and minimum down times. Section 4.6.4 of the current ISO tariff indicates that "All information provided to the CAISO regarding the operational and technical constraints in the Master File shall be accurate and actually based on physical characteristics of the resources except for the Pump Ramping Conversion Factor, which is configurable." However, DMM is concerned that in some cases unit characteristics submitted to the current Master File do not reflect the actual feasible or optimal physical characteristics of units, and instead reflect values that result from economic considerations. For example, if a unit is not staffed adequately, the start time for the unit may be extended well beyond the units actual feasible start time. This is an economic issue rather than an actual physical characteristic.

DMM recommends that the ISO implement as any changes and clarifications to the ISO's current tariff, BPM and policies/practices it believes are necessary to ensure that these Maser File values represent the actual feasible or optimal physical characteristics of units. In addition, rules should prevent use of one set of unit characteristics in the ISO Maser File for evaluating flexible ramping capacity (i.e. ramp rates, start times and minimum operating level), which can then be changed to values that would result in less operational flexibility in the actual market. If these rule changes or clarification are not made as part of this initiative, there should be an explicit acknowledgement and commitment to implement these changes as part of another initiative or process since these represent a critical part of the foundation of any must-offer obligation for flexible capacity.

ISO Response

The ISO appreciates that there are changes and clarifications that could be made to the current tariff regarding Master File values. The majority of these may be out of scope for this initiative; however, the changing of relevant Master File values after the publication of the EFC list is a concern within the scope. We were not able to address this in this current draft, but are evaluating possible solutions to include in the next draft.

Other Comments

- At the last two stakeholder meetings, market participants have brought up the possibility of counting imports toward meeting the flexible RA requirement. However, the proposal does not include discussion of this issue. The volume of imports that would potentially be eligible to count against a flexible requirement (presumably in the context of the 15-minute market per FERC Order 764) is significant and could have a very pronounced impact on procurement and pricing of flexible

¹⁶ See DMM's comments on the revised straw proposal for the contingency modeling enhancements, Aug 1, 2013, <http://www.caiso.com/Documents/DMM-CommentsContingencyModelingEnhancements-RevisedStrawProposal.pdf>

capacity from internal resources. DMM suggests clarification be provided regarding the role of imports in meeting the flexible capacity requirements and whether or not resources that can be dispatched in the 15-minute market but not in the 5-minute market are eligible to provide flexible capacity.

- The proposal suggests that storage may count as flexible RA by bidding into the regulation market. 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. DMM does not support counting storage resources that only provide regulating reserve to meet flexible RA requirements.
- The ISO is proposing that only resources that can start up in 90 minutes or less will have their minimum load capacity counts as flexible capacity. It was not clear in the proposal or stakeholder discussions what factors were considered in determining the 90 minute threshold. Flexible capacity is defined relative to a three hour ramp. The 90 minute threshold appears to convey a different definition of flexible capacity (at least in the upward direction). DMM suggest that additional clarification be provided regarding determination of the 90 minute threshold for start-up time. For example, if the goal is to measure the actual maximum amount of capacity that could be provided in 3 hours, this could be directly measured by the total level at which the unit could reach in three hours (including minimum load energy), taking into account its start-up time and ability to ramp above minimum load after being started up and on-line. However, if the goal is for this to serve as a proxy for the type of shorter term flexibility needed to meet the flex-ramp product and corrective capacity constraints in the spot market, it might be appropriate to use a shorter start-up time.
- DMM also requests clarification on how capacity from hydro resources will count toward meeting the flexible capacity requirement. The ability of hydroelectric resources to provide ramp depends on many factors including the type of water year (high, low, etc.), time of year (runoff season v. recharge season), environmental restrictions on flow, etc.. There is a considerable amount of hydro capacity in California and the extent to which it can count toward and actually provide flexible capacity can, as with imports, have a very pronounced effect on procurement and pricing. Further, if the counting rules for flexible capacity from hydro resources are not sufficiently dynamic to account for high v. low hydro years and the seasonal differences in output and flexibility then the consequences of a bad hydro year could be more severe.

ISO Response

The ISO has included a brief discussion regarding treatment of the inerties for flexibility to the third revised straw proposal. In short, at the initial phases of implementing flexible capacity into the ISO system, the ISO is relying on one product to address multiple needs. Once we have more experience with 15 minute inerties, the ISO may reexamine the potential contribution of inerties in meeting flexible capacity needs.

The ISO is looking to address both longer ramps and load following needs with a single product. Therefore, allowing a storage resource to be used for regulation energy management is not in lieu of a three hour ramping requirement. The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources like storage resources, particularly in calculating the EFC for these resources. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources.

Resources have the ability to meet ramping and flexibility needs when starting up and getting to PMin. However, the ISO cannot depend on all resources and their flexibility while they get from zero to PMin.

There must be some cut-off. The ISO has reviewed the difference between several start-up times to determine the benefit of different start-up times. Ultimately, the difference between using 60 minutes and 90 minutes was not significant and provided a reasonable threshold.

As with any resource, the amount of flexibility sold by a flexible capacity resource is up to the resource's SC. Additionally, the resource's SC would take on the risk of the resource not be able to comply with the must offer obligation. Therefore, the method for establishing a hydro resource's flexible capacity is static, but the amount the resource may choose to provide could differ based on the hydro conditions. The quantity shown should take hydro conditions into account.

