

**ISO Response to Comments on
Flexible Resource Adequacy Criteria and Must-Offer Obligation Revised Straw Proposal
June 13, 2013**

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Company	Date	Submitted By
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Opening Comments		
WPTF appreciates the opportunity to submit comments on the CAISO's June 13, 2013 Revised Straw Proposal for flexible RA capacity (FC). We offer comments in the following areas.		
ISO Response		
We appreciate your comments.		
The Must Offer requirements require further consideration to encourage participation and be equitable		
<p>The ISO has proposed additional must offer obligations for resources providing FC. In particular the ISO proposes to require suppliers to offer energy bids for their FC range from 5 a.m. until 10 p.m. WPTF believes that additional economic bidding will improve market efficiency. However, there are some limitations in the ISO's software that continue to create substantial risks for some market participants over some operating ranges if resources are not self-scheduled. Additionally, certain facilities have other operating limitations including traditional use limitations and, for example, host steam loads for QF facilities. (Some of these cases would be addressed by the ISO-proposed use-limited treatment and some would not.)</p> <p>WPTF encourages the ISO to continue to refine any must offer requirements such that the net effect is to improve market efficiency without creation of a disproportionate risk. As part of this consideration the ISO could address the benefits of a relaxed must-offer requirement until such time as the ISO's modeling issues have been predominantly resolved.</p>		
ISO Response		
<p>This is useful information and we would like to continue to discuss the specific use-limitations that the ISO software and SLIC inputs would not be able to cover. We appreciate that there are situations that cannot be automatically accounted for by the software and may lead to limited market risk or additional manual inputs by the participant. We will continue to refine the software, engage in market education on the one-off adjustments allowed by the tariff, and think through how must-offer requirements will affect non-traditional resource incentives and whether a relaxed or more elastic must-offer requirement may benefit all parties.</p>		
WPTF remains interested in further consideration about unbundling liquidity		
<p>WPTF understands that the ISO has proposed that the FC sold to an LSE be coupled with the generic RA capacity sold to an LSE. However, given that not all RA resources are flexible, and given the lumpiness of RA resources that would satisfy FC, it is unclear the extent to which there will be sufficient liquidity among FC resources to support a meaningful bilateral mechanism. WPTF encourages further thought, including the input of the MSC, regarding whether sufficient liquidity will exist and whether decoupling the services may be more productive. WPTF also encourages the ISO to initiate additional discussions characterizing especially how smaller LSEs would go about securing FC if their portfolio did not already include it.</p>		
ISO Response		
The ISO's assessment of the volume of capacity that would qualify as flexible shows that there should be		

adequate liquidity to support a competitive flexible capacity market. However, the ISO will seek MSC input on this matter. Smaller LSE, particularly ESPs, have stated that they do not procure significant amounts of their capacity more than a year ahead to account for uncertainty in their load forecasts.

Additional details regarding the use of FC in the DA and RT markets would be beneficial

The CAISO proposal includes a single FC product that is broadly intended to meet the range of FC needs the CAISO expects to have going forward. WPTF requests further information from the ISO about how this FC capacity product will be treated in the DA and RT markets. For example, we ask that the ISO confirm that the mechanism the ISO will use to access the FC in the DA and RT will be through its energy market and its ancillary service markets. WPTF also seeks confirmation that an FC resource will not be treated any differently in the DA and RT markets than a non-FC resource, with the exception of the possible population of bids by the ISO under its recently proposed must offer requirement. To the extent the ISO plans to use the FC in any way other than through the energy and AS markets, we request that the ISO provide details regarding any unique use.

ISO Response

WPTF’s characterization of the FRAC-MOO proposal is accurate. Flexible capacity resources will not be treated differently than non-flexible capacity resources in either the day-ahead or real-time markets with the exception of the requirement to submit economic bids into both the day-ahead and real-time markets.

Additional discussion on cost allocation would be appreciated

WPTF appreciates the ISO’s efforts to design a cost allocation proposal that based on causation (e.g., LSEs that contribute less to the need are allocated less). We encourage further discussion about the balance of cost causation, comparability with the ancillary service products, and manageability.

ISO Response

The ISO has modified the flexible capacity allocation methodology slightly. The ISO will use historic average monthly load factors to allocate loads contribution of the flexible capacity requirement. The ISO also looked at the distribution of each of the other contributions to net load and found that the methodology proposed, even though only a snap shot, was still a good representation of the average daily maximum 3-hour monthly net load ramp for each month.

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EnerNOC, Inc.	June 26, 2013	Mona Tierney-Lloyd mtierney-lloyd@enernoc.com (805)995-1618 (office) (415)238-3788 (cell)
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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</p>		

would need to collect to utilize a proposed allocation methodology. Specifically, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

EnerNOC has no comments on the allocation methodology at this time; but, reserves the opportunity to submit future comments.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

The CAISO's flexible capacity resource requirements and definitions were developed with traditional gas-fired generation resources in mind, both short- and long-start resources. Designing the flexible capacity requirement based upon one resource type, rather than the resource need, is patently unfair, discriminatory, and violative of the spirit and letter of FERC Order 719. Only after the Joint Parties' proposal was released and PG&E expressed concern about the possible exclusion of its hydro resources from meeting that product definition, due to the use limitations of those resources, did the definition change for purposes of allowing use-limited hydro resources to qualify. No such exercise has occurred to date for consideration of other use limited resources, including preferred resources, such as demand response. The flexible resource adequacy capacity must-offer obligation (FRACMOO) is based upon this generator-centric flexible capacity definition.

EnerNOC has significant objections to moving in the direction of applying a generator-centric product definition to use-limited resources and preferred resources, such as demand response (DR), without regard to the differences in operating characteristics of the resources. Further, in the Proposed Decision issued by the California Public Utilities Commission (CPUC or Commission), there is a recognition that additional work needs to be done to develop the requirements for preferred and use-limited resources to participate as flexible resources.¹ EnerNOC fully agrees with the following statement of PG&E reflected in the Proposed Decision:

"PG&E recommends the Commission and the parties work to ensure that the flexible component of the RA program is structured so that it fully captures all of the flexibility attributes needed to operate the system reliably, and so that it does not unintentionally disadvantage available non-traditional resources (such as demand response, energy efficiency, and storage) that may be able to help meet those flexibility requirements cost-effectively but with less GHG impact than traditional, fossil fuel-powered resources."²

Therefore, until a flexible resource adequacy capacity definition is adopted for demand response and other preferred and use-limited resources, EnerNOC does not support applying a generator-based must-

¹ Proposed Decision in R.11-10-023, issued on May 28, 2013, "There are a number of details remaining to be determined to fully implement the Joint Parties' Proposal, as appropriately modified, for a mandatory flexible capacity framework starting in RA year 2015, including counting of use-limited resource and preferred resources." Finding of Fact 20, page 64.

² Proposed Decision in R.11-10-023, issued on May 28, 2013 at pp. 47-48.

offer obligation to DR resources. The adoption of a FRACMOO for preferred and use-limited resources before the flexible capacity resource requirements have been adopted would be putting the cart before the horse. Additionally, the requirements for a flexible capacity resource cannot be credibly adopted for all resource types when they were developed considering only the operating characteristics of one resource type.

At this point in time, flexible capacity resource definitions are designed to meet the maximum 3-hour monthly ramping need identified by the CAISO. With generation, the effective flexible capacity (EFC), can be defined, as follows:

For units with start-up time (SUT) < 90 minutes:

EFC= lesser of (NQC-Pmin) or RRavg*(180 minutes-SUT))

For units with SUT>90 minutes:

EFC=the lesser of (NQC) or Pmin + (180 minutes)*(RRavg)

Where:

NQC=Net Qualifying Capacity

Pmin=Minimum operating capacity

RRavg=Average ramp rate

So, how exactly do these EFC resource definitions apply to DR? Or, said differently, how are the unique operating characteristics of DR considered in the definitions of EFC? In short, they are not considered. DR is not a machine with a specific start-up time and a constant ramping rate. DR is the ability for a group of customers to drop load in response to a signal or event. In order for customers to drop load, they must be consuming. The greatest need for resources to meet the maximum 3-hour ramp doesn't occur at 5 AM nor at 10 PM. The greatest 3-hour ramping need, January 2014, occurs after hour 15 and prior to hour 20 (CAISO's Presentation, slide 20). Why not tailor the must-offer obligation, especially for use-limited resources, to the hours in which the need is greatest?

The monthly, maximum 3-hour ramping need, that is the basis of the flexible resource adequacy capacity requirement, is designed to meet is the net load requirement (total load less solar and wind generation). One of the best tools available to the CAISO to manage that monthly, maximum 3-hour ramping need is to change the shape of the net load curve. DR can help with that, either on the demand side or on the supply side. DR can reduce the load at that point in time so as to reduce the need for ramping capacity from generation for the peak of the ramping requirement. Without modifying the shape of the net load curve, the only other way to address the ramping need is to ensure that the CAISO has enough generation on hand that is capable of ramping up and down to meet that monthly, maximum 3-hour ramp. However, the ability for generation to supply the ramping capacity necessary for meeting the maximum 3-hour ramp is the only option that CAISO has focused upon to date. The net result of continuing on this path of adopting the CAISO preferred generator-centric flexible capacity model will be to exclude cost effective DR resources that could meet the needs of the CAISO system. DR has historically been used as a peaking resource, and specifically as a summer peaking resource. It is called upon to clip the peaks or super-peaks, more cost-effectively, than procuring energy through spot sources when prices may be high or building new resources whose capacity would be idle in many hours outside of a peak period. 10% of peak capacity costs are used to meet 1% of the hours of the year. DR is a callable resource option to reduce peak and super-peak periods, which may drive resource development decisions.

In many ways, DR can provide a similar service to CAISO for meeting its peak ramping needs as DR does for meeting summer peaking needs in that DR can effectively reduce the maximum ramping requirement. DR is not now, nor will it ever be, a resource that can provide energy across a 17-hour period in a day and for 365 days/year simply because DR is not a generator. However, DR can and should be used to meet the maximum 3-hour ramping need, when that ramping need is expected to occur. DR should be utilized to support generation resources when those resources are not available or are under-performing or when the need for ramping resources exceeded expectations.

In its June 19, 2013 Presentation, on page 14, CAISO provides information that could be the basis for developing flexible resource adequacy requirements for DR resources. There are two illustrations on this page. On the left, is a distribution chart that indicates the frequency with which certain amounts of flexible ramping capacity are required per month. The maximum amount of flexible ramping capacity, in red, is only required about 5% of the hours per month. On the right is a load duration curve, again, the maximum ramping capacity is only needed about 5% of the time. This is exactly when DR resources should be utilized. Why not consider developing a ramping requirement for use-limited resources that reflect the time in which those resources would be needed most to address the super ramp?

There are two possible ways of addressing use-limited resources for that purpose:

Require DR and other use-limited resources to offer into the CAISO's day-ahead and real-time energy markets when the CAISO predicts that it's next day ramping needs will be within 5% of the monthly, maximum ramping requirement and require the MOO for the period when that maximum ramping requirement is likely to occur (hours 15-20, for example.) or

Require DR to submit day-ahead and real-time energy offers every day between hours 15-20, for example, which is when the maximum ramp is most likely to occur.

DR offers during those hours are most likely to affect the net load curve shape. Since that period represents a point in time when customers are consuming electricity, decreasing demand will have the greatest effect. DR will be able to contribute the most at that point in time.

If the CAISO's current definition is adopted for DR resources, where DR must offer a constant capacity reduction across 17 hours, many of which coincide with hours on the net load curve where customer load is low, the ability for DR resources to reduce load would be limited to the lowest contribution across all hours. It is counter-intuitive and nonsensical to limit the capacity available to the CAISO that could best address its largest ramping concern, between hours 15 through 20, by the amount of load drop that is possible at 5 AM and 10 PM.

In some ways, DR will be a superior product relative to supply resources. For example, because DR is generated by multiple individual customer resources, DR will not have the same likelihood of a total resource outage, as is possible with generation, especially aging generation that is being required to operate more strenuously than in the past by ramping up and down throughout a day. DR participation may actually extend the useful lives of some of those generation resources by reducing the amount of extreme ramping, up and down, to meet the super peaks.

DR doesn't have long-start problems and may actually allow the longer-start resources to be more effective, again, if the ramping need is less spikey. In fact, to some extent in the CAISO's calculation of EFC for long-start units, CAISO is giving these units the benefit of the doubt that they can actually be providing EFC to the system after 180 minutes, 3 hours. Some of these units have much longer start up times than 3 hours. DR can provide the full load drop within a very short period of time.

With that said, there are limitations to DR relative to other mechanical, generation resources. The majority of DR cannot be dispatched for 17-hours/day for 365 days/year for the very reason that these are not “mechanical” resources, but customers actively or automatically responding to reduce their demand. Such an exaggerated obligation would collapse the resource, unnecessarily. Aggregators would have to look for resources that are not driven by reducing summer air-conditioning load and can respond in late afternoon hours. However, if the “need” for the resource is married with the capability, DR resources will be a valuable tool to the CAISO in managing the reliability of the system. If CAISO is open to recognizing the differences between DR and other generating resources and is open to maximizing the benefit that DR can provide to meeting the defined need, then EnerNOC believes that DR can successfully contribute toward the solution.

ISO Response

The ISO recognizes the large potential benefits of demand response resources and agrees that there are significant differences between traditional generation and DR characteristics. We agree this will require, at a minimum: (1) an interpretation of the flexible accounting rules unique to DR, (2) separate must-offer requirements that may change as we gain additional data and insight into how DR interacts with the ramp curve, and (3) either an additional process to communicate the changing needs of the ISO i.e. defining the expected “super ramp-peak” or market based solution to communicate the need through prices and the incentive mechanism.

The ISO believes that reasonable efforts have been made to allow demand response to participate in the ISO market as flexible capacity and will further clarify the progress made in the next draft. The ISO is using the same counting convention that has been adopted by the CPUC for thermal resources. However, the counting convention should not disadvantage demand response resources as we expect most demand response resources to have the ability to move from their baseline to their maximum load drop within 3 hours. This may be a clarity issue and we would like to work further with EnerNoc and other market participants on how best to resolve any ambiguity in the formulas.

Finally, the ISO has proposed a design for flexible capacity must-offer obligation that is based on EnerNoc’s comments. Specifically, the ISO will allow demand response resources to select morning or afternoon offer obligations that would require economic bids from either 6:00am – 11:00am or 4:00pm – 9:00pm, Monday – Friday. This is only a suggestion and it may be appropriate to move toward more generic standards, i.e. a must-offer requirement for the expected 5% maximum ramp required rather than specific hours.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

Use limitations are properly viewed as the operating constraints of whatever resource type is being evaluated to meet the resource need. Generators have operating parameters such as ramp rates, start up costs, minimum run times, etc. As has been recognized already in CAISO flexible generation capacity model proposal, hydro generation sometimes requires a use limitation for maximum operating run time due to storage limitations. DR has its own operating parameter requirements that have not been addressed in the proposal in a way that would ensure that the model is resource agnostic. Consideration in the proposal is not given to operating constraints appropriate for DR. This design flaw contravenes the requirements of FERC Order 719.³

³ Wholesale Competition in Regions with Organized Electric Markets, 125 FERC ¶61,071, Order 719, ¶164, et seq., (October 17, 2008).

Depending upon the ultimate flexible resource adequacy requirements adopted for DR resources, DR will need to incorporate specific use limitations. DR resources will need to limit the hours of dispatch per month to no more than 24 hours; a limit on the number of dispatches/month (8); a limit on the number of consecutive days a resource is dispatched (3); and a limit on the number of hours of dispatch/day (4). DR resources will be available during weekdays, not weekends and holidays.

ISO Response

As noted above, the ISO has adjusted the must-offer obligation for demand response resources based on EnerNoc's comments. The ISO is proposing to implement a provision that would allow resources with monthly or annual start limitations to include opportunity costs in their start-up costs. This may address EnerNoc's concern regarding start limits. The ISO is also limiting the must-offer obligation for demand response resources to non-holiday weekdays. At this time we are evaluating how to best address the consecutive number of day's limitation. This may require something similar to an outage, a change in the software, or additional opportunity costs in the bid price, depending on the nature of the limitations. Additional discussions on these limitations will be vital to designing the most efficient mechanisms to incorporate DR's unique operating characteristics.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

Yes, based upon response above.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

EnerNOC has several concerns with the current approach of establishing the default energy bid based upon the inclusion of opportunity costs and run limitations.

As EnerNOC understands the CAISO's process for determining default energy bids, CAISO retains a third-party administrator for the calculation of default energy bids. The administrator meets with the market participant to determine the use limitations, discuss the opportunity costs and establishes a default energy bid. The default energy bid is a constant across an annual period. The administrator will determine when a bid needs to be mitigated and, when it does, the bid will automatically be mitigated to the default energy bid.

There are several problems with this construct:

If DR participation is limited to super-ramps, DR bids will only be submitted when the resource is needed the most and when the value of the resource may be highest. DR would not be a resource that is bid 17 hours/day, 365 days/year.

The opportunity costs for DR resource vary significantly from day-to-day and an annual default energy bid would not capture that variation. For example, if a resource was needed on Black Friday or Christmas Eve and EnerNOC had a large percentage of retail stores in its portfolio, the opportunity costs for those stores to respond at that time would be greater than a Wednesday afternoon in March, for example. Similarly, if a plastic extrusion company was in mid-process, its opportunity cost at that

juncture would be much higher than when it wasn't mid-process and at risk of losing its product. In short, a static price across all hours is not really workable for DR resources.

Automatic mitigation is also concerning. EnerNOC doesn't agree that a resource's bid should be automatically mitigated to anything other than the submitted bid without a due process or some finding that the bid was found to be an example of economic withholding.

It is unclear whether the existing run limitations are adequate for DR resources, as reflected in response 2.a.

The CAISO has already recognized, in its Reliability Demand Response Resource (RDRR) product proposal⁴ that those demand resources have a high strike price that is well above the operating costs of most generation resources. Flexible capacity resources will be no different.

ISO Response

The ISO has modified the must-offer obligation for demand response resources based on EnerNoc's comments. PDR resources are not currently subject to market power mitigation and do not have a Default Energy Bid. The ISO has proposed a four step process for calculating the opportunity cost of start-limited resources that should help in the optimal management/dispatch of resources. The ISO will be seeking stakeholder input on this process as well as the need to make the consideration of opportunity cost dynamic or have periodic triggers that would require the need to modify the opportunity cost either up or down.

As an informational point, DEBs can change hourly and daily and are not restricted to annual changes. Also, it is the Department of Market Monitoring rather than a third party administrator that is in charge of market power mitigation. We can discuss this further as well as how start-up and opportunity costs could be calculated if that would be helpful.

The ISO is in the process of determining the feasibility of implementing a constraint to accommodate consecutive day limits.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 4 or **Error! Reference source not found.**0 as appropriate.

See comments in prologue.

ISO Response

See first response.

The ISO has proposed to include 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.

Backstop should not be exercised until all available resource options have been explored.

ISO Response

The ISO agrees.

⁴ CAISO's RDRR Product Proposal submitted to FERC on May 20, 2011 in Docket No. ER11-3616-001 at p. 18.

Are there any additional comments your organization wished to make at this time?

LOCAL VERSUS SYSTEM FLEXIBLE RA CAPACITY:

Yes. The Monthly, Maximum 3-Hour Ramping Requirement is a system, not local, requirement. However, due to the market design of the Proxy Demand Resource (PDR), which is the only vehicle available for DR participation in CAISO for purposes of submitting economic energy bids, the resource is mapped to a sub-LAP. That means that only DR resources will, necessarily, have a “local” component to meeting the flexible RA capacity requirement. Along with the design of mapping DR resources to a sub-LAP comes all of the performance criteria on that sub-LAP basis. If DR resources were able to provide a system flexible RA capacity resource, the amount of that resource could be significantly larger and the risk associated with providing that resource on a sub-LAP basis to the demand response provider (DRP) could be significantly mitigated.