Company	Date	Submitted By
Southern California Edison	August 15, 2013	Joe M ^c Cawley 626-302-3301
<p>1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.</p>		
<p>SCE does not oppose the ISO's proposed <u>schedule</u> to assess, identify and report the annual flexible capacity requirements.</p> <p>As will be described within some of following comments, SCE does have concerns regarding some of the assumptions and methodologies being proposed.</p>		
<p>ISO Response</p>		
<p>The ISO appreciates the support on the schedule and will address methodology questions below.</p>		
<p>1. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,</p> <p>a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that</p>		

some resources reduce the net load ramp at one time, but increase it at others)?

See SCE's response to 2.c.

ISO Response

No response required.

- a. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

See SCE's response to 2.c.

ISO Response

No response required.

- a. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

SCE has reviewed the CAISO proposal as well as data on the flexibility need¹⁷. SCE then applies the CAISO methodology to determine the overall system allocation of the flex requirement. The result is the following:

¹⁷ <http://12.200.60.146:990> is the File Transfer Protocol web address from which the data can be accessed. A user name and password are needed to access this location and can be obtained from the CAISO.

2015 Share Calculations					
Month	Load Share	Wind Share	Solar PV Share	Solar Th Share	DER PV Share
1	53%	6%	25%	7%	8%
2	56%	8%	20%	8%	8%
3	46%	2%	33%	9%	10%
4	39%	4%	35%	10%	12%
5	39%	0%	37%	13%	11%
6	91%	23%	-12%	0%	-1%
7	101%	20%	-18%	0%	-3%
8	137%	4%	-18%	-15%	-8%
9	84%	16%	0%	0%	0%
10	46%	4%	34%	10%	6%
11	54%	1%	29%	8%	8%
12	59%	2%	25%	7%	6%
Average	67%	8%	16%	5%	5%

SCE is concerned that the results shown above are driven more by the modeling methodology than actual contribution to the ramping need in some instances. The data reflected in the table above appears to demonstrate that the effective flex credit received by solar is entirely an artifact of the ISO's analytical approach (i.e., allocating based on a 3-hr net load ramp when the load ramps in summer are longer and forcing the annual peak load to occur in August) and does not fairly represent solar's "true" contribution to flex needs. In addition, the erratic behavior of the allocations in the summer months do not make rational sense and could be indicative of further difficulty for the data to fully describe the contribution to flex need of each group and therefore is not a reliable basis for allocation.

SCE believes that the issues mentioned above bring into question whether it is appropriate to disaggregate the categories into the five proposed by the CAISO. SCE is concerned that if the data and analysis cannot reasonably support the disaggregation, then the categories should be aggregated at a higher level as discussed below.

Given the above concerns, SCE recommends that for 2015, the CAISO implement the following¹⁸:

Collapse the categorization to three; Load, Wind, and Solar. This will eliminate the seemingly illogical and sometimes dramatic difference in allocation between similar resource types like solar PV and solar thermal. SCE has created a table showing this allocation as follows:

¹⁸ For the years beyond 2015, SCE agrees that with increased data and experience a more appropriate allocation methodology could be developed.

2015 Flex Share Ratios			
Month	Load	Wind	Solar
1	53%	6%	41%
2	56%	8%	36%
3	46%	2%	52%
4	39%	4%	57%
5	39%	0%	61%
6	91%	23%	-13%
7	101%	20%	-21%
8	137%	4%	-41%
9	84%	16%	0%
10	46%	4%	50%
11	54%	1%	45%
12	59%	2%	39%
Non-summer	49%	3%	48%
Summer	100%	0%	0%

Second, SCE would recommend that rather than using a monthly allocation, which is subject in any month to the use of the three hour measure, simply using an average of the entire non-summer¹⁹ period (this average is provided in the table above).

Finally, for the summer months, the data appears to show that for 2015, the vast majority of the flexible need is attributable to load. Therefore, a possible allocator for the summer is to simply allocate the entire requirement to load.

As a final note, SCE recognizes that the use of peak load ratio share is not an adequate method to allocate to load. SCE recommends looking to other measures and believes that the use of average daily load factor has the potential to provide a relatively simple measure which more accurately tracks loads contribution to flexibility need.

SCE has and continues to support an allocation mechanism that allocates the obligation for the provision of flexible resources to those that cause the need for flexible resources. As a general matter, the CAISO is proposing to allocate the obligation based on those load serving entities that have contracts with intermittent resources. While this is a step in the right direction, SCE has noted that there is a current example where this does not appropriately address cost causation. SCE is concerned that this example will continue to grow in the future and produce a skewed allocation. That example is a situation in which a load serving entity that is not a CAISO entity procures intermittent resources from the CAISO controlled grid and exports them to serve load outside of the CAISO. In this circumstance, the CAISO proposal lacks in its ability to allocate flex requirements to that entity. SCE urges the CAISO to address this deficiency as soon as possible.

ISO Response

The ISO has proposed an allocation method that uses historical contributions to allocate changes in load.

¹⁹ Based on the data above, the non-summer period would be January through June and October through December

Using this allocation allows the ISO to drop the DG allocation, simplifying the allocation methodology. The ISO is not prepared to allocate summer flexible capacity allocation based solely on changes in load. However, the ISO will seek stakeholder input regarding the benefits of seasonal contribution to each component and is still considering if solar PV and solar thermal can be merged.

1. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:

Although the question posed concerns offer obligations, the underlying issue centers around the ability of various resource types to "count" toward meeting flexible RA requirements. SCE notes that counting rules and offer obligation requirements are two separate issues and should not be considered interchangeable.

ISO Response

The ISO understands and appreciates this distinction.

- a. Resources not identified as use-limited.

SCE supports the must-offer obligation rules being proposed for these resources.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

- a. Use-limited resources.

SCE supports must-offer obligation rules similar to those developed by PG&E for hydro resources, plus including the ability for a SC to submit an opportunity cost-based default energy bid for commitment energy.

Specifically, the rules would need to include the following six criteria:

1. The resource would need to supply a bid for the entire must-offer period (i.e. 5:00 a.m. to 10:00 p.m. each day).
2. The LSE can set the daily energy limit used by the ISO.
3. The resource would need to be able to supply a minimum of six full load hours of energy capability during that period.
4. The SC would be able to offer the resource as self-providing Ancillary Services up to the daily energy limit.
5. The ISO would honor the start limitations (as identified in the master file).
6. SCs have the ability to submit an opportunity cost-based default energy bid for commitment.

SCE points out that these criteria are to be considered a bundled package and it is through this bundled package that long-term use limitations on resources will be controlled.

ISO Response

The ISO is not prepared to require a minimum of six hours of energy from all use limited resources. The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for use-limited resources, particularly in calculating the EFC for these resources. Instead, the ISO believes that the use of the SFCP will provide sufficient incentive for over reliance on use-limited resources. The ISO believes the current proposal is consistent all other points made.

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

Opportunity cost-based bidding alone is not sufficient because this approach draws into question: When is the practice of using an opportunity cost bid economic withholding versus when is it an acceptable method of managing the resources must-offer obligation.

ISO Response

Thank you for the opportunity to discuss economic withholding. This is always a difficult concept and we appreciate it being addressed within the stakeholder process and not after the fact. We included the response to this question as its own section in the paper as we feel it is an important point that should be clarified.

Fundamentally, economic withholding is when a resource artificially increases its bid price above variable costs to avoid being dispatched for the purpose of forcing the market to dispatch higher-priced bids and establish a higher market clearing price to benefit the remainder of that supplier's portfolio that was dispatched by the market. While it is likely that including opportunity cost in the startup and minimum load cost of use-limited resources will impact unit commitment and dispatch, the presumption in the comments likening this to economic withholding is that opportunity costs are not valid variable costs of production²⁰ and therefore distort dispatch.

It is the use limitation that creates the opportunity cost and also legitimizes it as a variable cost of production. A limited resource is most efficiently used when the value of its output is highest. This not only benefits the resource owner through greater profit, but also benefits load in that the use of that resource during relatively scarce periods will result in lower prices on (presumably) a higher volume transacted. Including accurate representation of opportunity cost in the three production activities that are bid by use-limited resources results in more efficient dispatch and pricing from all perspectives.

²⁰ The term "variable cost of production" is used here to reflect variable cost relative to any of the operating activities that comprise the three-part bids for generation in the California ISO: startup, operating at minimum load, and operating above minimum load. While startup and operating at minimum load are not price-setting activities in the Cal ISO market, they do have costs associated with them that must be accurately reflected in the optimization for efficient dispatch and pricing.

The general concern then must be with the accuracy of the calculated opportunity cost that will be used in the startup and minimum load bids. The inaccuracy can emanate from two general sources: (1) methodology and data underlying the calculation or (2) misinformation from the supplier about the nature and magnitude of the opportunity cost. Inaccuracy can introduce inefficiency; however it can only be economic withholding if the estimate is sufficiently high *and* is controlled by the supplier *and* is leveraged to benefit the remainder of the supplier’s portfolio.

In the proposal, the ISO will be calculating the opportunity cost on behalf of each use-limited resource in order to provide an estimate of legitimate costs to include in the resource’s bid. This calculation will be based on an imperfect prediction of the future; therefore, the ISO is allowing a resource to incorporate its own estimate of the opportunity cost within an ISO calculated bid cap specific to the resource. Incorporating these costs into a resource’s minimum load, start-up, and/or energy bid cost is therefore not artificially increasing the bid to avoid being dispatched- rather, it is legitimately adjusting the bid in order to be dispatched in the intervals where the output has the highest value to both the resource and load.

Finally, under the existing requirements for use-limited RA resources there is no obligation to offer in specific hours, only an obligation to offer when a resource is available consistent with its use-limitation, which effectively allows for 100% physical withholding from the spot market. The current proposal trades a small potential inefficiency (via the resource-specific cap which may be marginally above the actual opportunity cost) for eliminating up to 100% physical withholding.

1. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

b. Hydro Resources.

SCE supports the must-offer obligation developed by PG&E and adopted during the Resource Adequacy proceeding for hydro resources.

ISO Response

The ISO appreciates the support on this aspect of the proposal.

- b. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

For the following resource types, SCE does not recommend a separate unique must-offer obligation by resource type, but rather a “bucketing approach.” A distinct bucket should be developed to house these types of resources and allow them to count towards meeting flexible capacity needs. The challenge will be to appropriately size the bucket to allow meaningful participation of these types of “preferred” loading order resources, while still maintaining reliability of the system. It is premature to set unique rules for these types of resources without first having gained sufficient knowledge and experience in understanding the capabilities of

these resources. Because the current quantity of these resources is small, the “bucket approach” will allow these resources to count while that experience is gained. Finally, it is likely that any rules that would be adopted without first gaining experience would need to be changed in the near term anyway.²¹

ISO Response

The ISO believes it is appropriate to start to align all resources with the ISO’s flexibility needs. There may be benefits from not applying must-offer obligations flexible capacity from preferred resources, however, without putting availability requirement on resources, it may not be possible to determine if they are actually providing additional flexibility or not.

1. Demand response resources

2. Storage resources

3. Variable energy resources

2. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO’s flexible capacity backstop procurement proposal.