PEAKING RA REQUIREMENTS AND FLEXIBLE RA CAPACITY REQUIREMENTS

It is unclear how DR resource availability for summer peaking purposes will coincide with summer flexible RA capacity availability requirements and whether the same resources can be used for both purposes. To the greatest extent possible, resources that are capable of providing both flexible and system peaking requirements should be able to do so. If separate products are developed for both, EnerNOC requests that customers who are registered with a DRP have the ability to participate as either type of resource. However, since these resources have different operating requirements and characteristics, it may not make sense to combine them into one Standard Capacity Product definition.

ISO Response

Generally, PDR was designed at a sub-LAP level in order to ensure proper incentives were in place and that DR resources were providing load management in defined areas. While the ISO understands that amount of DR providing flexible capacity may be larger if allowed to expand across sub-LAPs, the ISO believes this is a wider PDR issue and would be addressed outside of the FRACMOO initiative.

The ISO is not proposing to prohibit DR resources from providing both flexible capacity and peak load management services. Further, the ISO believes that it is appropriate to evaluate flexible capacity and generic capacity separately for flexible and generic availability incentive mechanisms. There are three items in the current proposal that should mitigate overlap between flexible capacity requirements and load drops: (1) The greatest ramping needs occur in the spring and winter and the smallest needs in the summer. (2) The DR provider gets to select the morning or afternoon for providing flexible capacity (3) There is no flexible capacity must-offer obligation for DR resources between 11:00am and 4:00PM All of these items should provide the DR provider with sufficient information to assess the potential overlap of the two obligations and make an informed decision about whether they want to provide generic and/or flexible capacity

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I. Introduction

Environmental Defense Fund (EDF) is a national non-profit consisting of passionate, pragmatic environmental advocates 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: Market and Infrastructure Policy, Revised Straw Proposal” (FRACMOO Straw Proposal), dated June 13, 2013.

EDF recognizes that as California continues on its bold journey towards a clean energy economy, the markets upon which the electric grid has historically been managed will need to evolve in order to facilitate the least cost integration of renewable resources that meets state environmental and consumer mandates. The FRACMOO Straw Proposal is designed to advance measures to implement the flexible capacity requirements for the 2015 Resource Adequacy (RA) compliance – ultimately, to facilitate the integration of renewables procured as a result of state environmental policy. Failure to integrate renewable energy assets at least cost will not only lead to higher energy rates for electricity customers, but will also lead to excessive reliance on conventional generation to balance the grid. Under such a scenario, any greenhouse gas (GHG) emissions reductions resulting from increased reliance on clean energy assets may be lost through over reliance on polluting fossil fuel resources. EDF thanks the CAISO for proactively engaging in this critical market transition, in conjunction with the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC). In the following document, we define our position (Section II) and respond to the CAISO template questions (Section III).

II. EDF Position on the FRACMOO Revised Straw Proposal

Any and all market enhancements, including FRACMOO, should be consistent with California environmental and energy laws, policies, and targets that govern electric energy development, generation, and procurement in this state.

California is a national and international leader on environmental policy, including laws that reduce GHG emissions (AB 32) and require IOU’s to have a 33% RPS (SBX1-2). The Public Utilities Commission and the Energy Commission have also established a clear loading order to define the utilities’ approach to meeting our energy needs: energy efficiency first, followed by Demand Response (DR), then renewables and only then conventional resources. The FRACMOO revised straw proposal must reflect these mandates, as it will directly influence whether they are met by the utilities.

Currently, the FRACMOO revised straw proposal is not consistent with the loading order, and may act to exclude DR and other preferred, use-limited resources that would be able to meet some of the CAISOs Flexible Capacity Requirements (FCR). In doing so, it may inadvertently reduce the efficacy of California’s landmark clean energy policies – and increase climate change and air pollution emissions. EDF recognizes that the specific three hour ramping requirement defined by the CAISO is most easily met by resources with well-defined ramping characteristics – the conventional generation resources that have largely been relied on to date. At this point in the state’s clean energy development, we believe that the rules designed to enable a resource to qualify as Effective Flexible Capacity (EFC) should ensure a place for clean, use-limited energy resources – reflecting the clean energy policies that are

driving the need for this proceeding.

For these reasons, we appreciate CAISO's commitment to "working with DR providers to ensure that all necessary use-limitations of DR resources are identified and properly addressed." As CAISO CEO Steve Berberich said recently, "Frankly, California needs to get much better at demand response. We have a tendency to look at one side of the equation as opposed to the demand side" (as quoted in Smart Grid Today on 6/10/13). We look forward to working with the CAISO in this endeavor, and offer preliminary comments below.

ISO Response

The ISO has added provisions that would allow renewable and demand response resources willing to follow ISO dispatch instructions to provide flexible capacity.

DR can be used to directly reduce peak load, which reduces both the largest three hour contiguous ramp contribution as well as the peak load contribution to the FCR. Therefore any combination of DR resources that can reliably be dispatched by the CAISO to decrease peak load, regardless of their temporal duration, should count as EFC and be considered in calculating FCR.

The CAISO has set its target on a three hour ramping product to meet forecast changes in net load, not accounting for DR's ability to directly reduce peak load and – as a result – the need for this capacity. Reflecting this ability – in accordance with DR's priority by the loading order - reduces the largest three hour contiguous ramp contribution, as well as, assuming the Most Severe Single Contingency (MSSC) condition is not binding, the peak load contribution to the FCR. Therefore any combination of DR resources that can reliably be deployed by the CAISO to reduce system peak load, regardless of their temporal duration, directly reduces the FCR. Stated in a different way, any combination of DR resources that reduce system peak load, regardless of temporal duration, should count as EFC.

In fact it is precisely during peak load conditions when DR resources typically have the most discretionary capacity available, and therefore the greatest ability to reduce the FCR, so long as the CAISO is willing to account for this equivalent effect. This also provides a strong argument for enabling DR to participate directly in wholesale energy markets, where direct control of DR resources by the CAISO will be of enormous system benefit.

In the FRACMOO revised straw proposal section 6.1.4, the CAISO requests stakeholder comments "...regarding the best way to manage DR resources' use – limitations based on the hours in which they can be called. The goal is a to allow a demand response resource to count towards flexible capacity for what it is able to drop over a three hour period instead of looking at a single moment in-time." This approach unnecessarily compares DR to conventional generation, not recognizing the contribution that DR can make towards directly reducing the FCR by judicious application during peak load conditions. While there are instances where DR resources can be aggregated to create a three hour ramping product consistent with the definition of EFC described in the FRACMOO revised straw proposal, we do not believe that this is the only approach allowing DR to satisfy the FCR, nor does it adequately reflect the loading order. We suggest that in addition to allowing DR to count towards EFC in the same manner as conventional generation, that the CAISO allow DR to count as an equivalent quantity of EFC consistent with the DR resources ability to reduce peak load and the FCR.

ISO Response

The ISO has added provisions that would allow renewable and demand response resources willing to follow ISO dispatch instructions to provide flexible capacity. Additionally, the ISO will consider comments regarding how other load management programs could be considered as part of the annual flexible capacity needs assessment. See comments to EnerNOC for further discussion of DR accounting rules.

Time Of Use (TOU) rates being actively considered within the CPUC's residential rate design rulemaking will reduce peak load over the next 2 - 5 years, changing the FCR over time. The CAISO should be prepared for a potentially large reduction in FCR resulting from adoption of TOU rates rather than procuring excess FC now.

The CPUC's residential rate design rulemaking (R.12-06-013) is in the process of considering more widespread adoption of TOU rates. Such price responsive demand will impact the amount of FC needed by the CAISO. If the CAISO does not account for any reduction in FCR resulting from some adoption of residential TOU rates in the near future, then the state may end up over procuring expensive thermal resources to meet this FCR, resulting in excess greenhouse gas (GHG) emissions as well as depressed wholesale energy prices. Because of the demonstrated ability of TOU rates to reduce peak load, we respectfully recommend that the CAISO consider the impact of the residential rates proceeding on an evolving FCR, and avoid procuring excess FC now.

ISO Response

The rate design will impact the net load curve. To the extent the net load curve is modified, the ISO can account for this change in the flexible capacity needs assessment. Additionally, the flexible capacity needs assessment considered here is a single year product and will be determined each year.

The FCR adopted by the CAISO should reflect actual need, and Load Serving Entities (LSEs) should not be required to procure or to assume costs for FC resources in excess of their actual need.

Many existing resources have historically supplied "flexibility" to the grid without explicit real time dispatch instructions from the CAISO. Such resources are capable of increasing their contributions in the future. As noted in the CAISO's "Roadmap for DR and EE," these include price responsive demand (a subset of Demand Response (DR)), out of state imports/exports of economy energy, the emerging Energy Imbalance Market (EIM) in WECC, limited self-scheduling of resources not capable of submitting to full dispatch by the CAISO, and spot purchases and sales from other California balancing authorities. In addition, the 15 minute energy market being developed by the CAISO will give even more options to purchase flexible capacity on the spot market.

LSEs will no doubt continue to rely on these traditional strategies to provide flexibility and should be encouraged to do so. Significantly, however, none of these resources would have an EFC value and thus be eligible to be procured and receive RA payments under the Proposed Decision's adopted "Flexible Capacity Framework" or the FRACMOO. As a consequence, the amount of flexible capacity to be dispatched by the CAISO is highly likely to be considerably less than that calculated by the FRACMOO formula. LSEs should not be required to procure or to assume costs for flexible capacity resources in excess of their actual need. The CAISO should ascertain what FC resources have been used in the past to meet ramping needs before mandating any particular set or quantity of FC resources – and these should be consistent with the loading order.

Whatever formula is eventually approved by the CAISO as the basis of its FCR should be demonstrated over a reasonable length of time to be consistent with actual need for flexible resources to be dispatched by the CAISO. Failure to do so would not only result in excessive costs but would prematurely require the development of new infrastructure which may never be needed. As discussed further below, EDF supports the approach by the CPUC described in the recent proposed decision in the RA proceeding.

ISO Response

The use of the three-hour net load ramp as a means to address both the 5-minute ramping needs and multi-hour ramps that will increase over time. As such, 5-minute dispatch capabilities are required to

ensure both needs are adequately addressed. As time and experience provide additional information regarding the need for flexible capacity, it will be considered in the annual flexible capacity needs assessment.

Adoption of a formal tariff should be postponed until the FRACMOO fully accounts for and integrates loading order preferred resources, use limited resources and existing sources of flexibility.

The CPUC's most recent Proposed Decision (PD) in the RA rulemaking (R.11-10-023) issued on May 28, 2013 adopted 2014 annual RA obligations applicable to CPUC jurisdictional electric LSEs and an interim flexible capacity framework. The PD makes several key findings that directly affect both the timing and content of the FRACMOO. Specifically, the PD concludes that "there is no compelling need to adopt a flexible capacity requirement for the 2014 Resource Adequacy year" and that the determination of flexible capacity need in 2015 through 2017 must be refined to ensure that "a wide range of use-limited, preferred, and other resources can qualify to meet flexible capacity needs." (PD at pp. 3, 25, 39)

EDF shares the CPUC's view that the need for such flexibility is not so immediate that it cannot wait to get the rules right to incorporate "a wide range of use-limited, preferred, and other resources." Thus, any CAISO procurement tariff must meet identified "reliability" concerns and do so in a manner that complies with important State policy mandates that require energy needs to be met by a specific resource mix that places a preference on energy efficiency, demand response, and renewable generation to reduce pollution and GHG emissions. Over procurement of fossil resources not only conflicts with these policies, but imposes additional and unnecessary costs on California electric ratepayers. (See, e.g., PD at p. 3.)

Given this conclusion, EDF agrees with the PD that the CAISO should take the time necessary to "best...identify and procure flexible capacity resources in a manner consistent with the Commission's Loading Order." (PD, at p. 50). The clear direction from the CPUC is that "preferred" and use limited resources, such as DR and energy storage, will play a role in meeting any identified flexible capacity need. An informal technical working group on the role of DR in the FRACMOO may be a timely next step to delineate ways to better integrate these resources into the Revised Straw Proposal.

ISO Response

The ISO has developed a proposal that will facilitate preferred resources participation as flexible capacity resources. If any program is to be implemented for 2015, the policy development must take place now. Finally, the ISO does not object to using a similar counting provision for DR and renewable resources as is proposed for thermal resources. If that counting convention is used, then most preferred resources should be eligible to provide EFC for up to their Pmax. Once the accounting is completed, it would be up to the resource's SC how much flexible capacity they would like to provide.

The costs to the CAISO of having flexible capacity on hand to manage any and all system needs, including conventional generation forced outages and ramping restrictions; intra schedule ramping; as well as changes to variable generation and load, should be allocated in a consistent manner.

Many types of system events, including conventional generation forced outage rates and ramping restrictions; intra schedule ramping; as well as changes to variable generation and load, impact the CAISOs need for flexible capacity. However, in the FRACMOO revised straw proposal, the CAISO assigns costs of the FCR resulting from changes in variable generation resources and load to the cost causer, while the costs of system events resulting from changes in conventional generation are socialized to load.

The effect of changes in conventional generation can be reframed in terms of its impact on net load. For

example, a conventional generator forced outage can be described as an equivalent spike in the net load: Changes in conventional generation can be reframed in terms of their impact on net load and consequently the FCR. Therefore, allocating the cost of the FCR resulting from changes in variable generation and load to the cost causer, while at the same time socializing the cost of the FCR resulting from changes in conventional generation is *per se* discriminatory. The CAISO should either socialize the costs of the FCR across all load, consistent with how the costs of changes in conventional generation are currently allocated, or should account for the contribution of changes in conventional generation to the FCR, and allocate the pro rata share of FCR costs to conventional generators, consistent with how the proposed FCR charges variable generation resources and load.

ISO Response

We have proposed a change in the cost allocation methodology and added potential options to review in the stakeholder meeting. We look forward to your response comments.

III. EDF Responses to CAISO Template Questions

The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

See Section II.F above.

ISO Response

No response required.

Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

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

The FRACMOO Straw Proposal should distinguish between solar thermal generation with and without storage. Such renewable generation assets are fundamentally different: Solar thermal without storage behaves more like a solar photovoltaic resource, and solar thermal resources with storage behave more like a conventional resource. The CAISO should explicitly distinguish between solar thermal resources with and without storage in its FCR determination.

ISO Response

We will make explicit note of this in the future and agree it may be appropriate to distinguish between the two types. (Or any intermittent resource type with storage and without storage.) We have also observed that solar thermal resources with storage capabilities on the grid behave differently than without storage in place.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions **Error!**

Reference source not found. or 0 as appropriate.

The FCR as proposed by the CAISO addresses two distinct needs: First, the FCR addresses the need to have flexible resources available to meet the diurnal ramp caused in part by the increase in solar resources on the grid. Second, the FCR addresses the need for having flexible resources available to meet the additional uncertainty and variability in the net load that comes with having increasing quantities of variable generation resources in the fleet. The first type of FCR is addressing a need that can be predicted as accurately as the rising and setting of the sun, while the second type of FCR is addressing a need that reflects solar and wind forecast errors.

Both types of FCR are needed by the CAISO, since without the MOO associated with the FCR, resources capable of meeting either of these needs would have the option of self scheduling, thereby limiting the ability of the CAISO to economically dispatch resources to manage changing grid conditions. The difficulty with the FCR as proposed by the CAISO in their revised straw proposal is that it makes no distinction between these two types of FCR, with the result that the cost of procuring this FCR will likely be driven by the more expensive of the two. In addition, FC resources must be available 17 hours each day, even though the significant ramping events occur within much smaller time intervals. So while the revised RA compliance obligation will provide the CAISO with tools to reliably meet load, it does so at a higher cost to ratepayers.

While EDF recognizes that the current RA rulemaking has placed limits on the types of FC that the CAISO is able to propose, we note that the CAISO has historically been able to meet large forecastable system ramps without the need for this FC construct. EDF is concerned that the CAISO is creating a framework for managing forecast net load that does not adequately utilize preferred resources and will prove excessively costly to ratepayers. We have suggested approaches to lower the cost of this approach – we would also support the CAISO working with the CPUC to distinguish between these two difference resource requirements.

ISO Response

The ISO has developed a proposal that will facilitate preferred resources participation as flexible capacity resources. We agree that the must-offer component of flexible capacity procurement is a vital piece to ensure flexible resources procured are able to be used as flexible in the energy markets.

Although historically the ISO has been able to meet large, forecasted system ramps, there have been presentations and papers on how in the future system ramps will increase in size and decrease in predictability. This necessitates explicit flexible capacity procurement in order to reliably operate the grid into the future.

The ISO has proposed to include 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.

Any exercising of the CAISO’s backstop procurement provision implies a failure either in the CPUC RA process or in the CAISO FCR forecasting. Furthermore, backstop procurement in lieu of the use of preferred resources to meet the FCR is inconsistent with California’s mandated loading order. Therefore any use of backstop procurement should be treated as a signal that the RA process is not functioning properly, and should encourage rethinking and possibly reworking the FCR construct, especially with respect to including the use of preferred resources.

ISO Response

There are numerous reasons why the ISO may need to utilize its backstop procurement authority and not every issuance of a CPM represents a failure of the RA system or the ISO’s forecast. However, the ISO does not consider the issuance of a CPM designation a minor issue. The ISO will continue to assess the cause for each CPM designation, will provide supporting details, and assess the potential for larger problems as appropriate.

Are there any additional comments your organization wished to make at this time?

Thank you for the opportunity to provide these comments. We consider these comments as the start of a dialogue and look forward to working with the CAISO as it considers the issues contained herein.

Company	Date	Submitted By
PG&E	June 26, 2013	Marie Fontenot (415) 973-4985 Peter Griffes (415) 973-3335
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 general, PG&E’s comments are primarily focused on the allocation methodology. Although we offer three specific recommendations to improve the granular allocation method presented in the Proposal, we encourage the CAISO to provide adequate time for stakeholders to develop and vet alternative allocation methodologies.		
PG&E offers seven recommendations: The CAISO should consider simpler alternatives to allocate the flexibility requirement.		

Allocation of flexible capacity requirement is more appropriate to a LRA-level than to a LSE-level. PG&E does not support technology mandates for flexible capacity. The granular allocation methodology should recognize intermittent resources that are dispatchable or economically curtailable. Revisit the appropriate intermittent capacity measure for calculating flexible RA allocation. The allocation of the flexible requirement should include the option for a third quarter true-up. The CAISO and stakeholders should explore alternatives to the proposed “bid high” approach to limiting dispatch.

PG&E also requests clarification on four design elements and notes what we believe is an error in the Proposal.

ISO Response

The ISO responds to each these items in detail below.

Recommendations

The CAISO should consider simpler alternatives to allocate the flexibility requirement.

PG&E understands the CAISO’s reasoning behind the most recent proposed requirement allocation methodology. However, one major downside is the complexity of the method. Although PG&E does not currently offer a third method beyond the two presented for consideration (peak load ratio share and the more granular method presented in the Proposal), PG&E believes the stakeholder process should be open to consideration of other allocation methodologies that are simpler than the “granular” method and welcomes ideas from other participants.⁵ PG&E recommends that the CAISO give stakeholders adequate time to develop alternatives allocation approaches before locking down this element of the design.

ISO Response

The ISO has considered several alternative allocation methodologies and has proposed in the most recent draft for load to be based on 3-year historic average monthly load factor. The ISO also considered changing the allocation methodology for the wind and solar components to include monthly averages that account for daily changes to each component, but found this did not provide significant benefit. The ISO continues to seek comments from stakeholders on these and other alternatives.

Allocation of flexible capacity requirement is more appropriate to a LRA-level than to a LSE-level.

PG&E is concerned with the CAISO’s plan to allocate flexible capacity requirements to load serving entities (LSEs). Allocations to local regulatory authorities (LRAs) are more appropriate. While the CAISO may recommend a total flexible capacity requirement to the California Public Utilities Commission (CPUC), the CPUC should maintain final responsibility for determining the flexible capacity procurement requirements its jurisdictional LSEs.

The CAISO’s discussion of penalties⁶ is inappropriate at this time as the specifics of the requirements process have not yet been finalized. PG&E encourages the CAISO to consider a before-the-fact verification process in concert with the CPUC and California Energy Commission (CEC).