SCE understands that the CAISO may, on occasion, need to procure flexible capacity to cure deficiencies in LSE SC flexible capacity showings. Whether implicitly or explicitly stated, SCE believes that when these situations arise, similar to current backstop procurement policies, the LSE must be provided a meaningful opportunity to cure the deficiency on its own prior to the CAISO procuring the capacity. Further, if the CAISO intends to use the current CPM price to procure flexible capacity, then the MW procured must be a “fully loaded” product that includes flexible capacity as well as all of its underlying system and local attributes.

As SCE understands the requirements, a resource owner is required to sell its flexible capacity as a “bundled” product (i.e. complete with any underlying system and local requirements the MW possesses) in order to prevent withholding and potential market manipulation. However, an LSE is able to utilize the various components of its procured MW to meet its showing in a manner that best meets its RA requirements at the lowest cost. For example, if a LSE procures 100MW of flexible capacity, which comes bundled with system and local attributes, but maybe only needs to show 50 MW of the flexible capacity to meet its flexibility requirement, but must show the full 100 MW of “local” capacity in meeting its local requirement, then the LSE has the remaining 50 MW of the “flexible” attribute available for substitution needs or to make available to the CAISO in the event the CAISO requests available “flexible” capacity to procure

²¹ The threshold question of Resource Adequacy eligibility needs to be resolved in the next phase of the Resource Adequacy proceeding prior to adding any resources to a bucket. For example, there is currently no methodology for counting a MW of energy storage toward meeting RA requirements as those rules have yet to be determined. Without those threshold RA counting rules, it is premature to include such resources in a bucket that would allow them to count for flexible RA, when they do not yet count for meeting system or local RA requirements.

on behalf of a deficient LSE who is short flexible capacity. In this case, if the CAISO is really only procuring 50 MW of flexible capacity from the LSE without the underlying system and/or local attributes, then the CPM price designed to compensate a resource owner for a “fully loaded” MW would be too high. Although this lower price has not yet been established, it would be inappropriate to compensate the LSE for a MW with only partial attributes at the full CPM price. More discussion is needed to determine what would be a fair price in these circumstances.

ISO Response

The ISO, as with RA, will provide the LSE a reasonable chance to cure any deficiency before issuing backstop procurement to cure the deficiency. Additionally, the ISO has proposed a methodology intended to minimize the costs when only flexible capacity is deficient.

2. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:
 - a. The proposed evaluation mechanism/formula
 1. The formula used to calculate compliance
 2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)
 - b. The use of a monthly target flexible capacity availability value
 1. Is the 2.5% dead band appropriate?

SCE supports the use of the 2.5% dead band as a starting point, with the understanding that this value is consistent with the current dead band established by the SCP program.

Consistent with SCE’s position that any rules agreed to now are to be considered interim, this band width may need to be revisited once experience is gained on the effectiveness of the flexible capacity availability incentive mechanism.

ISO Response

The ISO agrees that these rules must be interim. However, the ISO is designing a product that can be easily converted into a tool that can price the additional value of flexibility using a market based mechanism.

1. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity

availability value? If not, what is the appropriate charge? Why?

See SCE's response to 4.

ISO Response

No response required.

b. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

SCE supports the incentive mechanism as proposed, but only as an interim mechanism. A final answer to the question of what price to pay can only be developed after data representing actual program implementation is accumulated, analyzed and discussed.

ISO Response

The ISO has provided significantly more detail on the SFCP. The ISO is designing a product that can be easily converted into a tool that can price the additional value of flexibility using a market based mechanism.

2. Are there any additional comments your organization wishes to make at this time?

SCE wishes to remind parties that the current proposal is designed to be interim in nature until a more robust and permanent structure can be developed. Ultimately, cost causation must include not only an allocation of costs to load, but also an allocation to the resources that contribute to the need for flexibility.

Counting and Most Offer rules should line-up reasonably with both market needs and reliability needs. At present, there is neither sufficient historical data nor an agreement on how preferred resources can and will satisfy these needs to develop rules that are anything other than interim.

ISO Response

The ISO can consider such cost allocations as appropriate in the appropriate forums where long term solutions are developed.

Company	Date	Submitted By
San Diego Gas & Electric	8/15/2013	Nuo Tang 858-654-1818 ntang@semprautilities.com
1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed		

process

SDG&E Response: SDG&E agrees that the process of flexible determination must be transparent. SDG&E recommends the CAISO request contract data through the LRA since the CAISO proposes to allocate the requirements to each LRA. While this may seem like an extra step of getting the data, much of the requested data is already provided to the CPUC on a regular basis. SDG&E does not agree that the CAISO should be requesting intermittent resources data for the next five years. The current requirement is one year out and even the new multi-year joint reliability framework is only for three years out. Please explain the reasoning for the 5 year term.

ISO Response

The ISO believes that it is appropriate to request contract data from the LSE. This will ensure that the data collected is complete and does not rely on filing made to the LRA that may be designed to serve slightly different purposes. Additionally, the ISO will conduct studies looking multiple years into the future to provide advisory procurement target for LSE's and to allow the ISO to understand future flexibility challenges.

2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

- a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?
- b. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?
- c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

SDG&E Response: SDG&E agrees that the CAISO should submit to the LRA, each of its LSEs' contributions so that the LRA can allocate the requirements to the LRAs. It should be the LRAs that determine how to allocate those requirements to each of the LSEs.

- a. It is SDG&E's understanding that the net load ramp requirement is not for an aggregation of each day of the month; it is rather the day where the net load ramp is most in the month. The CAISO should only look at the resource's contribution on that day. If the contribution reduces the load ramp, then that resource's portion is limited to 0% not a negative percentage. The rest of the LSEs will need to provide flexible need based on their positive contribution to the net load ramp.

b. Each LRA's contribution is comprised of all of the corresponding LSEs' contracts that result in the net load ramp. As such, the CAISO should allocate to the LRA based on those respective LSEs' contributions to the net load ramp.

c. SDG&E would like the CAISO to clarify the term "Monthly Average Load Factor". How is this term different from the Peak Load Ratio Share in mathematical terms.

ISO Response

The ISO is currently proposing to look at only the day with the largest 3-hour net load ramp for determining the flexible capacity requirement and allocation. The ISO is proposing to allocate to LRAs based on the jurisdiction LSEs' contribution to that ramp. Finally, the ISO has modified the proposal for allocating load and is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

3. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:

Resources not identified as use-limited SDG&E Response: SDG&E is interested in learning how self-schedules have occurred historically. Has combined cycle resources' self-schedules caused the CAISO to be in over gen situation when other must run resources are generating? Would reducing the self-schedules down to one unit for each combined cycle have helped such a situation prior to any dispatch down instructions were sent to other must run resources?

b. Use-limited resources

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost. SDG&E Response: SDG&E is uncertain the ISO opportunity cost proposal will effectively manage the conventional resources with annual start-up limits or run hours. There will be continuous battles on what opportunity cost is appropriate (and for how long) to result in not running out of use before the end of the year and still allow maximum use of the resource. This will be a futile exercise pitting the generator against the ISO. The generator will fight for higher opportunity costs so the use limitation is not reached before the end of the year. The ISO (through Potomac Electric) will use a lower opportunity cost that retains a risk of running out of usage before the end of the year. In theory using opportunity costs could work in an average year, however an average year rarely exists. With the CAISO's ever changing portfolio of RPS and OTC resources, predicting the proper opportunity cost is impossible. Using opportunity costs to restrict usage is an indirect control that is actually not necessary if the CAISO is able to manage and track the limitations.

SDG&E proposes that the opportunity cost be exempt from MPM as the purpose of inserting the cost is for the resource to stay within certain limits annually and not profit.

The ISO is in the best position to track and determine on an ongoing basis how best to

manage an annual limitation over time. The ISO has visibility to its entire resource portfolio and can optimize the utilization of use limited resources directly by monitoring and adjusting usage toward the limitation on an ongoing basis. It will be awkward for the ISO to change opportunity costs quickly and accurately enough to optimize the use of a use limited resource. Perhaps the ISO should create an internal use plan for each use limited resource that is optimized across the ISO's entire portfolio on an annual basis. The ISO could restrict the total amount of each kind of annual use limitation that is allowed to count towards requirements like must be done for certain other resources like DR.

How ever the CAISO ultimately manages the use limitations throughout the year, the LSE must not have any replacement obligation if the use limitation is reached before the end of the year When LSEs procure flexible capacity on an annual basis, the expectation is the resource shall meet its obligations for the entire year. Current RA contracts do not involve parties sharing annual limitations as RA capacity is an obligation for the generator to bid or schedule into the CAISO markets. LSEs remain a blind party to the dispatches of the CAISO to an RA resource. If CAISO notifies the LSE the resource is over its use limitation and requires the LSE to purchase additional RA capacity, LSEs will effectively double pay for the same RA capacity. Ratepayers must not bare the burden of the CAISO's inability of managing the annual use limitations.

SDG&E recommends CAISO consider reflecting the above section in its next proposal. SDG&E does not wish to see based on the Joint Reliability Framework, a standard capacity product where either the CAISO or generator must notify the LSE that the resource which cleared the auction has exceeded its use limitation and the LSE must now go out again to purchase even more expensive capacity.

2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

c. Hydro Resources

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources SDG&E Response:

SDG&E supports integrating Demand Response to provide flexible capacity. Some DR programs can only be called on in the DA time frame while others can be activated in RT. If the CAISO does not activate those programs in DA, then the CAISO should consider those programs to have met the Flexible MOO much like the Long Start Resources proposal. Demand Response programs sometimes may not be available for weekends when the net load ramp is needed most. Thus some limitation should be used to count that program fully. CAISO or CPUC may be able to provide data of how DR programs have met the maximum load ramp and determine a suitable EFC for those programs.

2. Storage resources SDG&E Response:

SDG&E recommends the CAISO provide greater detail on its proposal for Energy

Storage resources. Storage differs from DR programs and the MOO should reflect as such. SDG&E is unsure why storage resources' only option would be to submit economic regulation bids as regulation energy management resource.

3. Variable energy resources SDG&E Response:

At the very beginning of the straw proposal, “[i]ntegrating a 33 percent Renewable Portfolio Standard (RPS)...creates several operational challenges for maintaining grid reliability.” While the proposal allows renewables to not generate is outside of the box, it is contradictory to achieving the 33 percent state mandated RPS. LSEs will be unable to accurately forecast its renewables portfolio and receive the RECs to meet the RPS requirement while the generator will claim it could have fully delivered the energy and thus should be paid for its full potential output. LSEs may be at risk of penalty for not meeting the annual target due to the dispatch down instruction. This would also cause increased generation from conventional resources that may be owned and operated by that LSE which would increase the need for GHG credits. This would seem to increase rate payer costs all around. SDG&E at this time cannot support this part of the proposal

ISO Response

The ISO is continuing to develop additional detail to clarify the opportunity cost provisions of the FRAC-MOO proposal. Considering DR resources to be compliant with the MOO if they are not dispatched in the day-ahead market is similar to the treatment of long-start resources. The ISO is still considering the implications of this treatment for DR resources. Finally, the ISO 's proposal to allow VERs to provide flexible capacity is not designed to put the 33 percent RPS mandate at risk. If an LSE is relying on a VER to provide energy to meet RPS targets, then they may not wish to use that resources as flexible.