⁵ PG&E does recommend specific modifications to the granular allocation method presented in the Proposal. See items 4, 5 and 6.

⁶ As alluded to in Section 3, page 8 of the Revised Straw Proposal.

ISO Response

As noted in the paper, the ISO will provide the flexible capacity requirement to all LRAs. The requirement provided will be the sum of that LRAs constituent LSEs.

The ISO believes it is appropriate to outline penalties within the context of this stakeholder initiative. While verification processes may mitigate potential of reporting errors it is still important to have penalty provisions in place just in case a reporting by one LSE causes harm to another LSE.

PG&E does not support technology mandates for flexible capacity.

Although the CAISO may develop different counting or must-offer rules for different technology types, PG&E does not support mandates that prescribe a portion of a LSE's flexibility showing from a certain technology type. The CAISO or the CPUC should not set a minimum requirement (i.e. mandate) for flexible capacity from specific technologies or resource types with less stringent counting or must-offer rules. Doing so reduces the overall reliability of the system, supplants other economic resources that could have offered their capacity (and may need the RA revenue stream to stay economic) and harms customers by providing higher costs with a reduced reliability benefit.⁷

The granular allocation methodology should recognize intermittent resources that can be dispatched.

PG&E recommends a modification to the Proposal's flexibility requirement allocation methodology to account for dispatchable intermittent resources, that is, those that can offer economic bids to the CAISO. Many intermittent resources could be made dispatchable for all or a large portion of their operating range and could offer flexibility benefits to the system. To the extent that a resource is dispatchable and can offer flexibility under its contract, that portion of the resource should not be considered in calculating the percentage of LSE-contracted intermittent capacity (used in the allocation).

The granular 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. The greater a LSE's percentage of these technologies, the greater the allocation to the LSE.

The methodology lumps all renewables in one of three bucket, regardless of their ability to be dispatched. This lumping together of all resources by technology means that capacity that is dispatchable and economically curtailable will increase the LSE's share of the flexibility requirement. This discourages LSE's that contract with intermittent resources from seeking the functionality the CAISO needs to more effectively manage variations, the ability to dispatch through its markets. The proposed approach perpetuates the very problem the CAISO is attempting to solve and is unfair to both LSEs procuring intermittents that offer flexibility and the owners of those resources that built their facilities with investments in additional functionality to allow them to respond to CAISO dispatch.

If this allocation methodology is to be adopted, PG&E recommends the CAISO modify its calculation of the LSE percentage of the total contracted capacity for each of the three categories. The capacity counted for each LSE, and in total, should only include intermittent capacity that is not dispatchable or economically curtailable. This modified treatment of intermittent resources would then need to be applied in a consistent manner throughout, where appropriate. This different treatment for different classes should be considered in multiple aspects of the flexibility framework. For example, these

⁷ Higher costs would be associated with any minimum requirement or set-aside since if the resources we're available at lower costs than other alternatives, they would be procured for LSE's RA showings and wouldn't require any set-aside.

resources may need to be accounted for differently when modeling the forward looking monthly 3-hour ramp.

PG&E also requests the allocation methodology address the calculation for LSEs that have contracted procurement of renewable power generally, but lack the granularity to identify the source and generation type of those contracted resources.

ISO Response

The ISO has included additional provisions that would allow variable energy resources to count as flexible capacity resources. This will allow an LSE that has procured dispatchable intermittent resources towards meeting their flexible capacity requirement. Any additional differentiation along these lines will occur in the annual flexible capacity needs assessment.

Revisit the appropriate intermittent capacity measure for calculating flexible RA allocation.

As noted during the June 19, 2013 stakeholder meeting, the percent of total contracted *capacity* may not be a reasonable measure for calculating a LSE's flexible RA allocation as it may over-represent the *energy* output of an intermittent facility. PG&E requests the CAISO revisit whether there are other appropriate measures such as net qualifying capacity (NQC) or a number based on the generation profile of a facility.

ISO Response

The ISO has proposed some modifications to the allocation of flexible capacity requirements. However, at this time, the ISO has not identified a superior method than one based on contracted capacity. For example, relying on a resource's NQC would mean that an LSE could receive a smaller allocation simply because the NQC of their resources is lower. However, the ISO remains open to alternatives to the proposed allocation methodology.

The allocation of the flexible requirement should include the option for a third quarter true-up.

The CAISO plans to provide the requirement allocation to each LSE by May 1st of the year preceding the compliance year. The allocation of the flexibility requirement may change due to changes in a LSE's portfolio (e.g., early or late contract start dates, early termination, contract capacity updates) as well as load migration. PG&E recommends the CAISO incorporate an option to provide updated load and portfolio information which would be used to revise the allocations. We suggest mirroring the process currently employed in the CPUC's local RA process in which LSEs can provide updates in August with the CPUC providing an updated allocation to LSEs in September.⁸

When this idea was raised at the stakeholder meeting, the CAISO noted a change from one LSE could affect the allocation to other LSEs. However, the CPUC has already shown that it is able to successfully implement a similar third quarter true-up for the local RA process (which similarly affects other LSEs) and is a more fair allocation of obligations across all LSEs.

ISO Response

Section 3 of the Second Revised Straw proposal outlines the process the ISO will follow for the flexible capacity requirement assessment. The opportunity for revised load forecasts and project build outs is

⁸ Please refer to the CPUC's 2013 Final RA Filing Guide for an example of a timeline that includes a True-Up, pages 2-3. The total system requirement is not altered, but the amounts of the requirement allocated to LSEs changes. http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra_compliance_materials.htm

now clearly provided for in August.

The CAISO and stakeholders should explore alternatives to the proposed “bid high” approach to limiting dispatch.

For resources with monthly and annual use-limitations, the CAISO’s current proposal suggests that market participants should ‘bid-at-high-prices’ to control CAISO dispatch of these types of resources. High-priced bids, or effectively economic-withholding through such bids, creates a number of market and compliance issues⁹ and should not be considered as a preferred solution. The CAISO and stakeholders should continue to explore non-priced alternatives, such as those that are already in place to address daily use-limitations¹⁰. While still recognizing the importance of bidding into the CAISO markets, additional software or processes may need to be developed. Alternative approaches to monthly and annual use-limitations appear superior to the current proposal and should be explored during the stakeholder process.

ISO Response

Although the ISO is able to include daily-use limitations in its optimization, at this time monthly/seasonal/annual use-limitations are beyond the scope of the market optimization. Our intent is not to ask resources to “bid high,” but to systematically include an opportunity cost in their bids when appropriate, and only for resources documented by both a record of the resource being use-limited and with an opportunity cost backed by the ISO’s independent default energy bid evaluator. We agree that additional software or processes may need to be developed as we gain more experience with using use-limited resources’ flexible energy.

Fundamentally, allowing an SC to include the opportunity cost of a use-limitation sends a clear signal that using the resource at that time maximizes the benefit of a dispatch to both the resource owner and the system. A transparent price is most likely to result in the consistent use of a resource that maximizes the benefits. Use plans could complement the price, to be sure that the pattern of use is not far off base (e.g., resulting in no starts or way too many starts in, e.g., June). Finally, LSEs, in their RA showing will have the ability to manage what resources are used to meet ramps by showing them as flexible and what resources they feel are best used for only meeting peak load.

Clarifications:

The proposal would benefit from clarity on several elements in its next iteration:

Clarify the requirement for non-contingent ancillary services bids.

PG&E would like the CAISO to clarify that the requirement for flexible capacity resources to bid into the ancillary service markets on a non-contingent dispatch basis applies to thermal resources with no use-limitations and not to use-limited resources.

ISO Response

Ancillary services can be bid into the day-ahead market as contingent or non-contingent. Contingent AS

⁹ Irrespective of the CAISO proposal’s suggestion that Default Energy Bid prices could be increased to reflect opportunity costs.

¹⁰ Specifically the daily energy limits, and additional resource characteristics included in the Masterfile such as number of starts per day.

can only be dispatched in the case of a contingency, whereas non-contingent AS in the circumstance that there is excess AS in real-time may be dispatched as energy even when there is not a contingency event. This rule would apply to any flexible resource bidding into the AS market and should not affect use-limited resources differently than traditional thermal resources.

Treatment of Combined Heat and Power resources.

For combined heat and power (CHP) and other resources that contain both dispatchable and non-dispatchable capacity, please:

Confirm that they are eligible to count their dispatchable capacity toward an LSE's required flexible capacity showing;

Clarify how the Effective Flexible Capacity (EFC) would be determined for CHP resources;

Whether there will be any change to the MOO in the event of daily operational constraints or ambient conditions that prevent economic bids for the full EFC. (We note that ambient conditions may affect output of natural gas resources, as well.)

ISO Response

CHP resources with flexible capacity will be eligible to provide flexible capacity. The EFC for these resources will be calculated the same as all other resources (i.e. 3-hour ramping capability). The ISO is not, at this time proposing a CHP MOO. Outage and derates will be considered in the development of a flexible capacity availability incentive mechanism.

Discussion of the error term.

PG&E requests clarification in the next proposal of the methodology the CAISO will use to determine the error term (ϵ) in the Flexibility Requirement calculation. The methodology should be clearly described.

ISO Response

A firm definition for what is included in the error term is premature at this time. The ISO is working with the CPUC and other LRAs to define a core measurement that should address most of the ISO's flexible capacity needs. However, the error term is included to cover needs that are by definition unknown. The ISO will discuss any modifications made to the flexible capacity requirement due to a non-zero error term in the flexible capacity requirement assessment.

The proposal should clearly distinguish between "Need" and "Requirement".

PG&E asks that the CAISO define "Requirement" as what is physically needed to operate the system. Flexible capacity requirements would then be allocated by the CAISO to ensure sufficient procurement to meet the identified system flexible capacity requirement.

"Need," on the other hand, should be used to describe the difference between the requirement and the capacity that is physically available to meet that requirement. We ask that the CAISO use these suggested definitions consistently in the next proposal.

ISO Response

The ISO has changes "need" to "requirement" as appropriate in the context requested.

Correction:

Expiration of Capacity Procurement Mechanism.

The Proposal contains what PG&E believes to be a factual error. On page 23 of the Proposal the CAISO

states, "... the ISO's backstop Capacity Procurement Mechanism expires at the end of March 2015." The pricing mechanism actually expires on February 16, 2016.¹¹

ISO Response

This correction has been made.

Company	Date	Submitted By
Calpine Corp.	June 26, 2013	Matthew Barmack barmackm@calpine.com 925-557-2267

Opening Comments

Calpine welcomes the opportunity to comment on the revised straw proposal. Calpine's primary concerns about the proposal are its continued reliance on flawed resource counting rules that discriminate against and discourage cost-effective upgrades to existing combined cycles. In addition, Calpine notes that while the proposal addresses how use limits for flexible capacity resources might be managed in the IFM and real-time markets, it does not address counting rules for use-limited resources. Even if a use-limited resource can comply mechanically with the enhanced must-offer for flexible capacity proposed by the CAISO, it may not provide the same reliability benefit as a resource with fewer use limits. Further analysis of how various use-limited resources should count towards flexible capacity procurement requirements is warranted either in this stakeholder process or in parallel proceedings at the CPUC (and other LRAs).

ISO Response

The ISO is not proposing separate resource counting conventions for use-limited resources. The ISO will work with the CPUC and other LRAs to determine if there is a need to limit that amount of use-limited resources shown in RA showings. As the ISO produces new data, it will be made available.

The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO's largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include? Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

Calpine generally supports the allocation of flexibility and other reliability-related costs to the loads and

¹¹ CAISO Tariff, section 43.7.1.

resources that cause the costs. Calpine notes that the CAISO's proposed cost allocation methodology provides no means of allocating flexible capacity costs to resources that are not under contract and/or scheduled by an LSE SC. While such resources may be rare or non-existent currently, for the sake of completeness and because such resources may become more common in the future as contracts expire, the CAISO may want to address such resources in their proposal.

ISO Response

The ISO understands this concern. Additional work may be needed to address this problem in the future.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

Calpine believes that resources should be counted similarly towards flexible capacity procurement requirements to the extent that they provide similar reliability benefits. The reliability benefit of a capacity resource is generally related to the extent that it can provide *energy* in periods in which capacity is scarce, i.e., in periods in which the system operator might be forced to curtail load involuntarily and/or violate reliability criteria, such as those developed by NERC and WECC. Determining the frequency of capacity scarcity associated with the large ramps that flexible capacity procurement requirements are designed to address requires detailed modeling, such as the modeling that E3 is developing for Track 2 of the LTPP.¹² Such modeling may reveal that a resource must be able to provide energy for six hours each day, as has been proposed for hydro, in order to address every possible instance of capacity scarcity. Regardless of what the analysis demonstrates, all resources should be held to the same standard and resources that are only able to provide energy in a more limited set of hours potentially should count less towards flexible capacity requirements.¹³

ISO Response

The ISO disagrees. As noted in the Second Revised Straw Proposal, the ISO believes that is reasonable to

¹² For example, see slide 2 of http://www.cpuc.ca.gov/NR/rdonlyres/832CD6B9-1AC6-4DAD-A20D-575C3278A202/0/E3_REFLEX_CPUC_20130522.pdf.

¹³ Modeling the ability of a use-limited resource to produce energy during periods of potential capacity scarcity generally involves simulated dispatch against a set of prices and market conditions. Such simulated dispatches and approximations thereof have been used to assess the cost-effectiveness of demand response programs. For example, see the discussion of the "A Factor" beginning on p. 23 of <http://www.cpuc.ca.gov/NR/rdonlyres/7D2FEDB9-4FD6-4CCB-B88F-DC190DFE9AFA/0/Protocolfinal.DOC>. The CPUC's DR cost-effectiveness methodology also accounts for the fact that DR programs that require day-ahead notification are less likely to be able to provide energy under scarcity conditions that only materialize during the operating day. As Calpine has suggested in previous comments, the flexible capacity of long-start units should be adjusted downwards similarly to reflect their inability to respond to such conditions.

consider some resource types as unique and capable of providing flexible capacity. Therefore, the ISO is proposing special MOOs for demand response, storage, and VERs.

The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated. The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions **Error! Reference source not found.** or 0 as appropriate.

The ISO has proposed to include 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.

Are there any additional comments your organization wished to make at this time?

Calpine continues to object to the CAISO's proposed flexible capacity counting rules. As Calpine has articulated in previous comments in this stakeholder process¹⁴ as well as in the RA proceeding,¹⁵ the 90-minute cold start threshold is arbitrary and may discourage low cost upgrades that significantly shorten start times, but may not reduce them below 90 minutes. In addition, the reliance on cold start times to calculate the flexible capacity of CCGTs is inconsistent with the manner in which CCGTs operate. The vast majority of CCGT starts are warm or hot.¹⁶

In addition, with respect to section 6.1.3 of the revised straw proposal, the section that addresses long-start units, as articulated above in footnote 13 and previous comments, Calpine believes that the flexible capacity of long-start units should be de-rated to reflect the fact that they may be unable to respond to capacity scarcity conditions that are not anticipated in the day-ahead time frame. The CAISO's first option for addressing long-start units, i.e., do not allow them to count towards flexible capacity requirements, is closer to Calpine's recommended approach than the option that the revised straw proposal endorses, i.e., consider the flexible capacity must-offer of a long-start unit fulfilled for an operating day if it is not committed in the IFM.

ISO Response

The ISO is not proposing separate resource counting conventions for long-start resources. As Calpine notes, there may be reliability concerns from over-reliance on use-limited resources. The same may hold true for over reliance on long-start resources. For example, if the flexible capacity fleet is exclusively long-start resources. The ISO will work with the CPUC and other LRAs to determine if there is a need to limit that amount of use-limited resources shown in RA showings. As the ISO produces new data, it will be made available.

¹⁴ <http://www.caiso.com/Documents/CalpineComments-FlexibleResourceAdequacyCriteria-MustOfferObligations-StrawProposal.pdf>

¹⁵ <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M064/K207/64207304.PDF>

¹⁶ Ibid., p. 5.

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Company	Date	Submitted By
NRG Energy, Inc. (“NRG”)	June 26, 2013	Brian Theaker brian.theaker@nrgenergy.com

The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

The CAISO’s proposed allocation methodology is reasonable. NRG offers no proposed modifications.

ISO Response

No response necessary.

Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

Yes.

ISO Response

No response necessary.

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

The CAISO’s allocation method, based on the interim approach of simplifying the flexibility requirement to a single three-hour ramp, is workable as an interim solution but will have to be expanded as load following and regulation requirements are added.

ISO Response

The ISO understands and agrees with the comment.

The ISO believes that there are either tools in place or under development to manage a resource’s use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC’s RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

NRG must manage annual start-up limits for some of its resources. NRG does not object to having to

offer those resources as a condition of having them count towards meeting flexibility requirements. That offering obligation already exists as a prerequisite for having resources count towards meeting Resource Adequacy requirements. NRG is very interested in ensuring that the use limits of its resources are accounted for and respected and that it does not incur undue risk (such as the imposition of Standard Capacity Product penalties for violating use limits if there are not reasonable tools in place for managing those limits) for providing such services.

ISO Response

The ISO will manage all use limitations as provided by the SC of the resource. The ISO is moving forward in developing a flexible capacity availability incentive mechanism. The ISO is still attempting to address the specifics of how use-limitations would apply to use-limited resources.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

Because the interim flexibility requirement is defined by a three-hour ramp, resources must be able to provide continuous energy across this three-hour period to qualify for providing flexibility. If a resource meets this requirement, it should be considered to be available to provide flexibility. However, this should not be the only consideration. Consistent with the current “bucket” approach to Resource Adequacy, the CAISO should have limits on certain resources that can only provide three hours of ramping for a very few days in a month. It would not be beneficial to rely on those kinds of resources to reliably provide flexibility when their consistent availability is in question.

ISO Response

The ISO will need a mix of resource capabilities to operate the grid reliably. We agree that reliance on any one resource type or characteristic would not be beneficial.

The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

NRG encourages the CAISO to consider and adopt validation rules that minimize the likelihood that the CAISO would reject what would otherwise be legitimate market bids. In the examples provided on page 18, NRG supports option (c) – creating an economic bid for 5 MW to cover the amount of flexible capacity provided, but not rejecting the self-schedule or the submitted market bid that did not cover the entire range of flexibility provided.

ISO Response

The ISO will not impose any new bid validation rules. Instead, the ISO is developing the flexible capacity availability incentive mechanism to provide the proper economic incentive for resources to economically bid their flexible capacity.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource’s start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

The CAISO’s proposed approach for allowing opportunity costs to be included in default start-up and

minimum load bids seems promising. The success of such an approach will depend on how difficult it will be to agree on what adders should be included in those default bids.

The opportunity cost should be structured in a way that would ration the amount of available use across the limitation period. Given that this is likely to involve forecasting LMPs for some future period (perhaps even an entire year), there should be an opportunity to adjust this opportunity cost adder as time progresses, so that the resource is not locked into an adder based on an initial forecast that may not prove accurate.

ISO Response

The ISO has included a proposal to account for start limitations. The ISO will be seeking additional input from stakeholders and the MSC regarding how best to address a need to dynamically adjust this opportunity cost calculation or include provisions for time progress.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 5 or 6 as appropriate.

Focusing on the nature of the must-offer obligation while deferring discussion about how use-limited resources can provide flexibility under the current paradigm, defined by a three-hour ramp, reinforces the need to ensure that resources must be able to provide an amount of energy no less than the amount the resource counts towards meeting flexibility requirements for at least a continuous three-hour period. The CAISO has proposed, for example, that hydro resources must produce a six-hour energy equivalent (June 13 Proposal at page 19). NRG concurs with such a requirement.

The requirement to submit economic bids across this significant time frame must be tempered by rational default bids that prevent a use-limited resource from being used up too early in the applicable limit period. The CAISO's proposed approach to allow for an opportunity cost adder to the resource's default bids holds promise for preventing use-limited resources from being prematurely exhausted. NRG supports subjecting all resources that meet flexibility requirements to the same offering obligation. This may bring in question whether certain resources can provide flexibility services across the entire period proposed by the CAISO. For example, NRG questions whether Demand Response (DR) resources would have sufficient load variability, and, consequently, sufficient flexible response capability, at 5 AM.

ISO Response

The ISO believes that it is appropriate to consider the availability of the underlying energy source for preferred resources and has developed specialized must-offer obligations for DR, VERs, and storage.

The ISO has proposed to include 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.

Despite NRG's concerns about whether the CAISO is appropriately designating capacity that the CAISO relies on to provide reliability, as agreed to in the principles underlying the 2011 settlement, NRG supports expanding the scope of the current Capacity Procurement Mechanism (CPM) to allow the CAISO to use this mechanism to procure flexibility in the case of a shortfall. NRG agrees with the CAISO that efforts to design a new backstop capacity procurement mechanism should begin soon, with the CPM mechanism set to expire in 2015. Ideally, parties should focus on the development of a centralized multi-year forward capacity procurement mechanism to address other ongoing problems with capacity procurement and not focus solely on a short-term backstop.

ISO Response
The discussion and development of a centralized capacity market is beyond the scope of this stakeholder initiative.
Are there any additional comments your organization wished to make at this time?
NRG supports option 2 for dealing with long-start resources (page 21 of the proposal). While the CAISO acknowledges the need for new availability incentive mechanisms in light of the incorporation of flexibility requirements into the RA program, NRG urges the CAISO to move forward with applying the existing availability requirements of the Standard Capacity Product to the Demand Response that currently counts towards meeting RA requirements, as ordered by FERC back in 2009 (127 FERC ¶ 61,298 at paragraphs 57-58).
ISO Response
The application of the existing availability incentive mechanism to DR is beyond the scope of this stakeholder initiative.

Company	Date	Submitted By
Alliance for Retail Energy Markets	June 26, 2013	Sue Mara RTOAdvisors, L.L.C. (415) 902-4108 sue.mara@rtoadvisors.com
Opening Comments		
GENERAL: AREM remains fundamentally convinced that flexible capacity requirements should be structured as biddable ancillary services (either as new ancillary services or as new requirements folded into existing ancillary services) and that the CAISO’s primary focus should be on developing and implementing those ancillary services and establishing a centralized forward capacity market. The implementation of both ancillary services and a centralized forward capacity market will 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		
In order to operate the grid reliably the ISO will need to both procure the appropriate capacity capabilities and dispatch this capability through the correct market products. This stakeholder process sets out to ensure that the ISO procures the needed capabilities for the energy and AS markets. This includes the new ramping product, which is a biddable energy product specifically for flexible energy. We agree both the implementation of this new product and the development of a forward capacity procurement construct are vitally important.		

1. The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO's largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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,

1a. Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

1b. Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

1c. Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?

The CAISO's proposal for allocating the flexible capacity requirement to LSEs based on their contribution to the three-hour ramp needs further discussion and consideration, both from a policy perspective and to further evaluate various alternatives. The increasing amount of intermittent resources on the grid, required by state law are, without a doubt, creating changes to overall grid operations, and necessitating new products and services to manage the intermittency. However, AReM has not yet reached any specific conclusions as to whether the impact of increasing renewable resources in compliance with state law should result in the imposition of these new grid management costs in the manner proposed by the CAISO. AReM looks forward to additional discussion on this issue and a full discussion of all the potential allocation alternatives. In particular, AReM believes that principles of cost causation, and establishing appropriate price signals, needs to be balanced against how the impacts of changes to grid operations that result from increased intermittency of resources should be procured and priced. In short, the discussion of whether these costs should be allocated in the same manner that ancillary service costs or RA requirements are allocated today (which is more of a pro-rata allocation) or whether new cost allocation mechanisms are warranted needs further discussion.

As AReM has previously argued, 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.. Proper cost causation ensures that all market participants get the correct price signals.

AReM appreciates that the CAISO has proposed a new method for allocating flexibility requirements to Local Regulatory Authorities (LRAs), which differs from the peak-load ratio share used to allocate RA requirements to LSEs (pp.12-15). The CAISO's proposed allocation formula adds factors to address each LSE's portfolio of wind, solar and distributed energy resources and their effects on flexibility needs. This proposed allocation method is a bookend of a potential allocation mechanism based on how an LSE's fleet of renewable resources contributes to a need for flexible resources.

In addition, AReM requests that the CAISO explore another alternative allocation method that also incorporates cost causation principles. The CAISO has presented the "duck curve" as evidence that load shape drives system flexibility needs. AReM suggests that there may be merit in an allocation method that takes into consideration the extent to which the shape of an LSE's load exacerbates the "duck curve" or, conversely, 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 may 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 study this additional alternative allocation method and report on its results in its next paper.

However, if the CAISO moves forward with the allocation method specified in its Revised Straw Proposal (pp. 13-14), AReM opposes allocating the flexible requirements on an annual basis as the CAISO has proposed. Instead, AReM supports a monthly allocation of flexibility requirements, which more closely tracks the effect an LSE's portfolio has on the flexible resource needs of the system. As previously noted, flexible needs do not correspond with system peaks and using an annual peak value to allocate flexible requirements will create additional cross subsidies that should be avoided. The CPUC has proposed a monthly allocation of the flexible requirements and AReM requests that the CAISO adopt a monthly allocation as well.¹ Finally, AReM notes that an LSE's allocation of the flexible capacity requirement must be adjusted to reflect load migration as is currently the practice for System and Local RA. AReM recommends that the current process for revising RA requirements apply to the flexible capacity allocation as well.

ISO Response

The ISO has changed the allocation of flexible capacity caused by load changes to consider monthly average load factors and will continue to take input from stakeholders regarding the appropriate allocation methodology.

2. The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

a. Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

AReM has no comment at this time, but looks forward to further discussion on this topic.

b. Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

AReM is concerned about potential limitations on the use of Combined Cycle Units to qualify to provide flexible capacity. In particular, the CAISO's December 13, 2012 Straw Proposal proposed an "interim" counting rule for combined cycle units and stated that a "longer-term solution" is needed (p. 20). The Revised Straw Proposal is silent on this topic. ESPs procure RA capacity from combined cycle units and need upfront clarity about how such units will qualify to provide flexible capacity. Lack of clarity will hamper procurement and create unnecessary market uncertainty. AReM does not have the technical expertise to propose appropriate counting rules for Combined Cycle Units. However, the CAISO should commit to work with stakeholders to develop clear rules for Combined Cycle Units and all flexible resources before any flexible procurement requirements are imposed on LSEs.

ISO Response

The ISO counting conventions are consistent with those used by the CPUC. The ISO is committed to working with the CPUC and other stakeholders to continue to refine these provisions.

3. The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

AReM has no comment at this time, but looks forward to further discussion on this topic.

4. The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

AReM has no comment at this time, but looks forward to further discussion on this topic.

5. The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions Error! Reference source not found. or 5 as appropriate.

The CAISO has previously discussed issues associated with self-scheduling of resources by LSEs, which limits resources available to meet flexibility needs. The CAISO's December 13th Straw Proposal stated that the CAISO was "considering" a requirement to prohibit self-schedules on flexible resources during "particular periods," but not until 2015 (p. 14). The Revised Straw Proposal seems to require that self-scheduling of flexible resources would be prohibited between 5:00 a.m. and 10:00 p.m. beginning with the 2015 compliance year (p. 18). Because self-scheduling reduces flexible resources available to the system, AReM generally supports this requirement (subject to the CAISO adequately addressing the issues that have been raised about the impact that CAISO modelling flaws have on the need for some self-scheduling, as discussed at the June 19, 2013 meeting), but recommends that it be clearly specified in the CAISO's rules to avoid misunderstanding and market uncertainty.

ISO Response

The ISO does not propose applying a must offer obligation until the start of the 2015 RA compliance year.

6. The ISO has proposed to include 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.

Capacity obligations imposed by the CAISO must be shared among all LRAs, and therefore a default mechanism in the event that an LRA does not establish capacity procurement obligations will be necessary, if flexible capacity requirements are embedded in the RA requirements. The December 13th Straw Proposal discussed how the CAISO would establish default obligations for LRAs in its tariff. The Revised Straw Proposal is silent on this topic. AReM requests that the CAISO specify how it intends to set and enforce default flexible capacity obligations for LRAs. Without a CAISO requirement for comparable obligations, cross subsidies could occur. If the CAISO intends to identify deficient LSEs, AReM requests that the CAISO also specify that all LRAs must meet or exceed the CAISO's default requirements or be

subject to any backstop procurement and, possibly, penalties (if penalties are imposed for LSE deficiencies by other LRAs). However, if 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

At this time we expect that the ISO would only backstop flexible capacity in the case when there is an aggregate deficiency and that it will not be possible for all LSE's to meet their obligation and for there to be an aggregate shortage. We added further details in the next draft and appreciate AReM pointing out that the section was dropped.

7. Are there any additional comments your organization wished to make at this time?

Grandfathering of Existing RA Contracts – This topic is not addressed in the Revised Straw Proposal. AReM recommends that parties to existing RA contracts must be either exempt from the new flexible resource requirements (i.e., the contracts would be “grandfathered”) or be given time to renegotiate the contracts to the mutual satisfaction to both parties.

Required Annual Showing for Flexible Capacity – The Revised Straw Proposal states that “as in the current RA framework,” the LSEs’ SC must show they have met 90 Percent of the LSE’s flexible capacity requirement in the annual RA showing made in October. LSEs under CPUC jurisdiction submit their showings to the CPUC, which are then shared with the CAISO.

The LSE’s SC is not involved in this process. The Revised Straw Proposal also notes that the 90% requirement could be increased to 100% in the future (footnote 4, p. 4). AReM opposes this new requirement and recommends that LSEs report the flexible resources included within the System and Local units procured to meet their RA requirements, using the same process and schedule in place today. Thus, in the October filing, LSEs would continue to demonstrate that they had met 90% of the System RA for May to October of the following year, and would provide as part of their showing the flexible capacity available in those System RA units. Before the CAISO implements a change to the current process for making RA showings, AReM reiterates its previous request (made in AReM’s January 10, 2013 comments) that the CAISO provide market participants with data on: (1) the magnitude of the monthly flexible capacity requirement from 2008 to 2012 if such a requirement had been in place during that time period; and (2) the extent to which its proposed flexible capacity requirements would have been met through the system and local RA showings made during that same five-year period. AReM believes that analysis of such data will help determine whether changes are required to the annual showings.

ISO Response

We feel that there will be ample time between when the flexible rules are approved and when they will go into effect for entities to renegotiate any contracts- therefore grandfathering should not be necessary.

In section 40 of our tariff, our relationship is generally with the SC for the LSE. However, section 40.1.1 (found here: http://www.caiso.com/Documents/Section40_ResourceAdequacyDemonstrationForAllSCsInTheCaliforniaISOBAJul11_2013.pdf) essentially allows the relationship to be with the LSE as confirmed by the CPUC or LRA.

The ISO anticipates the showing process by LSE, as the process is currently structured by the CPUC, would continue.

We are not able to provide all the years referenced at this time, but please refer to data submitted in the most recent CPUC RA proceeding where we provided forecast flexibility requirements compared to the available flexible capacity of the RA fleet

http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra_compliance_materials.htm. We feel that because the projected need for flexibility is increasing, a historical analysis is less helpful to show the extent to which flexible capacity requirements will be met through system and local requirements.

Company	Date	Submitted By
California Department of Water Resources (CDWR)	6/26/2013	Mohan Niroula Mohan.niroula@water.ca.gov 916-574-0712
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p>		
<p>CDWR response: CDWR appreciates ISO’s effort and commitments in revising the FRAC MOO proposal that will ultimately address stakeholders’ concerns. The five components (change in load, wind output, solar PV output, solar thermal output, and DG output) that are believed to be causing the flexibility needs are reasonable components to consider, although CDWR recommends changes in how two of them are allocated. CDWR agrees with CAISO that the allocation of responsibility for flexibility needs should take into account the portfolios of the individual LSEs and reflect the degree that each LSE has invested in resources that create the need for additional flexibility. CDWR also agrees that CAISO has properly focused on intermittent resources such as solar and wind as driving the bulk of the need for flexibility. However, CDWR does not support the allocation methodology for change in load and distributed energy resources.</p>		
<p>ISO Response</p>		
<p>The ISO has changed the allocation methodology and looks forward to comments on the proposed changes.</p>		

Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

FCR for Change in Load: the proposed allocation of FCR to an LSE based on its coincident peak load share does not reflect true causation in the case of an LSE whose load is moving in the opposite direction to the ramp. An LSE that has negative load ramps or runs flat during the period when maximum flexibility would be needed would be penalized by an allocation of an FCR obligation.

For example, LSE A has negative gross load ramps in the morning = -200 MW and evening gross load ramps of -100 MW coincident with the ISO system need for ramp up. The LSE A has a coincident peak load share of 2%. If ISO FCR for Δ Load is 4000 MW, then the LSE A would be allocated 80 MW of FCR based on coincident peak load share of 2% for Δ Load. However, the LSE A did not cause the ramp up needs; rather it helped the system by negative gross load ramps. Therefore, for the LSE A, instead of allocating FCR, it is appropriate to award credits of -100 MW (at system peak-evening) FCR which can count towards FCR obligation associated with other four components for the LSE. In order to adopt this methodology, the allocation based on coincident peak share should be replaced by allocation based on LSE's load profile that provides a measure of gross load ramp specific to the LSE. This is the only appropriate method to allocate FCR attributed to LSE's change in load. Awarding credits for the negative net load ramps for an LSE would incentivize LSE to reshape their load year-after-year based on the characteristics of their load. CDWR believes that awarding FCR credits for negative gross load ramps would promote demand response in the form of the "load modifier" described in the CAISO Demand Response Roadmap. An excerpt from the CAISO Demand Response Roadmap states:

The load reshaping path focuses on the demand side of the balance equation, to create a flatter system load shape that has a lower peak and is both less deep and less steep. Modifying consumption patterns to reshape system load in this favorable way can reduce costs and simplify grid operation. A lower peak load reduces the need for peaking generation capacity. A less deep load shape means less risk of over-generation and better utilization of existing resources. A less steep load shape reduces the need for fast-acting (fast starting and ramping) resources. This path therefore focuses on programs and incentive mechanisms such as retail tariff structures that change consumer behavior and favorably alter the load shape. It also includes activities for incorporating "load-modifying" DR programs into the demand forecast, rather than including such programs on the supply side as is currently generally the case.

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.

Where,

ISO system change in load (gross load 3 hour ramp) at the largest ramp need = sum of all LSE's gross load 3 hour ramps coincident at the system's monthly largest 3 hour net load ramp.

Allocation of FCR to LSE A = $(-100 \div 3600) \times 4000$

= -111 MW, this negative allocation should be treated as credit, capped to the LSE's negative gross load 3 hour ramp (100 MW only). In this case, LSE A should be awarded credit of 100 MW FCR. If it was positive, then the LSE would have full amount as its obligation. Awarding credit would balance FCR needs attributable to the intermittency of LSE portfolio resources.

FCR for Change in DG output:

CDWR does not support allocation of FCR for change in DG output based on an LSE's coincident peak load share ratio for an LSE that has no DG. As proposed, an LSE that does not have DG in its portfolio would still receive an FCR obligation for its load ratio share of DG connected to other entities. In this example LSE A does not have DG in its portfolio. The ISO's need of FCR for Δ DG output is 500 MW. As proposed by ISO, LSE A would receive 2% of 500 MW= 10 MW FCR obligation. CDWR proposes that FCR for Δ DG output be calculated based on each LSE's contribution to the total Δ DG Output.

Assessment of total FCR allocation to LSE A:

FCR for Δ Load = -100

FCR for Δ Wind = 50 (based on methodology proposed by ISO)

FCR for Δ Solar PV & solar Thermal= 45 (based on methodology proposed by ISO)

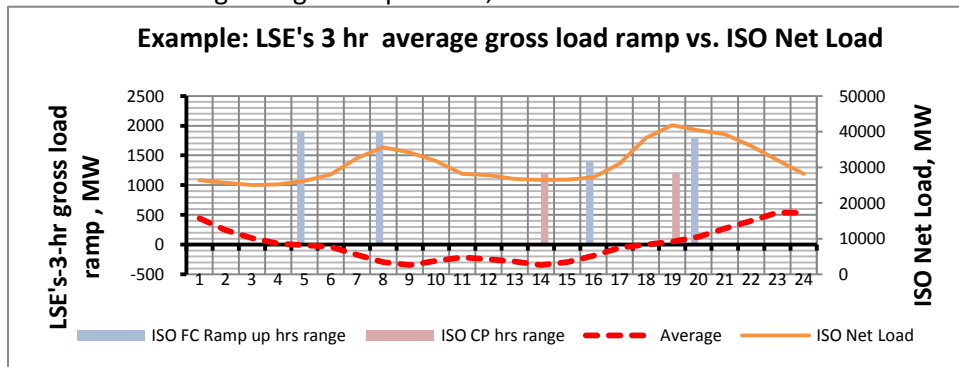
FCR for Δ DG Output = 0, because LSE A does not have DG in its portfolio.

Total FCR allocation to LSE A = -100+50+45 = -5 MW

If the Total FCR is negative (5 MW here), it should be credited towards LSE's system RA need or compensated in some way to reward "Load Modifier".

As an example, if FCR for Δ Load is +100, then total FCR=100+50+45=195 MW

CDWR recognizes the challenges in determining an LSE's 3 hour gross load ramp, because it would require hourly demand forecasts. CDWR believes that an LSE's last 3-5 years of hourly historical load data may provide a reasonable basis for calculating each LSE's 3 hour gross load ramp for future years. An LSE's average 3 hour gross load ramp during the morning and evening ramping super peak hours (for example 5 am- 9 am in the morning and 4 pm - 8 pm in the evening-similar to RA availability assessment hours, shown in the chart below) for the last 3-5 years for a specific month may be considered as the LSE's 3 hour gross load ramps for future years for that month. Adjustment to historical hourly load may be made reflecting load growth patterns, etc.



ISO Response

This is an interesting point; there is a trade-off between cost-causation principles (net load allocation) and incentivizing load to alter their shape (gross load allocation). We propose a new allocation in the next draft and look forward to your comments.

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

Allocation of FCR should follow cost causation principles. CDWR believes its proposal at 1 (b) above would truly reflect cost causation and promote demand response.

ISO Response

We disagree that using gross load would reflect cost causation principles as the flexible requirement in

part is derived from net load ramps.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

CDWR response: 1) The ISO's eligibility criteria, especially the requirement of 6 hours of energy at Pmax, may prevent many use limited resources from providing flexible capacity. A resource may be able to provide 6 hours of energy at half the Pmax and half the Pmax should therefore be eligible capacity to provide flexibility. The criteria should be modified to state that the use limited hydro resources will have an eligible capacity for flexibility if that capacity can be sustained for 6 hours or more while providing energy. Some use limited resources can be operated at reduced capacity for an even longer duration, and they should be included. Given the ISO's projected needs for flexibility, it should not exclude resources that can make some contribution from consideration.

ISO Response

We have changed the must-offer requirements for use-limited resources and are still refining the rules. We look forward to more comments that specifically address the best way to create use-limited MO requirements.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

CDWR believes that the future stakeholder process announced by the ISO should consider all resource limitations for purposes of determining whether they can provide flexible capacity. While some types of limitations could not effectively be priced into a unit's opportunity cost, the ISO should explore all options for obtaining flexibility from existing resources. Failure to do so exposes ratepayers to increased costs for new units that may not be needed.

Daily energy, environmental, or start limited resources: the current masterfile information provides a list of constraints should be included in such consideration, such as:

Maximum Generation Capacity	Minimum Generation Capacity	Minimum Dispatchable Level	Minimum On Time	Maximum On Time	Minimum Off Time	Maximum Startups Per Day
Pump Maximum Daily Startups	Pump Minimum Up Time	Pump Minimum Down Time	Gen-to-Pump Down Time	Pump Minimum Down Time	Pump-to-Gen Minimum Down Time	

Pump Shutdown Time

Daily energy limit should be considered for daily dispatch. Minimum down time, or minimum run time should also be considered as defined in the current tariff. CDWR notes that environmental limitations such as those associated with hydroelectric projects or certain thermal units may result in prohibitions on use that may not be easily priced into opportunity cost bids, and the dispatch of flexible capacity

should incorporate and respect environmental limitations.