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

SDG&E Response: The CPUC, in its most recent decision, has ordered all generators to not have the ability to unbundle its flexible capacity from its system/local capacity in 2014 and 2015 and seemingly beyond. This means generators cannot actively withhold its flexible capacity when selling it as system/local capacity. As such, when the CAISO needs to backstop such capacity, the current Tariff already has provisions to backstop system capacity which would include the Flexibility attribute in CPUC terms. It may be necessary for the CAISO to alter the current CPM language to require the backstopped resource from self-scheduling beyond the resource's PMIN. The challenge with backstopping only the flexible portion of a resource is that the PMIN is forgotten. Did the CAISO backstop the PMIN which may not be flexible due to the start-up time? Do LSEs pay for surplus backstopped PMIN capacity in order to meet a flexible significant event?

ISO Response

The ISO will include a provision that requires that any resource procured using the ISO's flexible capacity backstop mechanism to cure monthly or annual flexible capacity provisions will be subject to the applicable flexible capacity must-offer obligation.

5. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

SDG&E Response: CAISO should reconsider bid-evaluation for FRACMOO especially with the proposal for new availability incentive mechanism. Currently SIBR will validate generic capacity bids against the RA Supply Plan and the Capacity Availability Incentive Mechanism awards or penalizes the resource based on performance. SDG&E believes this should be the same for flexible capacity.

a. The proposed evaluation mechanism/formula

1. The formula used to calculate compliance

2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

SDG&E Response: SDG&E believes the differentiation of a flexible product and generic product is makes the term "Standard Capacity Product" no longer standard as the CAISO not all capacity will be judged equally. The proposed flexible capacity availability incentive mechanism will encompass hours of 5am to 10pm of everyday while the existing availability incentive mechanism 5 hours changes by season and on non-holiday weekdays. The existing capacity availability incentive mechanism target is inappropriate since the time frame for the assessment is very different. SDG&E believes CAISO can provide some details based on historical bids into its market for flexible resources. In the past three years, what percentage of flexible resources accurately provided flexibility capacity in the DA and RT markets. This study can be performed by determining the EFC for those flexible resources and determine which flexible resources were used as generic capacity in the monthly supply plans. Of those flexible resources that were committed in the supply plan, the CAISO can review historical bidding and SLIC data to determine what the average percentage of economic bids were. This may provide a better indication of the target for flexible capacity availability incentive mechanism rather than using the targets from the existing availability incentive mechanism. It is imperative that a resource should not be double penalized for both capacity availability mechanisms.

b. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate? SDG&E Response: No, SDG&E recommends CAISO look at the hypothetical historical 3 year monthly averages and use the 1 standard deviation from that target. If the distribution is not normalized, then use the median value.

2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why? SDG&E Response: The current CPM price seems appropriate.

c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal. **SDG&E Response:** 1. The current availability incentive mechanism allows for resources to substitute another in order to avoid the capacity availability charges. CAISO’s proposal for the new flexible capacity availability mechanism does not consider unit substitution to avoid such a penalty. 2. As with the existing availability incentive mechanism, contracts executed prior to a certain date in 2009 and 2010 were allowed to be grandfathered from the financial impacts of the capacity incentive mechanism that were not originally contemplated when negotiating such contracts. The flexible capacity incentive mechanism should also allow grandfathering as this is a new financial risk that was not originally contemplated during negotiation. 3. The current surplus of capacity availability mechanism penalties are distributed to the LSEs via load share ratio. Please provide clarification on how the surplus flexible availability mechanism penalties would be shared.

ISO Response

The ISO has added significant detail and examples to the availability incentive mechanism portion of the paper that proposes the generic and flexible attribute of the capacity be assessed independently. Additionally, the ISO has proposed a dead band of 3.5% at the beginning of the SFCP. It is not clear how hypothetical historic average could be determined. The ISO has included provisions for substitute capacity for forced outages. The ISO is not aware of existing contracts that include specific provisions for flexible capacity. The ISO has not addressed grandfathered contracts. It is not clear that the ISO needs to provide grandfathering provisions or what such provisions should cover. The ISO is still assessing how surplus flexible capacity penalties will be shared.

Company	Date	Submitted By
Large-scale Solar Association (LSA)	8/16/2013	Rachel Gold, Policy Director rachel@largescalesolar.org
<p>1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.</p>		
<p>LSA understands that the CAISO and other parties have expressed a preference for having a limited initial definition of flexible resources and may consider expanding that definition in the future. LSA is concerned, however, that the current 3-hour continuous ramp definition – which requires continual provision of the service for three hours – may be unduly restrictive and will unnecessarily exclude resources that could address the CAISO’s operational issues when combined with other resources (e.g., three resources that could provide the service for an hour each would give the CAISO at least the same flexibility as one resource for three hours).</p> <p>The data shared by CAISO in the CPUC’s Resource Adequacy proceeding earlier this year, suggested that there might be sufficient resources to meet the Flexible Resource Adequacy Requirement (“FRAC”) under this narrow definition.¹ However, the extent to which existing resources can meet the FRAC requirement under this revised proposal is unclear. Moreover, LSA is concerned that the cost to Load</p>		

Serving Entities (“LSEs”) to procure flexible resources would be higher with a resource pool that is significantly restricted in this manner, and this concern do not appear to be considered in the Straw Proposal.

LSA requests that the CAISO provide an updated and more detailed estimate of how much of the total FRAC requirement could be met with existing resources based on its current calculation method, and how that result would change with SONGS and expected once-through cooling (“OTC”) retirements. Alternatively, the CAISO should indicate how this information will be made available in other regulatory proceedings (e.g. the CPUC’s RA or LTPP proceedings).