Monthly or Annual Energy or environmentally or start limited resources: a resource's default energy bid, reflecting the opportunity cost of being dispatched, may limit dispatch of such a resource to its constraints. In any instance, environmental limitations must be respected in the dispatch.

Demand Response Resources: The current Masterfile information with regard to participating load pumps should be respected.

Pump	Pump	Pump		
Maximum	Minimum Up	Minimum	Gen-to-Pump	Pump-to-Gen
Daily Startups	Time	Down Time	Minimum Down Time	Minimum Down

As identified in the proposal, daily and annual use limitation may include number of events, maximum length of event per day, and specific hours available.

ISO Response

This is a good list and we appreciate the detailed information. We will include these specifics in our final draft.

The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

It is not clear why the CAISO should reject the part of the bid that is providing flexible capacity, even where it is deficient in total amount.

ISO Response

We removed the bid validation proposal piece.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

If the opportunity cost is used as compensation for operating a resource exceeding its use limitations, frequent dispatch of such resources may jeopardize environmental or operational criteria. For example, a pump's minimum up time of 10 minutes must be respected by operating the unit for at least ten minutes and there may be no adequate compensation for a unit that becomes unavailable due to dispatch that damages the unit or violates environmental requirements. An alternative could be to factor in the limiting factors in the dispatch directly rather than in the opportunity cost.

ISO Response

We agree- both pricing and system constraints will have to be used to prevent environmental or operational constraints from being violated.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions **Error! Reference source not found.**5 or 0 as appropriate.

Some demand response resources will not be available at every hour. Pumping load may be capable of

increasing or reducing consumption, but what it could do would depend on the status of the pump (off or on) at the time of need. For DR resources with such limitations, the hours when bidding is required should be limited to the specific hours the units will be available coincident with ISO ramp up needs. A PL DR resource may not be available for dispatch in any hour within a RA compliance month if the pump load does not exist during that hour (e.g. if no water delivery is needed for some hours or days within the month). The ISO should waive the must offer requirement for demand response resources that cannot offer availability in all required hours.

ISO Response

See response to EnerNOC.

The ISO has proposed to include 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 ISO will need some backstop authority. CDWR understands that ISO intends to apply the replacement procurement mechanism for the existing CPM, expiring in March 2015. CDWR believes this is a reasonable approach.

Are there any additional comments your organization wished to make at this time?

Demand response resources that provide flexible RA capacity (acting as a "supply resource" under the demand response roadmap) should not be subject to the additional 15% planning reserve margin. The load component of DR flexible RA capacity would not be deducted from load forecast (unlike "load modifier" under the CAISO demand response roadmap) and this resource would be made available to ISO market.

Since the implementation of MRTU, the Participating Load (PL) concept limits Participating Loads such as pumping loads to bid in only Curtailable Demand (i.e. dropping load). To allow a participating load to bid in load increase, the PL model and the CAISO Tariff must be modified. Modification of the PL model to allow bids for increased load will allow the PL to mitigate over-generation in the ISO system and to more flexibly provide load shifting when water requirements permit. CAISO has indicated (in the DR road map) that the PL model may be modified through a stakeholder process to enable it to be a dispatchable demand resource (DDR)¹⁷. The ISO will also have to assess whether the current PL model fits the requirements for flexible RA or requires modification.

Total FCR consists of contingency and non-contingency FCR. The ISO should allow the contingency portion of FCR to be provided by DR resources (such as participating load) under contingency dispatch. Contingency FCR may be allocated to LSEs based on peak load ratio share. The non-contingent portion of FCR should be allocated to LSE's based on the five components identified in section 4 of the proposal (as modified in accordance with the suggestions herein). This would encourage DR participation by resources that may have limitations but which could be very effective when deployed.

¹⁷ "Another route for DR to gain access to the ISO's wholesale market is the participating load model. Under this model, demand-side resources can participate in ISO markets by increasing and decreasing consumption. Currently, the model only supports bidding into the market on the positive or "generation side," operating region of the resource. The ISO implemented a non-generating resource (NGR) model last year to enable energy storage participation through such positive and negative operating ranges. This model can be adapted through a stakeholder process to enable participating load to be a dispatchable demand resource (DDR) to support the ability of participants to more fully reflect operating capabilities to the ISO market. The timing of this stakeholder initiative will depend on the annual prioritization with other stakeholder catalog items."

<http://www.caiso.com/Documents/Draft-ISODemandResponseandEnergyEfficiencyRoadmap.pdf>

ISO Response

We appreciate the specific information. We will address the contingency issue in the next draft.

Company	Date	Submitted By
Silicon Valley Power (“SVP”)	June 26, 2013	Ken Kohtz kkohtz@santaclaraca.gov 408-615-6676
General Comments		
<p>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 Revised Straw Proposal. SVP, which operates in the CAISO as a Load Following Metered Subsystem, is a member of the Northern California Power Agency (“NCPA”) and by the Bay Area Municipal Transmission Group (“BAMx”). SVP has reviewed and supports the comments submitted by NCPA and BAMx, and rather than reiterate those comments, SVP adopts and incorporates the comments by NCPA and BAMx as its own.</p>		
ISO Response		
Thank you for the information.		

Company	Date	Submitted By
Bay Area Municipal Transmission Group (BAMx)¹⁸	June 26, 2013	<i>Doug Boccignone</i> dougbocc@flynnrci.com 888-634-7509
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p>		
<p>The Flexible Resource Adequacy Criteria and Must-Offer Obligation should allocate responsibilities consistent with principles of cost causation. Thus, load serving entities that cause the need for additional flexible capacity – based on the LSE’s net ramping requirement at the time of the system maximum 3-hour net-load ramp – should be allocated the responsibility and associated costs of obtaining it. The ISO’s current proposal moves in this direction, but modifications are needed to ensure</p>		

¹⁸ BAMx comprises the City of Palo Alto Utilities, the City of Santa Clara/Silicon Valley Power, and Alameda Municipal Power.

consistency with cost causation principles.

The core components identified by ISO for allocation of the largest 3 hour net-load ramp change each month are generally appropriate provided that the right LSE allocation factors are used as set forth below. These components should only be used, however, if and when the ISO has the information available to calculate an LSE allocation factor that is consistent with cost causation for a particular component. Thus, until the ISO has the information it needs to calculate each LSE's share of distributed generation, the distributed generation component should not be used (see below for suggested revisions to the change in load and change in distributed generation component allocation factors).

Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

The ISO has used the appropriate allocation factors for change in transmission-connected wind, change in transmission-connected solar PV and change in transmission-connected solar thermal. However, the allocation factors for change in load and change in distributed generation (i.e., load ratio share) do not appropriately reflect each LSE's share of these components.

For change in load, the ISO should either:

(1) calculate each 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: $\Delta \text{Load} = \text{LSE's forecasted change in load during forecasted ISO maximum monthly 3-hour net-load ramp}$

or

(2) use historical metered load data to calculate each LSE's average hourly load curve for the relevant non-holiday weekday hours and then 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: $\Delta \text{Load} = \text{LSE's maximum monthly 3-hour load ramp (based on LSE's average hourly load shape) divided by sum of all LSEs' maximum monthly 3-hour load ramp (based on each LSE's average hourly load shape) x ISO's total change in load during ISO's forecasted monthly maximum net-load ramp}$

Additionally, as noted above, the change in distributed generation 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. Specifically,

Proposed revised distributed generation component formula: $\Delta \text{Distributed Generation (DG)} = \text{Change in DG output (LSE's \% of total DG owned or contracted x ISO total change in DG output during maximum monthly 3-hour net-load ramp)}$

ISO Response

We have changed the cost allocation and look forward to your comments on the changes.

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

First, the ISO should clarify that DG is defined as distribution-level connected generation that is not behind the retail meter.

Second, BAMx does not believe it is appropriate to include the Most Severe Single Contingency

(MSSC)/3.5% of peak load component in the flexible capacity requirements. This component adds a forward spinning reserve requirement on top of the maximum 3-hour ramping requirement. The ISO has not demonstrated through this stakeholder process 1) that it has a reasonable expectation of being unable to obtain spinning reserve when needed using existing mechanisms, or 2) that intermittent renewables increase the amount of spinning reserves required to maintain reliability.

If there were a demonstrated need for such a forward spinning reserve requirement, the resources that qualify to meet that requirement should continue to be allowed to be self-scheduled and to set/use the contingency flag when they are selected to meet the requirement, since spinning reserves only should be used to produce energy during contingency events and not to meet the ramping requirements (which will be covered by the flexible resources identified to meet the 3-hour ramping requirement).

ISO Response

We will make this clarification.

The nature of ancillary services is that they have to be flexible in real-time in order to qualify as AS. This means that some of the flexible resources procured as flexible capacity naturally will be used as AS. Therefore in order to make sure the ISO can operate the grid reliably using only RA resources, we must increase the flexible resource requirement by the expected maximum AS requirement. Because the resources are being sold as flexible, they must bid as non-contingent AS in order to preserve the acquired and paid-for flexibility.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

To maximize the hydro resources available to provide flexible capacity and consequently reduce costs for ratepayers, the hydro counting rule should be clarified to allow hydro owners as much flexibility as is consistent with meeting the ISO's objectives for flexible capacity. BAMx proposes that the hydro counting rule be clarified to allow for an effective capacity to be calculated for each month even if a hydro resource cannot generate at Pmax for 6 hours each day for that month. For example, if a hydro resource can generate at 80% of Pmax for 6 hours each day for a given month, its effective capacity should be 80% of Pmax for that month. During the stakeholder meeting on June 19, there was also discussion of allowing hydro resources to generate for less than 6 hours. This, too, would add flexibility and should be allowed if consistent with the ISO's objectives. For example, if a hydro unit can generate at 100% of Pmax for 4 hours, its effective flexible capacity should be 2/3 of Pmax.

ISO Response

We may revisit the hydro rules at a later date, but at this time most hydro resource operators have indicated that the must-offer requirements are reasonable. If a significant amount of hydro is unable to be counted as flexible due to these rules, the ISO will revisit the requirements and consider relaxing the monthly 6-hour rule.

Are there any additional comments your organization wished to make at this time?

The ISO's proposed formula for calculating the monthly system flexible capacity requirement includes

the use of an epsilon factor or error term to “account for load forecast errors and variability” (ISO, Revised Straw Proposal, June 13, 2013). The proposed epsilon factor needs more definition and reasonable restrictions on the magnitude and applicability of the factor. The ISO should describe the type of information it will consider in the use of the factor. Further, the development of the epsilon value should be part of the annual flexible capacity stakeholder process. Finally, the epsilon value should not be adjusted within the RA compliance period so that LSEs will have a reasonable degree of certainty that their flexible capacity requirements will not change once the allocation has been made each year.

ISO Response

A firm definition for what is included in the error term is premature at this time. The ISO is working with the CPUC and other LRAs to define a core measurement that should address most of the ISO’s flexible capacity needs. However, the error term is included to cover needs that are by definition unknown. The ISO will discuss any modifications made to the flexible capacity requirement due to a non-zero error term in the flexible capacity requirement assessment.

Company	Date	Submitted By
Northern California Power Agency (“NCPA”)	June 26, 2013	Tony Zimmer tony.zimmer@ncpa.com 916-781-4229

The ISO has outlined a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

Northern California Power Agency (“NCPA”) believes the CAISO’s proposal to allocate flexible capacity requirements to LSEs based on their contribution to the CAISO’s largest three (3) hour net-load ramp is an equitable and efficient method, and the core components identified by the CAISO in its proposal appropriately capture the key factors that contribute to the net load change CAISO is working to manage.

LSEs have chosen to comply with the state’s Renewable Portfolio Standard (“RPS”) in different ways, and some of those ways increase the overall need for flexible capacity in the CAISO control area. NCPA has predominately invested in baseload renewables, including, but not limited to, geothermal generation, landfill gas generation and small hydro generation, and has further invested in certain firming contracts for more intermittent renewables. This was a deliberate choice made by NCPA because NCPA is responsible for balancing its loads and resources (managing its own variability and uncertainty) pursuant to its Load Following Metered Subsystem agreement with the CAISO. Other LSEs have relied more heavily on intermittent resources (predominately wind and solar), placing much greater flexibility demands on the grid, and on the resource capacity needed to balance them. Under the principles of cost causation, NCPA should not be penalized for its significant investments to minimize its own impact on grid variability by the imposition of cost shares caused by other entities that made different investment decisions.

Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

NCPA believes that the allocation factors proposed to be used for the Solar PV, Solar Thermal and Wind Output components are appropriate, and will properly identify each LSE's contribution towards the largest three (3) hour net-load ramp. NCPA believes that the allocation factors CAISO has proposed for Load and Distributed Energy Resources ("DG") should be revised.

The CAISO is proposing to allocate the total change in load to each LSE based on its peak load ratio share. A LSE's peak load ratio share is likely not representative of its contribution to the CAISO coincident maximum three (3) hour ramp used to determine the flexible capacity requirements each month. For example, some LSEs have a very flat load profile due to customer mix or geographic location, while other LSEs may have a more variable or irregular load profile. 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 pro rata 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. Regarding CAISO's source of data, as part of the annual process used to establish the flexible capacity requirement, CAISO can request that each LSE provide prospective load forecast information to be used by CAISO for allocation purposes (similar to the local capacity allocation process or CRR process). As an alternative, CAISO could use historical load or load distribution factors to allocate the coincident forecast CAISO is using to calculate net load to individual LSEs.

The CAISO is also proposing to allocate the total change in DG output based on each LSE's peak load ratio share. This again does not properly represent a LSE's contribution to total change in DG output in the period of time measured. Just as CAISO uses LSE specific information to allocate Wind Output, Solar PV and Solar Thermal, CAISO should allocate the total change in DG output to each LSE based on its individual portfolio contribution to the total change in DG output. This information should already be available to CAISO as part of the DG deliverability initiative, where NCPA and other LSEs provided information to CAISO regarding the DG located within its members' distribution systems. NCPA's concern with the current proposal stems from the fact that some of NCPA's members have little or no DG on their distribution systems; therefore it would not be equitable if they were forced to carry a share of the burden associated with the total change in DG component that is not consistent with the amount of DG they actually have.

As a side note, in response to comments made by other stakeholders during the June 19th stakeholder meeting suggesting that CAISO's proposed allocation method is "too complex", there are many elements of the CAISO markets that are much more complicated. Development of a proper cost allocation method is vitally important to ensure that ratepayers of different LSEs are not unfairly burdened by the procurement decisions of others.

ISO Response

We agree the cost allocation is vitally important and have proposed changes in the most recent draft. We look forward to your comments on the revisions.

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

While NCPA believes that CAISO's current proposal is much better aligned with the principles of cost causation than the previous proposal, NCPA still believes the current proposal does not properly recognize NCPA's unique situation as a Load Following Metered Subsystem. As previously explained, NCPA is contractually obligated to balance its integrated portfolio of supply and demand in real-time through the use of Load Following Capacity, to ensure that its net portfolio deviations (whether such deviations are attributed to supply or demand) are kept within a tight deviation band. If NCPA is unable to balance its supply and demand portfolio in real-time, NCPA is assessed significant Load Following Deviation Penalties in accordance with the CAISO Tariff. In order for NCPA to follow its load, it must plan for and reserve capacity on its generation resources, or from other sources, that can be dispatched by NCPA in real-time to manage its portfolio balance during every 10 minute interval. NCPA reserves both Load Following Up and Load Following Down Capacity to effectively regulate its portfolio in real-time to respond to its net load requirements. For example, if NCPA's load were to positively or negatively deviate in real-time, NCPA is contractually obligated to maintain capacity to generate more or less energy during the same interval to balance its portfolio. On the other hand, if a resource that is part of the Load Following Metered Subsystem portfolio unexpectedly deviates in real-time, NCPA is obligated to manage such deviations in accordance with its NCPA Metered Subsystem Aggregator Agreement ("MSSAA").

Since NCPA is uniquely situated as a Load Following Metered Subsystem, and is contractually obligated to acquire sufficient capacity and energy to serve its demand up to and through real-time, and NCPA's failure to do so will result in significant Load Following Deviation Penalties, NCPA strongly believes that a Load Following Metered Subsystem market participant should not receive an allocation of flexible capacity requirements for the load and generation scheduled as part of the Load Following Metered Subsystem. This is strongly correlated with and supported by the principle of cost causation, in that CAISO's flexible capacity need is reduced by, or does not need to account for, NCPA's Load Following Metered Subsystem net load because NCPA is contractually required to self-manage its Load Following Metered Subsystem net load requirement.

ISO Response

We have attempted to resolve NCPA's situation as a LFMS in the paper and look forward to further comments.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms. Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

NCPA supports establishing counting rules that enable the counting of hydroelectric resources as flexible capacity. In fact, hydroelectric resources tend to be the most flexible resources and are well suited to the management of the variability and uncertainty associated with net load requirements. As discussed throughout this stakeholder process, hydroelectric resources generally have use limitations that are driven by environmental and other water management requirements. NCPA is somewhat unclear regarding CAISO's current proposal to manage the use limited nature of hydroelectric resources; therefore the comments provided below may be consistent with what is currently being proposed, but if not NCPA believes the following treatment should be applied to the counting of hydroelectric resources as flexible capacity.

If the physical storage (watershed and reservoir capacity) and installed generation capacity for the hydroelectric resource is capable of providing energy equivalent to output at Pmax for six (6) hours the resource shall be eligible to qualify as flexible capacity up to its registered Pmax MW value; provided, however, the amount of capacity that may be claimed by a LSE as flexible capacity each month, and which is required to be Bid into the CAISO, may be less than Pmax and shall be based on the actual capability of the plant at the time based on current hydrology conditions and other use limitations. For example, a hydroelectric resource with a Pmax of 100 MW may be registered as being eligible to provide 100 MW of flexible capacity if the physical storage and installed generation capacity is capable of providing energy equivalent to output at Pmax for six (6) hours, but during any monthly reporting period the actual amount of flexible capacity claimed from the facility may be equal to or less than 100 MW based on current hydrology conditions and other use limitations.

ISO Response

As described the hydro accounting appears consistent with the proposal.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 5 or 6 as appropriate.

As explained in NCPA’s response to question 1.c, NCPA operates in the CAISO as a Load Following Metered Subsystem. NCPA is contractually obligated to balance its portfolio of demand and supply in real-time, and if it fails to do so, it is subject to significant deviation penalties. In order to perform Load Following, NCPA reserves capacity from its resources as Load Following Up and Load Following Down Capacity (explicitly included as part of NCPA’s Bids to CAISO). This capacity is effectively reserved by NCPA to be used by NCPA in real-time to follow its portfolio deviations. NCPA’s ability to reserve Load Following Up and Load Following Down Capacity for its own use is a necessary requirement and is already reflected in the CAISO Tariff. The current CAISO Tariff Section 40 explicitly exempts the system and local capacity used by a Load Following Metered Subsystem for resource adequacy compliance from the Must Offer Obligation. NCPA strongly believes that this treatment should also be applied to the extended Must Offer provisions being proposed by the CAISO for flexible capacity. Since NCPA is already required to balance its supply and demand in real-time, and has a contractual obligation and financial incentive to do so, the flexible capacity that is used by a Load Following Metered Subsystem to meet its assigned requirement, if any, must continue to be exempted from the must Bid requirement; otherwise NCPA will be unable to perform its Load Following obligations because the capacity it would otherwise use to balance its supply and demand in real-time will be committed to CAISO and not be available for NCPA dispatch. Unlike other market participants who are required to commit capacity to CAISO through the submission of a Bid, NCPA actively uses its Load Following capacity in real-time to self manage its net load requirements, and any Bid obligations that would limit NCPA’s own use of its capacity would inhibit its ability to perform Load Following and would be inconsistent with its MSSAA. As previously stated, this rule is already incorporated in the CAISO Tariff and should not be modified as part of this initiative.

Company	Date	Submitted By
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Cogeneration Association of California	June 26, 2013	Don Brookhyser Alcantar & Kahl deb@a-klaw.com 503.402.8702
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p>		
<p>More detail is required as to how variability in the Distributed Generation factor will be calculated, and CAC reserves comments pending that review.</p>		
<p>ISO Response</p>		
<p>Thank you, we will provide these in the next draft.</p>		
<p>The ISO believes that there are either tools in place or under development to manage a resource’s use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC’s RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms. Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.</p>		
<p>CAC is concerned with the treatment of Qualifying Facilities that are cogeneration operations. They may not have pre-established limits as to starts or duration of operation, but may have limits based on synchronizing electricity generation with the thermal demands of the industrial host. This has generally been accommodated through self-scheduling, but the 6/13 revised straw proposal suggests this may conflict with the dispatch needed to meet flexibility needs. Such cogeneration facilities do provide some flexibility benefit, and there should be further study of how that benefit can be recognized and incorporated into the ISO’s calculation of flexibility need. See, generally, CAC’s reply comments on the Proposed Decision in CPUC Docket R12-03-014, attached.</p>		
<p>Currently, the use limitations of cogeneration are managed through the Net Scheduled PGA and each unit’s master file. The PPA with a purchasing utility generally provides for scheduling protocols that accommodate the use limitations, and any must-offer obligation should be coordinated with such protocols.</p>		
<p>ISO Response</p>		
<p>We have not specifically evaluated whether cogeneration facilities at this time, but will do so going forward and appreciate additional dialogue on how they might fit into the proposed use-limited must-offer proposed requirements.</p>		

Company	Date	Submitted By
Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, CA (“Six Cities”)	June 26, 2013	Bonnie Blair bblair@thompsoncoburn.com 202-585-6905
<p>The ISO has outlined the methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p>		
<p><u>Six Cities’ Comments:</u> The Six Cities generally agree with the identification of the core components for allocation. However, the determinants for allocation for the maximum three hour ramp due to change in load and change in Distributed Generation should be revised to track more closely the contribution of each LSE to those components, consistent with the cost causation principle.</p>		
<p>ISO Response</p>		
<p>The ISO has modified the flexible capacity allocation methodology slightly. The ISO will use historic average monthly load factors to allocate loads contribution of the flexible capacity requirement. We look forward to comments on the new methodology.</p>		
<p>Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.</p>		
<p><u>Six Cities’ Response:</u> The Six Cities support the proposed allocation factors for wind, solar PV, and solar thermal resources. As indicated above, however, the factors for allocation of the maximum three hour ramp due to change in load and change in Distributed Generation should be revised to track more closely the contribution of each LSE to those components, consistent with the cost causation principle. For the allocation due to change in load, the allocation to each LSE should be based on contribution to change in load during the time period in which the maximum three hour ramp occurs, rather than being based on contribution to system peak. For the Distributed Generation component, the allocation to each LSE should be based on its relative share of Distributed Generation, rather than contribution to system peak.</p> <p>In addition, the Cities request further explanation regarding the definition of Distributed Generation, specifically, does the definition include only DGs that are net metered, or does it include only DGs that are CAISO recognized resources under applicable PGA/MSS arrangements, or both?</p>		
<p>ISO Response</p>		
<p>The ISO has modified the flexible capacity allocation methodology slightly and believe it more closely follows the cost causation principles.</p>		

At this time we have not specified a DG definition, but will make this clear in the next draft.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Six Cities' Response: In general, the Six Cities encourage the ISO to apply rules to use-limited resources that will maximize the ability of such resources to supply flexible capacity while meeting the ISO's operating requirements and balancing the need of LSEs to hedge against market uncertainties through dispatch of their resource portfolio. For example, rather than disqualifying a use-limited resource entirely if it cannot maintain output for six hours at Pmax, the ISO should allow the resource to count toward flexible capacity requirements for that portion of its capacity for which it can maintain output for six hours.

ISO Response

This is a good point and will be clarified in our next draft. The use of the term Pmax seems to be causing general confusion and so should be changed or be better defined.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

Six Cities' Response: For resources that have annual limitations on start-ups or environmental restrictions, the resource should be permitted to specify the start-up/environmental limitations on a monthly basis so as to distribute the annual start-up/environmental allowances in a manner that maximizes value and allows a resource to count toward the LSE's annual Flexible Capacity Requirement. The Six Cities support the inclusion of an opportunity cost to be included in the default energy bid (DEB) that would allow the resource to manage its constraints while meeting the criteria of the availability requirements.

In addition, as mentioned in section 6.1.2.2 of the proposal, the ISO should insure that the third party that develops the DEB would be available to meet the requests of resources for forecasts of future LMPs in support of the development of a resource's opportunity cost.

ISO Response

The ISO is still working through the exact limitations of the software and manual processes regarding use-limitations and will take this suggestion into account.

The ISO has a third party create/verify DEBs so as to maintain independence from the determinations. It may not be in the ISO's power to "meet the requests of resources for forecasts of future LMP's.." but we would be interested in more information on what Six Cities' specific OC calculation concern is regarding LMPs.

The ISO has proposed to include 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 the ISO's proposed approach for backstop procurement of flexible capacity.

ISO Response

Thank you.

Are there any additional comments your organization wished to make at this time?

Six Cities' Response: 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.

With regard to the ISO's proposed epsilon factor, additional explanation as to how that factor will be developed and applied is necessary to evaluate its appropriateness.

Consistent with the recommendation above that the ISO establish eligibility requirements for flexible capacity resources so as to maximize the availability of flexible resources to the system, the Six Cities suggest that the ISO provide for recognition of intertie resources that are flexible on an hourly basis. While such resources would not be able to respond to intra-hour ramps, they can help to address the maximum three hour ramp. One possible approach would be for the ISO to allow intertie resources with hourly flexibility to count toward a portion of the total flexible capacity requirements.

ISO Response

A firm definition for what is included in the error term is premature at this time. The ISO is working with the CPUC and other LRAs to define a core measurement that should address most of the ISO's flexible capacity needs. However, the error term is included to cover needs that are by definition unknown. The ISO will discuss any modifications made to the flexible capacity requirement due to a non-zero error term in the flexible capacity requirement assessment.

Company	Date	Submitted By
San Francisco Public Utilities Commission	June 26, 2013	Michael A. Hyams mhyams@sfwater.org (415) 554-1590
The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO's largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific		

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, Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

As an initial matter, the City and County of San Francisco (San Francisco) notes that the Flexible Resource Adequacy Criteria and Must-Offer Obligation should allocate responsibilities consistent with principles of cost causation. Thus, load serving entities (LSEs) that cause the need for additional flexible capacity – based on the LSE’s net ramping requirement at the time of the system maximum 3-hour net-load ramp – should be allocated the responsibility and associated costs of obtaining it. The ISO’s current proposal moves in this direction. The ISO proposes to allocate the total system flexible capacity need to LSEs as follows:

Change in load (LSE’s peak load ratio share x ISO total change in load during maximum monthly 3-hour net-load ramp)
+ Change in wind output (LSE’s % of total wind contracted x ISO total change in wind output during maximum monthly 3-hour net-load ramp)
+ Change in solar PV output (LSE’s % of total solar PV contracted x ISO total change in solar PV output during maximum monthly 3-hour net-load ramp)
+ Change in solar thermal output (LSE’s % of total solar thermal contracted x ISO total change in solar thermal output during maximum monthly 3-hour net-load ramp)
+ Change in distributed generation (DG) output (LSE’s peak load ratio share x ISO total change in DG output during maximum monthly 3-hour net-load ramp)
= LSE’s share of total flexible capacity need during the ISO forecasted maximum monthly 3-hour net-load ramp

While the ISO’s proposed allocation methodology represents an improvement over the simple peak load ratio share methodology previously proposed, San Francisco believes further changes are needed to ensure consistency with cost causation principles.

The core components identified by ISO for allocation of the largest 3 hour net-load ramp change each month (as set forth above) are generally appropriate provided that the right LSE allocation factors are used as set forth below. However, these components should only be used if and when the ISO has the information available to calculate an LSE allocation factor that is consistent with cost causation for a particular component. Until the ISO has the information it needs to calculate each LSE’s share of distributed generation, the distributed generation component should not be used (see below for suggested revisions to the change in load and change in distributed generation component allocation factors).

Currently, the distributed generation component is expected to be small, but it is expected to grow in significance over time. The ISO should work with stakeholders to put in place the procedures to obtain the information it requires to accurately allocate the flexible capacity need associated with the distributed generation component to LSEs based on cost causation, so that this is possible in a few years when the distributed generation component may be more substantial.

ISO Response

The ISO has modified the flexible capacity allocation methodology slightly. The ISO will use historic average monthly load factors to allocate loads contribution of the flexible capacity requirement. There may be further refinements that are needed including accounting for DG.

Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent

of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

The ISO has used the appropriate allocation factors for change in transmission-connected wind, change in transmission-connected solar PV and change in transmission-connected solar thermal. However, the allocation factors for change in load and change in distributed generation (i.e., load ratio share) do not appropriately reflect each LSE's share of these components.

For change in load, the ISO should either:

(1) calculate each 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: $\Delta\text{Load} = \text{LSE's forecasted change in load during forecasted ISO maximum monthly 3-hour net-load ramp}$

or

(2) the ISO should use historical metered load data to calculate each LSE's average hourly load curve for the relevant non-holiday weekday hours, 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: $\Delta\text{Load} = \text{LSE's maximum monthly 3-hour load ramp (based on LSE's average hourly load shape) divided by sum of all LSEs' maximum monthly 3-hour load ramp (based on each LSE's average hourly load shape) x ISO's total change in load during ISO's forecasted monthly maximum net-load ramp}$

Additionally, as noted above, the change in distributed generation 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. Specifically,

Proposed revised distributed generation component formula: $\Delta \text{Distributed Generation (DG)} = \text{Change in DG output (LSE's \% of total DG contracted x ISO total change in DG output during maximum monthly 3-hour net-load ramp)}$

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

First, the ISO should clarify that DG is defined as distribution-level connected generation that is not behind the retail meter.

Second, San Francisco does not believe it is appropriate to include the Most Severe Single Contingency (MSSC)/3.5% of peak load component in the flexible capacity requirements. This component adds a forward spinning reserve requirement on top of the maximum 3-hour ramping requirement. The ISO has not demonstrated through this stakeholder process that either 1) it has a reasonable expectation of being unable to obtain spinning reserve when needed using existing mechanisms, or 2) intermittent renewables increase the amount of spinning reserves required to maintain reliability.

If there were a demonstrated need for such a forward spinning reserve requirement, the resources that qualify to meet that requirement should continue to be allowed to be self-scheduled and to set/use the contingency flag when they are selected to meet the requirement, since spinning reserves should only be used to produce energy during contingency events and not to meet the ramping requirements (which will be covered by the flexible resources identified to meet the 3-hour ramping requirement).

ISO Response

The nature of ancillary services is that they have to be flexible in real-time in order to qualify as AS. This means that some of the flexible resources procured as flexible capacity naturally will be used as AS. Therefore in order to make sure the ISO can operate the grid reliably using only RA resources, we must increase the flexible resource requirement by the expected maximum AS requirement. Because the

resources are being sold as flexible, they must bid as non-contingent AS in order to preserve the acquired and paid-for flexibility.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms. Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

To maximize the hydro resources available to provide flexible capacity and consequently reduce costs for ratepayers, the hydro counting rule should be clarified to allow hydro owners as much flexibility as is consistent with meeting the ISO's objectives for flexible capacity. San Francisco proposes that the hydro counting rule be clarified to allow for an effective capacity to be calculated even if a hydro resource cannot generate at Pmax for 6 hours. For example, if a hydro resource can generate at 80% of Pmax for 6 hours, its effective flexible capacity should be 80% of Pmax. During the stakeholder meeting on June 19, there was also discussion of allowing hydro resources to generate for less than 6 hours. This too would add flexibility and should be allowed if consistent with the ISO's objectives. For example, if a hydro unit can generate at 100% of Pmax for 4 hours, its effective flexible capacity should be 2/3 of Pmax. An LSE SC claiming flexible capacity from this hydro unit would be able to claim as much as 2/3 of Pmax from the unit.

ISO Response

We will make this clarification in the next draft. There seems to be some confusion around the term Pmax, which needed better defining or perhaps renaming in this context.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

The ISO should consider minimum energy or run time limits for other types of use-limited resources to maximize the number of resources available to provide flexible capacity and reduce the cost of a flexible capacity requirement. The ISO should prioritize working with stakeholders to develop appropriate requirements for demand-response and energy storage.

ISO Response

We agree.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 5 or 6 as appropriate.

As stated above, San Francisco does not believe there is justification to include in the flexible capacity requirement a spinning reserve component. If the ISO nonetheless retains a spinning reserve component, this component should not be subject to bidding requirements beyond the existing requirements for spinning reserve.

ISO Response

Ancillary services can be bid into the day-ahead market as contingent or non-contingent. Contingent AS

can only be dispatched in the case of a contingency, whereas non-contingent AS in the circumstance that there is excess AS in real-time may be dispatched as energy even when there is not a contingency event. This is why spinning reserve would be subject to bidding requirements beyond the existing ones.

The ISO has proposed to include 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.

If the ISO includes a backstop procurement provision in its flexible capacity requirement framework, the ISO should use its currently proposed approach for implementing this provision. That is, the ISO should only be authorized to use its backstop procurement authority if there is a collective deficiency, and the cost of the capacity procured by the ISO should be allocated to the deficient LSEs.

Are there any additional comments your organization wished to make at this time?

The ISO’s proposed formula for calculating the monthly system flexible capacity requirement includes the use of an epsilon factor or error term to “account for load forecast errors and variability” (ISO, Revised Straw Proposal, June 13, 2013). The proposed epsilon factor needs more definition and reasonable restrictions on the magnitude and applicability of the factor. The ISO should describe the type of information it will consider in the use of the factor. Further, the development of the epsilon value should be part of the annual flexible capacity stakeholder process. Finally, the epsilon value should not be adjusted within the RA compliance period so that LSEs will have a reasonable degree of certainty that their flexible capacity requirements will not change once the allocation has been made each year.

ISO Response

Agree.

Company	Date	Submitted By
Powerex Corp.	June 26, 2013	Thomas Elgie Tom.Elgie@powerex.com 604-891-6010
<p>1. The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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. Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p>		
<p>CAISO has proposed to allocate flexible capacity procurement obligations at the Load Serving Entity (LSE) level. This question assumes that allocation to LSEs as proposed is indeed the optimal approach and asks</p>		

whether the methodology proposed to effectuate the allocation in the June 13, 2013 Straw Proposal is appropriate. Powerex suggests that the question should be raised a step earlier: is the allocation to LSEs the most appropriate approach? Powerex respectfully notes that the proposed allocation of the obligations and the associated costs at the LSE level is not directly related to cost causation in all instances. While the increase in load that requires flexible capacity to be required is indeed the direct responsibility of the LSE, as it is caused by customers the LSE is obliged to serve, the increase that is caused by variable energy resources is directly attributable to the variable energy resources, whose delivery of output, and corresponding integration costs, may, in many cases, be the appropriate obligation of third parties, not LSEs. If LSEs must bear the burden of the cost caused by such entities, such third parties effectively will receive a subsidy because the true cost associated with that resource's dispatch is higher than the cost attributed to the generation output owner. In Powerex's view, this approach is short-sighted as it will encourage eventual over-saturation in CAISO markets' of resources that increase flexible capacity needs, while distorting price signals because the true costs of the resource are not recognized and attributed to the resource.

As to whether ISO has identified all the core components for allocation, it may have overlooked an important aspect of the issue. ISO states at n.12 that "solar and wind resources that are firmed outside of the ISO balancing area will not be included in the allocation calculation". However, ISO does not directly speak to the flip side: what about California's flexible capacity that is consumed by resources located outside the state, whose obligation to integrate (i.e. "firm"), is the appropriate responsibility of third parties? It is unclear whether ISO has modeled the consumption of flexible capacity at the interties and has considered a means to prevent free riders given that it proposes to charge the LSE for flexible capacity, in all circumstances, rather than charge consistent with cost causation, a flexibility consuming importer or exporter. This very real concern as to free ridership at the interties needs to be considered carefully.

ISO Response

The ISO has revised the cost allocation methodology and looks forward to comments on the revised version.

b. Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

No. The CAISO should allocate the costs to the generation or load customer consistent with cost causation. For variable energy resources whereby the contractual obligation for integration costs within their commercial agreements rests with an LSE, the transfer of flexible capacity integration costs charged by the CAISO to the VER could then be assigned to the LSE. Powerex believes it will distort wholesale energy markets if generators, as well as imports and exports that increase the flexible capacity requirements of the CAISO, are able to "free ride" as a result of costs being allocated to LSEs, inconsistent with cost causation.

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

As indicated previously, ISO states at n.12 of the Straw Proposal that "solar and wind resources that are firmed outside of the ISO balancing area will not be included in the allocation calculation". ISO should provide more details as to how it is going to determine whether a resource has been firmed out of state including disclosure of the criteria that will be used. Put another way, the CAISO should state how it will determine whether the firming obligation for a resource outside the state is the responsibility of the LSE

or the importing party? Will it be based on whether the resource is serving a LSEs RPS obligations? What about circumstances where the LSE has sold the “un-firmed” energy of resource meeting its RPS to a third party outside the state, presumably at a discount to “firmed” energy prices, intending to transfer the firming obligation contractually to the third party? How will the CAISO prevent both resources and loads outside the state from consuming flexible capacity in CAISO markets, leading to insufficient in-state procurement, creating a reliability risk, or to sufficient procurement with the costs for these flexible capacity resources charged to LSEs, inconsistent with cost causation?

ISO Response

We will provide additional details in the next draft. These are good clarifications.

2. The ISO believes that there are either tools in place or under development to manage a resource’s use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC’s RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

- a. Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.
- b. Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

Parity would dictate that CAISO impose similar requirements on resources that may have use limitations regardless of the genesis of those limitations. CAISO should understand from a reliability perspective that use limited resources may include more resources than traditionally assumed to fall into that category. For example, at the Federal Energy Regulatory Commission, proceedings involving Gas-Electric coordination are ongoing. One of the issues of interest is whether, given limited infrastructure, priorities given to pipeline use for residential heating needs, and other market design considerations, gas-fired generators have access to sufficient natural gas supplies to run as and when called upon in real-time, particularly during peak periods. Reliability events have occurred in light of the growing reliance on natural gas-fired generators that do not necessarily have access to firm gas supplies. It is unseemly to require hydro resources to have sufficient fuel (water) to run for a minimum of 6 hours but not impose a similar requirement on other resources that may experience fuel limitations. Whether water or natural gas is the limited “fuel” should not form the basis for a distinction.

ISO Response

This is an interesting point, but may be beyond the ability of the ISO capabilities at this time. We will evaluate further as needed.

5. The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 5 or 6 as appropriate.

While submitting an economic bid is an important pre-requisite, verifying performance will be key to

ensuring that ramping resources are providing the needed reliability service.

ISO Response

Agree, and we have created an incentive mechanism with this in mind.

7. Are there any additional comments your organization wished to make at this time?

Any requirement that flexible resources be dispatchable on a 5 minute basis will effectively exclude resources at the interties from providing flexible capacity to the extent the interties remain subject to 15 minute scheduling. This will result in the inefficient and unnecessary exclusion of resources that could provide valuable ramping capability to the CAISO. Hourly intertie schedules today can provide valuable flexible capacity. Fifteen minute intertie resources will be able to play an even greater role in the provision of valuable flexible capacity commencing in 2014. The CAISO should revise its requirements to more broadly allow intertie resources to participate in meeting flexible capacity requirements, thereby resulting in a lower acquisition cost, and more efficient market outcomes.

ISO Response

We will take this into consideration.