This information is necessary to provide sufficient context for the revised proposal being contemplated here and to allow all stakeholders to more fully understand the potential impacts of the proposal.

ISO Response

The ISO understands that over-generation concerns continue to grow and is constantly studying this problem and looking for potential solutions.

2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA’s jurisdictional LSE’s contribution to the ISO’s largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

LSA appreciates the change in the Second Revised Straw Proposal that now allocates FRAC to local regulatory agencies (“LRA”) based on each LRA’s jurisdictional load sharing entities’ (“LSE”) contribution to the largest 3-hour net-load ramp change each month. LSA supports this change as aligned with the current process for allocating other resource adequacy requirements.

LSA is concerned, however, that the current allocation methodology looks only at changes in wind and solar output (in addition to load) and ignores the contribution to system inflexibility of other generation sources. For example, the lack of flexibility of long-start resources, to the extent they are coming online or offline during the 3-hour ramp, may also influence the amount of ramping required to manage those changes in output.

a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)? **No comment at this time.**

b. What measurement or allocation factor should the ISO use to determine an LRA’s contribution to the change in load component of the flexible capacity requirement? **No comment at this time.**

c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

Certain VERs, particularly those integrated with energy storage, possess operational flexibility, which should be reflected in the FRAC requirement assessment. These resources, or the flexible portion of their capacity, should not be included in the intermittent resource portfolios when calculating the three-hour ramp component of the flexible capacity requirement. If these resources are not removed from the intermittent resource portfolios, it will result in redundant procurement of flexible capacity resources. Additionally, the kind of standard location-based, generator-type production profile as proposed to be used by CAISO will not be relevant for these resources, which have the ability to increase and decrease production based on market signals.

ISO Response

The ISO understands that over-generation concerns continue to grow and is constantly studying this problem and looking for potential solutions. Ultimately, a solution for over generation concerns must be a part of any long term flexible capacity solution. The ISO is prepared to work with stakeholders to address issues regarding VER with direct on-site storage in the flexible capacity needs assessment.

3. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:

a. Resources not identified as use-limited

b. Use-limited resources

LSA has some concerns about the inclusion of long-start resources in the proposal due to potential contribution of these resources to over-generation conditions and believes this issue requires further examination. LSA requests that the CAISO explain the following:

- How much capacity of this type remains on the system and would be eligible to be counted under the FRAC;
- How much of this capacity the CAISO would have to rely on regularly to meet its flexibility needs; and
- The degree that the need to pre-dispatch those resources could increase curtailment risk to VERs and other resources.

This more complete picture about the extent to which these resources may participate will allow for more informed decision-making about whether and how they should be allowed to qualify to be counted in the FRAC and how the MOO for these resources should be designed to ensure it avoids adverse impacts on other generators.

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

No comment at this time.

2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them. No comment at this time.

c. Hydro Resources No comment at this time.

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation)

LSA appreciates CAISO's development of initial MOO proposals for specialized resources and views this approach as consistent with that taken in the general RA framework, where the Standard Capacity Product is as uniform as possible but still accounts for the operating characteristics (including the MOO) of different resource types. As the details of these MOOs are refined, LSA wants to ensure that MOO for specialized resources are appropriately designed to fully utilize the capabilities of those resources and give credit for doing so.

For example, while the procurement requirement for LSEs is based on their contribution to the largest 3 hour net-load ramp change each month, the provision of flexible capacity by VERs should not necessarily be for a 3-hour duration but rather for individual hourly periods that could then be combined by CAISO for effective management of the system. (See comments above on this point.)

1. Demand response resources

2. Storage resources

3. Variable energy resources

LSA is still evaluating the proposed MOO for VERs and offers only initial comments on the proposal at this time. For example, LSA is concerned that the Day Ahead ("DA") bid requirement may be highly problematic for VERs.

Specifically, it is unclear what impact a DA bid requirement will have on VERs under the implementation of Order 764 changes and the "New PIRP" rules. LSA requests CAISO explain the potential implications of this requirement under the New PIRP before we can opine on whether the DA requirement is viable.

LSA also recommends that the CAISO closely coordinate implementation of the VER MOO with Order 764 implementation to ensure that there are no unintended consequences due to the VER MOO. LSA also recommends the following:

- Hours of MOO requirement for solar resources should be consistent. Any difference in hours

should be related only to solar resources with on site storage.

- The CAISO consider that there may be several different scenarios for a flexible VER to offer flexibility, and that each resource’s ability to offer flexibility may be a function of energy delivery requirements in a PPA. LSA recommends that the CAISO have further discussions with stakeholders on these issues that include the following scenarios:
 - Generator contracted to PMax with allowance for curtailment to X% of PMax (for flexibility), whereby $(1-X)*P_{Max}$ = Effective Flexible Capacity (“EFC”).
 - Generator contracted to $(P_{Max} - N)$, whereby N capacity is entirely flexible (merchant or contracted differently) and may be offered as EFC.
 - Generator with on site storage contracted. EFC = storage MW output capacity

ISO Response

The ISO is continuing to work with the CPUC and other LRAs to establish appropriate treatment for long-start resource. The ISO understands that over-generation concerns continue to grow and is constantly studying this problem and looking for potential solutions. Ultimately, a solution for over generation concerns must be a part of any long term flexible capacity solution. The ISO will provide additional discussion regarding the interaction with the VER MOO and FERC order 764 in the fourth revised straw proposal.

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO’s flexible capacity backstop procurement proposal.

No comment at this time.

ISO Response

No response required.

5. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

Similar to hydroelectric facilities, a flexible VER should be deemed to have fulfilled its must-offer obligations so long as it has submitted economic bids to the extent feasible based on the availability of the relevant natural resource. Presumably, once these resources have met their must-offer obligation, no penalties for non-availability would accrue. The CAISO should clarify the treatment of flexible VERs within the Availability Incentive Mechanism proposal.

a. The proposed evaluation mechanism/formula

1. The formula used to calculate compliance

2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

b. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate?

2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

ISO Response

Hydro resources are offering into the ISO market and are dispatched over the course of the entire day based on a use plan. The above request asks for something different than what has been proposed for hydro resources. The lack of an energy source is different than reaching a use-limitation that the ISO can account for in the market optimization. VERs, like hydro resources will have the opportunity to manage the amount of risk they are willing to except for non-availability by assessing how much flexible capacity they wish to provide. However, the ISO will continue to seek comment regarding how this issue is best resolved.

6. Are there any additional comments your organization wishes to make at this time?

LSA has no further comments at this time.

ISO Response

Thank you.

Company	Date	Submitted By
Braun Blaising McLaughlin & Smith, PC, on behalf of the California Municipal Utilities Association (CMUA)	8/19/2013	Tony Braun (916) 326-4449 braun@braunlegal.com

1. The ISO has proposed a process by which an annual flexible capacity requirement assessment would be conducted. Please provide any comments or questions your organization has regarding this proposed process.

CMUA Response: As CMUA has noted in prior comments, if the assessment is proposed to apply CAISO-Balancing Authority wide, then all LRA must have formal input and participate fully in the assessment process. To be clear, CMUA is proposing that representatives for POU LRAs be formally included in the assessment process, on par with the CPUC and CEC. With that clarification, CMUA supports the process.

ISO Response

The ISO will conduct an open and transparent assessment process and encourages full stakeholder

engagement.

2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,

a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e. how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

CMUA Response: The ISO's inclusion of a monthly flexible capacity requirement, and the ability of intermittent resources to contribute flexible capacity, should adequately account for overall variability of net load.

b. What measurement or allocation factor should the ISO use to determine an LRA's contribution to the change in load component of the flexible capacity requirement?

CMUA Response: The ISO should base the change in load component of the flexible capacity requirement on changes in load for LSEs subject to each LRA's oversight during the monthly maximum three hour ramp periods used to establish the monthly system flexible capacity requirements. The data used to determine LSE changes in load during the monthly maximum three hour ramp periods could be historical data for recent years or the forecast data used by the ISO to estimate the monthly maximum three hour ramps.

Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

CMUA Response: Not at this time.

ISO Response

The ISO is currently proposing a historical contribution to load changes to allocate this portion of the requirement.

3. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:

a. Resources not identified as use-limited

CMUA Response: CMUA finds the CAISO proposal for non-use-limited resources acceptable.

b. Use-limited resources

CMUA Response: Throughout this process, CMUA has urged the CAISO to be more granular in the types of products that make up the flexible ramping requirement, so that additional resources can contribute to system flexibility needs. CMUA understands that this was the earlier policy preference for the CAISO. This revised Straw Proposal includes specialized rules for preferred resources. Given this process to revise the proposal, and the input of several other stakeholders, CMUA urges the CAISO to move in this direction and create differentiated products. In doing so, the CAISO will help address the needs of use-limited resources that may be better able to contribute ramping needs while respecting the operational characteristics of the units.

1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.

CMUA Response: CMUA has not comment at this time.

2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

CMUA Response: CMUA has not comment at this time.

c. Hydro Resources

CMUA Response: CMUA supports expanded product differentiation and hydro-specific rules to reflect the particular needs of hydro resources and the reality that they constitute a significant portion of the fleet.

d. Specialized must-offer obligations (please also include any recommended changes for the duration or timing of the proposed must-offer obligation):

1. Demand response resources

2. Storage resources

3. Variable energy resources

CMUA Response: CMUA has no comment on this issue, other than to note that the specialized obligations being created for these resources underlies the need to have differentiated products so that additional resources can contribute to meeting flexibility requirements.

ISO Response

The ISO is working with the CPUC and other LRAs to develop a long-term solution that is more granular and has a procurement target for each of these needs individually.

4. The ISO has proposed to include a backstop procurement provision that would allow the ISO to procure flexible capacity resources to cure deficiencies in LSE SC flexible capacity showings. Please provide comments regarding the ISO's flexible capacity backstop procurement proposal.

CMUA Response: CMUA supports the broad outline of backstop procurement, which is designed to mirror the Local Capacity Requirement backstop that the ISO currently performs.

ISO Response

The ISO appreciates the support for this aspect of the proposal.

5. The ISO is not proposing to use bid validation rules to enforce must-offer obligations. Instead, the ISO is proposing a flexible capacity availability incentive mechanism. Please provide comments on the following aspects of the flexible capacity availability incentive mechanism:

a. The proposed evaluation mechanism/formula

1. The formula used to calculate compliance

CMUA Response: CMUA has not comment at this time.

2. How to account for the potential interaction between the flexible capacity availability incentive mechanism and the existing availability incentive mechanism (Standard Capacity Product)

CMUA Response: CMUA has not comment at this time.

b. The use of a monthly target flexible capacity availability value

1. Is the 2.5% dead band appropriate?

CMUA Response: CMUA has no position on this issue at this time.

2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

CMUA Response: CMUA has no position on this issue at this time

c. Please also include comments regarding issues the ISO must consider as part of the evaluation mechanism that are not discussed in this proposal.

ISO Response

No response required.

6. Are there any additional comments your organization wishes to make at this time?

CMUA Response: Not at this time.

ISO Response

No response required.