Company	Date	Submitted By
The Utility Reform Network (TURN)	June 26, 2013	Kevin Woodruff, kdw@woodruff-expert-services.com , 916-442-4877, and Tom Long, tlong@turn.org , 415-929-8876 x303
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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>Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p> <p>Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.</p> <p>Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?</p>		
<p>The CAISO’s proposal for allocating flexible capacity requirements is a useful thought experiment. However, TURN doubts that data exist in sufficient quantity and quality to make such computations for purposes of allocating flexible capacity requirements – and ultimately the related costs – among Load-Serving Entities (LSEs), much less make such computations with reasonable accuracy.</p>		

Rather than suggest a method at this time, TURN believes the CAISO should instead assess what data will be available to it to estimate flexible capacity requirements and/or allocate such requirements among LSEs, and then adapt an allocation methodology that respects the limits of such data's availability and accuracy. TURN suspects that such an analysis would yield a simpler approach to allocating costs.

ISO Response

The ISO is utilizing the data and methodology developed as part of the CPUC RA proceeding. However, the ISO continues to assess the data available that may enhance allocation methodology.

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

The CAISO's June 13 Straw Proposal appears to largely reiterate the Joint Parties' Proposal the CAISO and others proposed to the CPUC in Rulemaking (R.)11-10-023. However, the Proposed Decision (PD) in that docket, which the CPUC may adopt tomorrow (June 27), would not adopt the Joint Parties' Proposal, either as submitted or as presented in the Straw Proposal. For example, the Straw Proposal addresses many important implementation issues and a plan to seek Board approval regarding such issues in December 2013. But the PD states "[i]n workshops and comments, stakeholders will develop counting rules, eligibility criteria, and must-offer obligation for use-limited resources, preferred resources, combined cycle gas turbines, and energy storage resources for Commission consideration" (p. 57) and that the Commission will issue its decision in June 2014 (p. 67, Conclusion of Law 14). As another example, the CAISO's Straw Proposal again proposes an "[a]nnually adjustable error term to account for load forecast errors and variability" (page 9), which it has labeled epsilon ('ε'). But the PD states "[t]he Commission will determine a cap or a method to calculate the annually adjustable error term in the methodology used to calculate flexible capacity need" (p. 57).

TURN appreciates that the CAISO's processes, including its need for Board approval and FERC approval of changes to its tariffs, may not mesh nicely with the CPUC's own processes, and that the CAISO is not ignoring the CPUC's forthcoming policy and implementation efforts. But the CAISO proposal should recognize that the CPUC may adopt different approaches to the implementation of flexible capacity requirements than the CAISO will propose to its Board and be ready to adapt to such different policies.

ISO Response

The ISO will continue to work with the CPUC in the RA proceeding with a goal of creating consistent criteria for use-limited resources, DR, storage, and variable energy resources.

A firm definition for what is included in the error term is premature at this time. The ISO is working with the CPUC and other LRAs to define a core measurement that should address most of the ISO's flexible capacity needs. However, the error term is included to cover needs that are by definition unknown. The ISO will discuss any modifications made to the flexible capacity requirement due to a non-zero error term in the flexible capacity requirement assessment.

Company	Date	Submitted By
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Center for Energy Efficiency and Renewable Technologies (“CEERT”)	June 26, 2013	V. John White CEERT Executive Director vjw@ceert.org
I. INTRODUCTION		
<p>On June 13, 2013, the California Independent System Operator (CAISO) issued a “Revised Straw Proposal” entitled “Flexible Resource Adequacy Criteria and Must Offer Obligation” (FRACMOO Straw Proposal). The FRACMOO Straw Proposal is designed to advance “measures” to “implement the flexible capacity requirements (FCR) for 2015 RA [Resource Adequacy] compliance” and called for a Stakeholder Meeting to be held on June 19, followed by Stakeholder Comments to be submitted by June 26.</p> <p>Following that meeting, the CAISO staff circulated a “Comment Template” with questions posed on the FRACMOO Straw Proposal. By these Comments, the Center for Energy Efficiency and Renewable Technologies (CEERT) offers its Comments on the FRACMOO Straw Proposal below.</p> <p>While CEERT does respond to the questions posed by CAISO Staff in its Comment Template, CEERT believes that these questions do not permit consideration of overarching concerns and issues related to this proposal. CEERT, therefore, first offers an overview of its position (Section II), detail on its specific concerns and requests regarding the Straw Proposal (Section III), and, finally, responses to the questions posed in the Comment Template (Section IV). It is CEERT’s hope that the entirety of CEERT’s comments will be considered by the CAISO in taking any next steps on the Straw Proposal.</p>		
II. OVERVIEW OF CEERT POSITION		
<p>CEERT agrees with the CAISO that successfully integrating increasing amounts of variable generation resources into the grid is of paramount importance. CEERT also agrees that measures should be undertaken as soon as possible to ensure that sufficient flexible capacity is available to ensure that ramp rates can be addressed.</p> <p>However, CEERT believes that the FRACMOO Straw Proposal is seriously flawed and should not become the basis of a tariff filing. CEERT strongly recommends that FRACMOO’s shortcomings be addressed in close coordination with the California Public Utilities Commission’s 2015 RA rulemaking.</p> <p>In summary, and as supported by its comments and responses to the questions posed in the CAISO Comment Template below, it is CEERT’s position that:</p> <p>The FRACMOO Straw Proposal requires modification to minimize procurement of flexible resources in excess of what is needed to meet reliability requirements. The Straw Proposal currently ignores resources which are commonly used by load serving entities (LSEs) to provide “flexibility” but which do not or cannot meet requirements for full, unconditional dispatchability by the CAISO. Without modification, the Straw Proposal therefore overestimates the amount of flexible capacity needed to ensure reliability and would result in procurement of resources which are not needed to meet reliability requirements.</p> <p>The FRACMOO Straw Proposal cost allocation methodology requires significant revision in order to comply with the CAISO’s own adopted Cost Causation Principles. While a welcome starting point, in its present form it is not an appropriate template for detailed tariff language.</p> <p>Further development of the FRACMOO Straw Proposal must be closely coordinated with the Resource Adequacy (RA) procurement decisions of the CPUC, especially the CPUC’s 2015 RA Rulemaking and must be consistent with California environmental and energy laws, policies, and targets that govern electric</p>		

energy development, generation, and procurement in this State. In particular, the CAISO needs to either significantly accelerate the implementation of its multi-year “DR Roadmap¹⁹,” or support significant trial procurements of DR prior to completing the integration process outlined in the Roadmap.

III. OVERARCHING CONSIDERATIONS

A. The FCR adopted by the CAISO must account for all potential sources of grid flexibility and only require a Must Offer Obligation for that portion of total flexibility needed to complement traditional market response to price signals. The FCR should not be based only on modeling and projections unless those projections reflect the contributions to flexibility of resources that do not meet the strict definition of Effective Flexible Capacity (EFC) in the Straw Proposal and EFC quantities required are trued up to actual need.

Many existing resources have historically supplied “flexibility” to the grid without explicit real time dispatch instructions from the CAISO and are capable of stepping up that contribution in the future. These include price responsive demand (a subset of Demand Response (DR)), out of state imports/exports of economy energy, the emerging Energy Imbalance Market (EIM) in WECC, limited self-scheduling of resources not capable of submitting to full dispatch by the CAISO, and spot purchases and sales from other California balancing authorities – many of which possess surplus flexibility.

Significantly, however, none of these resources would have an “Effective Flexible Capacity” (EFC) value and thus be eligible to be procured and receive RA payments under the Proposed Decision’s adopted “Flexible Capacity Framework” or the FRACMOO, both of which are based on the Joint Parties’ (CAISO, SCE, and SDG&E) Proposal for flexible capacity procurement. It is not appropriate to leap to the conclusion that 100% of any identified “flexible capacity” need must be formally procured in advance, explicitly compensated with RA payments, and made available for formal CAISO dispatch in real time.

LSEs will no doubt continue to rely on these traditional strategies to provide flexibility and should be encouraged to do so. As a consequence, the amount of flexible capacity to be dispatched by the CAISO will be considerably less than that calculated by the FRACMOO formula. LSEs should not be required to procure or to assume costs for flexible capacity resources in excess of their actual need.

An obvious additional source of significant flexibility outside of the FRACMOO is utilization of those resources that have a calculated EFC value, offer capacity into the annual RA procurement process, but do not win the auction and thus receive no EFC RA payment, and, in turn, are not under any Must Offer Obligation. To assume that these resources simply disappear and NEVER offer to sell energy into the daily ramps or bid for ancillary services defies common sense. All of the CAISO presentations to date show that there is a significant “reserve margin” for flexibility in the existing and projected generation fleet. To assume that NONE of these resources will provide ANY “flexible capacity” in real time is simply untenable.

The requirement that 100% of all “flexibility needs” be explicitly procured in advance and subject to a MOO seems to be motivated by a fear of withholding in day ahead and hour ahead markets by sellers of “flexible capacity” who are presumed to have market power and will use it to drive up the price and thus reap monopoly rents for eventually supplying this flexibility in real time. There is no basis in logic or history to support this presupposition. First, the vast majority of “flexibility” is owned or controlled, not by merchant sellers of capacity, but by the Load Serving Entity Scheduling Coordinators themselves. It is

¹⁹ California ISO Demand Response and Energy Efficiency Roadmap: Making the Most of Green Grid Resources, DRAFT June 12, 2013

hard to construct a scenario where they would withhold flexibility from themselves in order to drive up their own costs. The CAISO points to today's rampant self-scheduling practices as justification for requiring a 100% MOO. At least anecdotally, it is asserted that approximately 90% of resources are self-scheduled to avoid CAISO dispatch. However detrimental this self-scheduling practice is, and regardless of how important it is to understand and mitigate the root causes, it necessarily means that the overwhelming majority of EFC today is supplied without an explicit MOO payment and without explicit CAISO dispatch instructions. It strains credulity to assert that, in the future, there will be ZERO response from ANY resource to follow supply/demand principles unless bribed to submit to the very real costs associated with CAISO dispatch instructions.

CEERT has always been very aware that the dramatic restructuring of the electricity supply portfolio inherent in the successful implementation of State policy to rely on new renewable resources and to retire obsolete coastal fossil resources that are polluting the air and harming the marine environment requires careful planning and procurement of BOTH renewable and new fossil resources. In addition, significant modifications to traditional operating procedures and the role of the demand side in the balancing equation will be required. Given the dramatic looming change in the supply/demand for grid "flexibility" and the uncertainty surrounding both the timing and the magnitude of those changes, it is entirely appropriate that, at least during the interim when the market is adjusting to the new paradigm, that special precautions be taken to ensure grid reliability by paying special attention to flexibility. It is also entirely appropriate that these precautions take the form of special provisions to ensure that the grid operator has in its hip pocket a suite of resources at its beck and call to step in if and when required. However, this is not justification to completely suspend the laws of supply and demand and grant the CAISO an exclusive monopoly over 100% of this poorly defined commodity we term "flexibility."

In other venues, CEERT has proposed that, initially, the fraction of flexibility need under explicit advance procurement and control of the CAISO be set at 70%²⁰. If one looks at the "flexibility requirement duration curves" published in various versions in various venues by the CAISO, and makes the analogy to other systems experiencing similar forces, and other capacity like products in the CAISO, it seems logical to assume that, eventually, a well functioning reliable system could be operated with something like a 15% "flexibility reserve margin" that needs to be explicitly procured in advance and put in the grid operator's exclusive control – similar in magnitude to the traditional generic capacity reserve margin. CEERT picked a 70% reserve margin to start the process recognizing that most people had not bought into the concept of thinking about flexibility in this manner, that the needs can never be precisely defined in advance with little or no actual operating experience, and that the initial market response would be rudimentary at best, The initial precise fraction is not critical as long as the incremental need is relatively small, the supply is relatively robust, and the price is thus relatively low. What is absolutely critical is that people feel comfortable that reliability is ensured, that actual operating experience serves as a guide, and that a significant fraction of the potential supply of flexibility be reserved for the development of a future more robust "natural" market response. What is important is that the process be started NOW to gain operating experience while there is time to refine the details without compromising reliability or incurring huge unnecessary costs, Accordingly, it is also critical that we do not cast in stone a tariff that creates a set of expectations and entitlements that will be difficult to unwind as experience is gained.

²⁰ See, e.g., R 11-10-023 Comments of the Center for Energy Efficiency and Renewable Technologies on Proposed Decision Adopting 2014 RA Obligations, Flexible Capacity Framework, and Program Refinements, California Public Utilities Commission, June 17, 2013

Whatever formula is eventually approved by the CAISO as the basis of its FCR need should be demonstrated over a reasonable length of time to be consistent with actual need for flexible resources to be dispatched by the CAISO. Failure to do so will not only result in excessive costs but would prematurely require new infrastructure that may never be needed.

ISO Response

The ISO in the next draft has attempted to address concerns regarding the lack of EFC for non-traditional resources and the difficulty in assigning MO requirements around all resources that are in fact providing flexibility. We have attempted to respond to these comments by expanding our language and proposal to explicitly including non-thermal resources in the fundamental design concepts. We look forward to your comments on these changes.

The FRACMOO must Fully Consider and Integrate Preferred, Use-Limited, and Existing Flexibility Resources.

The principal issue discussed in this section is not which resources are capable of contributing to grid flexibility, but which resources are eligible to be paid in return for committing, in advance, to CAISO dispatch instructions, and how those eligibility rules should reflect the diverse nature of the inherent resource characteristics while preserving some semblance of equal treatment for all eligible resources.

The FCR unnecessarily restricts DR and other “use-limited” resources, and the CAISO must commit to a faster and better stakeholder process to fully integrate these preferred resources into the FCR. CEERT welcomes the CAISO publication of its DR Roadmap and commits to actively joining that long, involved multi-year journey. In cooperation with the CPUC, the CAISO must squarely address these resources and ensure that they are fully and appropriately integrated into the FCR procurement mechanism. In this regard, while the FRACMOO Straw Proposal does address “flexible capacity availability requirements” (Section 6) that appear intended to include use-limited or preferred resources, CEERT believes that there are several shortcomings with those provisions and the proposal as a whole that could lead to unnecessary over-procurement of fossil resources and shortchange the role that preferred resources are expected to play, such as demand response, in meeting that need. CEERT, in fact, asked questions regarding this section of the FRACMOO Straw Proposal at the June 19 Workshop, only to have consideration of those issues deferred to some indefinite time.

However, the future availability of such resources must be considered sooner rather than later. This is especially true when a tariff may result. It is critical to ensure that any final tariff language actually match the capabilities of preferred and use limited resources and that standards or metrics that may exceed those needed to achieve flexibility, are not imposed on these resources simply based on the characteristics of traditional fully dispatchable resources.

Instead, as CEERT has recommended before the CPUC, the best way to get the flexibility requirements and “metrics” right for preferred resources, such as DR, is to have a targeted procurement of demand response, especially to gain the necessary operating experience, program redesign, and customer involvement for the successful integration of DR.

For these reasons, CEERT urges the CAISO to work with the CPUC to structure a true stakeholder process, which ensures input from third parties providing demand response and energy storage, as well as the LSEs and agency staffs. CEERT asks that no further action be taken on the FRACMOO until the important issue of how best to integrate demand response, storage, and existing sources of flexibility are fully and effectively considered, and changes to the FRACMOO are made in response. CEERT

believes that this process can and should begin as early as this August 2013.

ISO Response

Please see previous response.

Additionally the ISO will continue to work with the CPUC and LRAs moving forward to determine the most efficient way to integrate demand response, storage and other non-thermal resources. We agree these resources can provide needed flexibility to the system and any proposal should accommodate their unique requirements as much as practical.

C.) The cost allocation methodology outlined in the FRACMOO Straw Proposal, while well intentioned, is incomplete and unsuitable as a basis for developing tariff language at the CAISO or allocation of procurement costs at the CPUC.

Until the publication of the FRACMOO Straw Proposal, the only cost allocation methodology proposed by any party for procurement and utilization of flexibility was articulated in the Joint Party Proposal as a variation of the current CPUC CAM methodology for allocating generic RA capacity. This current proposal relies upon an LSE's load ratio share as the billing determinant. Most if not all parties recognize this proposal as only a placeholder pending a much more robust stakeholder process to more closely align cost allocation with cost causation. While CEERT welcomes the CAISO's contribution to this dialogue as set out in the FRACMOO Straw Proposal, it rejects the implied notion in the Straw Proposal and in the Comments Template that the cost allocation methodology outlined here forms the basis for a future tariff filing and only the details and implementing language remain to be decided. Specific comments by CEERT on the cost allocation proposal are included later in response to the specific questions raised in the Comment Template. In this section, CEERT would like to step back to first principles and discuss overall philosophy and architecture of the cost allocation methodology. To this end, CEERT offers the following observations.

First, CEERT completely endorses the notion that cost causation principles should apply and that costs of executing the FRACMOO program should be allocated to LSEs in proportion to their contribution to the net load ramping requirement of the grid as a whole.

Second, it is not clear what costs the FRACMOO Straw Proposal proposes to allocate. A very significant fraction of the overall costs of the FRACMOO program are CPUC jurisdictional procurement costs for EFC. It is not clear whether their inclusion in the Straw Proposal is meant to be advisory as a single party proposal in a CPUC proceeding, or whether they are meant to be specifically included in the CAISO Tariff as FERC jurisdictional wholesale costs to be borne by all users of the grid. CEERT believes that the former is the only appropriate treatment and that CAISO Tariff language is required only for those costs related to the real time execution costs of the program such as any opportunity costs in default energy market bids, out of merit order dispatch instructions to procure incremental flexibility in real time, and backstop procurement provisions.

Third, the cost allocation proposal exclusively relies on modeling and projections from a history that is per se not completely applicable to future conditions. There is no provision in the proposal to first measure the performance of the models then modify the methodology based on experience. It is extremely difficult and time consuming to modify the CAISO Tariff once filed and accepted at FERC. The current proposal cannot be the basis for such a Tariff filing without significant multi-year operating experience to validate the concepts and precisely define actual costs incurred.

Fourth, the proposal violates the CAISO's own Cost Causation Principles by relying on opaque and proprietary models and confidential data not available on an equal basis to all affected parties and by not allowing self-supply or behavior modification by affected parties to avoid the allocated costs or mitigate overall program costs.

CEERT believes that the topic of cost causation and cost allocation presents novel and complicated issues that are simply not ripe for drafting of tariff language. They must be discussed in a robust, joint stakeholder process on a separate timeline from other programmatic issues in concert with the CPUC -- including not only workshops and informal comments, but potentially evidentiary hearings and formal legal briefs at potentially both the CPUC and the FERC before adoption. In the meanwhile, CEERT sees no option other than to keep the Joint Party Proposal of queuing off the existing RA load ratio share as a default billing determinant. We completely understand and agree that this is only an interim solution that is seriously deficient in the long term, and this is a priority topic for program development.

ISO Response

The ISO has modified the cost allocation methodology to better align with cost causation methodology. We look forward to CEERT's comments on the changes.

IV. CEERT Responses to CAISO Comment Template Questions

1. CAISO Proposed Allocation Methodology to Allocate Flexible Capacity Requires to Load Serving Entity (LSE) Scheduling Coordinator (SC).

a. *Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?*

No. The current methodology relies exclusively on proprietary models, historic databases--which may not be accurate predictors of future conditions--and confidential contract terms and conditions. In addition, it lumps CPUC jurisdictional procurement costs with FERC jurisdictional energy and ancillary service market information in order to arrive at a total revenue requirement as well as LSE specific billing determinants. The essential missing elements are: 1.) A robust feedback loop to true up modeling estimates to actual system ramps, and 2.) Mechanisms where LSEs can both self-supply ramping capability and modify load shapes to reduce actual ramp requirements and thus reduce both total costs and their share of program costs.

ISO Response

We will look into whether these elements are feasible at this time and consider the recommendation.

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

CEERT repeats its agreement with the direction the CAISO has taken in this process and commits its resources to working out the significant issues CEERT Comments on identified above, plus any others that become apparent during the coming development process. In the meanwhile, CEERT sees no logical choice other than the load ratio share approach taken in the Joint Party Proposal. CEERT believes that this cost allocation process is a long and involved process that should not affect the development timing of other FRACMOO program elements. It is a priority task, but needs its own separate timeline and tariff

language development process distinct from, for example, the MOO tariff language development

ISO Response

We agree that cost allocation is always an involved process to determine; however, at this time it will continue to be a part of this stakeholder process.

2. Treatment of Preferred and Use-Limited Resources in CAISO FRACMOO Straw Proposal. a. *Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.*

Other than the recent agreement on counting conventions for use limited hydro initiated by PG&E, CEERT does not believe that existing or proposed ISO tools manage ANY “use-limitations”. However, it does appear from initial presentations at the June 19 workshop that parties may be close to a preliminary consensus on counting conventions for combined cycle facilities. CEERT believes that the initial proposals for counting conventions be the result of “trilateral” negotiations between the CPUC, the CAISO, and representatives of the developer/owners of each specific resource type before being work shopped to the broader stakeholder group. CEERT believes that, while these negotiations should be held to a FERC-like “comparability standard,” the first priority is to appropriately account for the specific inherent resource attributes rather than by rote adherence to a common template taken from conventional traditional resources such as the template used in the Joint Party Proposal. CEERT also believes that any detailed resource specific must-offer obligation language be developed AFTER consensus is reached on counting conventions and that this MOO be held only to a FERC comparability standard.

ISO Response

The point on the counting conventions is a fair one- it is the result of a stakeholder process which inherently means there was compromise by different parties. At this time we believe that it was a satisfactory result and that the conventions, while perhaps needing some clarification when used for certain resource types, will be sufficient to calculate the flexibility of resources.

We would be happy to discuss the current tools and processes that the ISO uses to manage use-limitations. We believe that these in addition to market mechanisms will be sufficient to manage use-limitations for economically bid-in flexible resources.

5. CAISO Proposed Must-Offer Obligation.

Again, it is not practical to precisely define MOO protocols for resources for which appropriate treatment of resource specific characteristics in the portfolio of resources eligible for FRACMOO procurement and the fraction of overall flexibility needs to be filled by FRACMOO resources have not been quantified and resource specific counting conventions have not achieved reasonable consensus among the parties.

ISO Response

We have changed the MOO protocols and will continue to work with stakeholders to refine the proposal going forward. We agree there are challenges to precise definitions when assigning the requirement to such a wide range of resource types.

6. CAISO Flexible Capacity Backstop Procurement Proposal.

While CEERT is conceptually supportive of the notion that a FERC jurisdictional Backstop Procurement Process is required to augment a CPUC jurisdictional EFC procurement process, it does not believe that

backstop program basics such as triggers for actually conducting, such a procurement, prices to be paid, auction protocols, etc., have been conceptually articulated sufficiently to even begin tariff language development.

Company	Date	Submitted By
Edison Mission Energy	June 26, 2013	Michael Kramek Director – Market Policy & Regulatory Affairs 617-279-3364 mkramek@edisonmission.com
<p>The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.</p>		
<p>Bid validation rules must accommodate periods where generators need to perform required operational tests (i.e. emission testing). While infrequent, such tests often require generators to operate at a fixed level for multiple hours. Developing rules that would disqualify generation resources from offering flexible capacity during periods of operational testing, or restricting offers that would ensure the resource operates at a fixed level is unrealistic and disconnected from actual operations. As expressed on the June 19th meeting, an ISO requirement for performing operational testing is a SLIC ticket. One option the ISO may want to consider is developing validation rules that check for SLIC outages. This check can be performed prior to validating offers from flexible capacity resources that may be unable to offer an economic bid for its entire flexible capacity range.</p>		
<p>ISO Response</p>		
<p>The ISO is will not use bid validation rules to enforce compliance with the applicable flexible capacity must-offer obligation. However, the ISO welcomes additional feedback regarding how this might be considered under the flexible capacity availability incentive mechanism. There will need to be similar accommodations for testing and we will explore how this process would work. Likely the details will be beyond the elements of this policy proposal and outlined more completely in a business practice manual, but generally will be incorporated into the policy.</p>		
<p>The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 5 or 6 as appropriate.</p>		
<p>As expressed above any must offer obligation requiring economic bids must allow for generators to perform required operational testing. In addition, further discussion on must offer obligation rules for MSG resources is needed. Real-time market structural issues, such as disconnects between RTC and RTD pricing processes, need to be considered prior to finalizing must offer rules.</p>		
<p>ISO Response</p>		
<p>The ISO is continuing to assess alternative methods for counting MSG resources. By RTC and RTD disconnect, do you mean the potential difference between the 15-minute and 5-minute energy price? We would appreciate more information on this concern either in the next round of comments or by</p>		

contacting Karl Meeusen (kmeeusen@caiso.com) or Carrie Bentley (cbentley@caiso.com) directly.

Company	Date	Submitted By
Wellhead	6/24/13	Grant McDaniel, Doug Davie
<p>The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms. Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources. Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?</p>		
<p><i>Wellhead does not believe that the CAISO should consider any other minimum energy or run time limits for use limited resources to be eligible to provide flexible capacity.</i></p>		
<p>ISO Response</p>		
<p>The ISO is not proposing any additional limitations on use-limited resources. However, the ISO will continue to assess the need for such limitations and will work with the CPUC and other LRAs to address this matter should the need arise.</p>		
<p>The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.</p>		
<p><i>Example 1: Wellhead believes it is appropriate to reject both the self-schedule and the economic bid because neither complies with the flexible capacity availability requirements.</i></p> <p><i>Example 2: Wellhead believes it is appropriate to reject the economic bid only because it does comply with the flexible capacity availability requirements; however, the self-schedule is valid.</i></p> <p><i>Bid validation rules will need to accommodate self-schedules for regulatory required testing of generating units.</i></p>		
<p>ISO Response</p>		
<p>The ISO believes that the development of a flexible capacity availability incentive mechanism will provide a superior mechanism for ensuring compliance with a flexible capacity must-offer obligation. Therefore, the ISO is not proposing to use bid validation rules at this time. Further, the ISO will be seeking stakeholder input on the design of the flexible capacity availability incentive mechanism.</p>		
<p>The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up</p>		

in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

Wellhead believes that a properly designed opportunity cost mechanism is the appropriate way to handle this very important issue. During the June 19, 2013 stakeholder meeting, the CAISO mentioned that it had some examples that it had developed to handle the opportunity costs associated with limited starts. Wellhead requests that the CAISO supply these examples to participants for further review and discussion.

ISO Response

The ISO has proposed a four step process for calculating the opportunity cost of start-limited resources that should help in the optimal management/dispatch of resources. The ISO will be seeking stakeholder input on this process as well as the need to make the consideration of opportunity cost dynamic or have periodic triggers that would require the need to modify the opportunity cost either up or down.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions 5 or 6 as appropriate.

Wellhead supports this proposal at this time, but would ask one clarifying question: If a unit is eligible to provide flexible capacity but is currently grandfathered from standard capacity incentives/penalties, would that same unit be grandfathered from incentives/penalties under the flex RA program, or does the decision to provide flex RA carry a mandatory obligation to also participate in the incentive/penalty program? This is a very important question as it relates to 3rd party contracts and the rights to obligate a unit to provide flexible capacity.

ISO Response

At this time the current proposal is that there would be no allowances for grandfathered contracts in regards to the incentives/penalties for flexible capacity. The long time-frame between this proposal and implementation should allow for renegotiation as necessary. We are open to hearing from market participants with specific contracts that they feel should be exempted and would like to understand the reasons for a potential exemption before finalizing the proposal.

The ISO has proposed to include 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 the CAISO's proposed backstop procurement provision, but does not believe that the current CPM for standard capacity is the correct compensation.

ISO Response

The ISO has not changed the compensation proposal for backstop procurement, but continues to seek stakeholder input regarding the appropriate level of compensation. We agree CPM may not be the appropriate price and look to stakeholders for their thoughts.

Are there any additional comments your organization wished to make at this time?

Wellhead appreciates that this straw proposal is just a first step and that further adjustments will be made to increase the granularity of the product; however, we firmly believe that without some target

(even a soft target to start) for the cumulative Pmin, the CAISO will not be sending the appropriate signals to market participants.

ISO Response

The ISO will continue to assess the need for provisions that would limit the amount of baseload or PMin as part of capacity showings and will work with the CPUC and other LRAs to address this matter should the need arise.

We will specifically address the need for a Pmin or baseload soft target in the next draft. The idea of publishing a soft target for informational purposes is a good one and we will look into the feasibility.

Company	Date	Submitted By
SDG&E	7/2/13	Randy Nicholson, Vic Kruger, Nuo Tang
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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>Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p> <p>Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.</p> <p>Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?</p>		
<p>SDG&E generally shares the CAISO’s desire to tie the allocation of Flex RA requirements more closely to causation. However, SDG&E is concerned that the proposed methodology is perhaps overly complex given that load changes – not resource portfolio mixes—are the primary driver of flexible capacity needs in the near term. Consequently, constructing an allocation methodology designed to capture the contributions of different resources types to total flexible need is, for the vast majority of LSEs, unlikely to yield results that materially differ from a less complex allocation scheme based simply on changes in load. This is particularly true given that all LSEs share the state’s 33% RPS mandate, and to a large extent, will have a similar mix if resources in their portfolios. To the extent there are outliers to this general proposition – for example, an LSE whose RPS requirements are met nearly entirely with dispatchable biogas, or storage assisted wind or solar – then perhaps we should focus on crafting an exception ensuring a fair allocation to the outlier, not adding unnecessary complexity to <i>all</i> allocations.</p>		
ISO Response		

The ISO continues to search for an allocation methodology that balances complexity with equity while reflecting causation principles. The ISO has made modifications to the proposal to try to address the allocation factors for each of the components of the flexible capacity requirement.

It is a fair point that some LSE's may meet RPS requirements with a different set of renewable resource types that may be more or less flexible than the average. We will continue to explore how to design a cost allocation that both ties to causation and is not overly and unnecessarily complex.

The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO, consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

Customized solutions that balance operational needs with the use limitations of various resources must be developed to ensure the pool of resources eligible to meet the CAISO's evolving flexible capacity challenges is deep and liquid. The recently adopted PG&E proposal requiring 6 hours minimum daily energy to qualify a hydro resource as flexible is an example of type of creative solutions this effort should seek for other use limited resources.

One obvious solution is to create categories – or buckets – that limit the total amount of use limited resources an LSE can count towards meeting its Flexible RA requirements. The CAISO's ramp duration curve could be used to determine the maximum contributions from each bucket while still allowing the CAISO to meet all its flexibility needs. For example, "Bucket A" resources might be those that are available to meet all ramps, and there would be no restriction on the maximum amount LSEs could count as Flexible RA from this bucket. Bucket B would consist of resources that were slightly operationally restricted, but available to meet most ramps. Hydro resources would likely fall into Bucket B, as would CTs with mild (e.g., < 3000 run hours per year) environmental restrictions. Bucket C resources are fairly restricted, and perhaps available to meet only one ramping scenario day, and not available every day. These resources likely include CT's with more rigid environmental permit restrictions (e.g., < 50 starts per year), or highly flexible DR programs with a significant numbers of total hours or calls. Energy Storage resources also likely fall into Bucket C. Bucket D resources are very restricted and expected to meet only a few super ramps per year. Bucket D resources include normal DR programs or participating loads.

While all groups provide needed flexibility, contributions from Buckets B- D would be capped to ensure only a fixed amount of operationally restricted resources make up the daily pool of eligible flexible resources. Economic Bidding requirements would be the same across all Buckets. However, like the current accommodation for hydro resources, the daily energy requirements would vary by bucket and would reflect the use-limitations of resources in each bucket.

There may be natural break points between buckets driven by the total portfolio of available flexible resources. The Buckets also have to have meaningful differences so the CAISO can optimize their use. Finally, SDG&E suggests number of groups or buckets needs to be kept small to minimize the counting

rules and enhanced MOO that must be developed and approved by FERC.

ISO Response

The ISO is not proposing any additional limitations on use-limited resources. However, the ISO is not opposed to “bucket” approach; this may resolve issues with both use-limited and preferred resources. We will continue to evaluate the idea and would like further comment on any ideas on how to break up the must-offer requirements into buckets. At this time it seems like a challenge would be to create (as mentioned in comments) the right size bucket that would be durable and not need adjustments each year to accommodate new resource characteristics.

The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

SDG&E believes the flexible portion of the resource is top down from Pmax and the non-flexible portion is bottoms up from 0MWs. With that in mind, SDG&E recommends the CAISO to not reject any bids both self-schedule and economic as long as the resource has sufficient non-RA capacity available to its PMax (option C of example 2). However, if the resource does not have any flexible RA available, only then should the CAISO reject the bid and allow the SC to resubmit its bid. If the SC does not do so, then SIBR should economically bid in the entire RA amount. In cases of outages, the current practice is top down from the PMax, so it should be the flexibility portion that is curtailed first. Any new SCP penalties should not duplicate the current SCP penalties for RA forced outages.

ISO Response

The ISO believes that the development of a flexible capacity availability incentive mechanism will provide a superior mechanism for ensuring compliance with a flexible capacity must-offer obligation. Therefore, the ISO is not proposing to use bid validation rules at this time. Further, the ISO will be seeking stakeholder input on the design of the flexible capacity availability incentive mechanism.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource’s start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

SDG&E is generally open to the approach, provided the circumstances under which a resource can make intra-year revisions to the calculation of its negotiated opportunity costs are transparent and straightforward. Obviously, for resources with run limitations, opportunity costs will increase over the year as the unit is dispatched and its number of remaining hours or starts decreases. If the resource has a maximum of 50 starts, and 40 of them are utilized by April 1 to manage springtime ramps, then the value of the remaining 10 starts increases substantially over the last 8 months of the year. There must be a simple way to make intra-year changes to the NDEBs to reflect the changes circumstances.

ISO Response

The ISO has proposed a four step process for calculating the opportunity cost of start-limited resources that should help in the optimal management/dispatch of resources. The ISO will be seeking stakeholder input on this process as well as the need to make the consideration of opportunity cost dynamic or have periodic triggers that would require the need to modify the opportunity cost either up or down.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions **Error! Reference source not found.** or 0 as appropriate.

SDG&E generally supports the uniform application of the economic bidding requirements to all flexible RA resources. However, like the current accommodation for hydro resources, SDG&E recognizes that the daily energy requirements will likely vary to reflect the operational use-limitations of resources.

Are there any additional comments your organization wished to make at this time?

SDG&E anticipates this process will ultimately generate accommodations for use limited resources of all types to provide eligible, flexible capacity. Once flexible RA of any flavor is listed on an LSE's monthly and yearly compliance showings, it is up to the CAISO to judiciously manage the dispatch of those resources both within the month and across the year. If the CAISO's optimization mismanages use limitations and creates a situation where the resource is unable – because, for example, it reached maximum hours or starts limits -- to provide flexibility in the later part of the year, the LSE should be indifferent. SDG&E believes there should be no change the resource's status from an RA compliance perspective. In short, there should be no replacement obligation if the CAISO fails to properly account for and optimize known use limitations within a given month or across the year.

ISO Response

This is a good point and the ISO agrees with most of the comment; however, at this time there is no limitation on the amount of use-limited resources that can be shown as flexible. If an LSE meets the flexible requirement with a large proportion of use-limited resources there will be the potential for them to incur replacement costs even if not explicitly through a resource replacement rule. In the circumstance where the ISO's optimization does create a situation where enough resources are unavailable due to use-limitations in aggregate, then potentially the ISO will need to use the CPM or other future mechanism to procure additional flexibility. Details have not been worked out as to who would be allocated these costs, but it would be unlikely that an LSE that was technically deficient due to over reliance on use-limitations would be held entirely indifferent.

Generally, the ISO will provide dispatch instructions and manage the resources according the use-limitations provided by the resource's SC and will continue to manage use-limited resources as needed for reliability. Additionally, the ISO has proposed a four step process for calculating the opportunity cost of start-limited resources that should help in the optimal management/dispatch of resources. The ISO will be seeking stakeholder input on this process as well as the need to make the consideration of opportunity cost dynamic or have periodic triggers that would require the need to modify the opportunity cost either up or down to further prevent the situation described.

Company	Date	Submitted By
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California Public Utilities Commission	7/2/13	Megha Lakhchaura: mla@cpuc.ca.gov, 415.703.1183 Donald Brooks: dbr@cpuc.ca.gov
<p>The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based on possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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>Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p> <p>Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.</p> <p>Does your organization have any additional comments or recommendations regarding the allocation of flexible capacity requirements?</p>		
<p>CPUC Staff strongly opposes the proposed allocation methodology for flexible capacity. There are two main reasons for our opposition, which are summarized below. In addition Energy Division staff has attempted to sketch a more satisfactory approach.</p> <p><u>The current methodology does not accurately reflect cost causation.</u></p> <p>The ISO proposes to allocate flexible capacity procurement obligations according to an LSE’s contribution to overall system flexibility requirements. The CAISO proposes creating an LSE’s requirement via an additive approach with five factors. Three of the five factors are based on wind and solar contracts, meaning LSEs with more wind and solar resources are perceived to contribute to system flexibility needs to a greater extent than LSEs without them and thus an LSE with more wind and solar contracts in its portfolio will be allocated a greater percentage of the flexibility need during the day/month. The flaws to this approach inhibit achievement of CAISO’s goal to allocate costs based on cost causation.</p> <p>LSEs procure intermittent facilities in order to meet state mandated RPS requirements. Thus cost causation is really the responsibility of the entire state that created the mandates. The benefits of RPS facilities (clean air, clean water, lower GHG emissions) are socialized without regards cost causation, thus complicating allocation of costs. Although LSEs could have met their RPS mandates strictly with baseload facilities (some publically owned utilities and electric service providers claim they do) baseload facilities that are not flexible are also contributing to the problem by their inability to be economically dispatchable. Nuclear facilities are also not able to ramp or be subject to economic dispatch. Thus cost causation is complicated.</p> <p>The CAISO’s allocation proposal is built on a calculation that aggregates flexibility requirements caused by solar PV generation and allocates them to LSEs based on which LSEs have the largest MW total of contracted solar PV resources relative to total MW of solar PV resources delivering in CAISO. The CAISO proposal uses a similar method to allocate the flexibility requirements related to solar thermal and wind resources. In short the proposal allocates requirements to LSEs regardless of the individual performance of the solar contracts held by a particular LSE, and regardless of the actual operation of the solar PV resources that are not really under the control of the LSE. CPUC staff agrees that lack of dispatchability</p>		

would cause the need to dispatch other resources around to manage the grid. On the other hand, cost causation principles would require a differentiation between solar resources that are dispatchable (such as contracts with economic curtailment or bidding provisions) and those that are not. An explicit place for wind, solar PV, and solar thermal resources to be dispatched would provide more accurate allocation of costs to those that cause the costs. Further, recognizing that some renewable facilities can be economically dispatched or operated more flexibly, and determining the flexibility need based solely on facilities that are unable to change operations, may help reduce the magnitude of the flexibility need. The proposed allocation method is inconsistent with current allocation methods: the CPUC would be prevented from exercising oversight of cost and benefit allocation since the action would have been performed by the CAISO in advance. The auction and allocation in the proposal would complicate the CPUC's administration of their compliance program; through its RA proceeding, the CPUC is developing rules around the allocation of obligations and the procurement of flexible capacity. Contingency reserves added to the requirement, as well as two of the five factors, are allocated to LSEs based on share of coincident CAISO peak. The CAISO seeks comment on a better approach. Energy Division staff has attempted to provide that approach below.

The ISO should allocate flexible obligations to a Local Regulatory Authority (LRA)

Currently, the ISO aggregates the local capacity obligations of CPUC LSEs to obtain a collective obligation for CPUC jurisdictional LSEs. The collective obligation is communicated to the CPUC. The CPUC then allocates the LCR to its LSEs based on the LSE's load ratio share of peak load. Regardless of actual location of load, LSEs receive prorated portions of all Local RA obligations in the service territory, not individually based on which Local Areas (if any) their load is located in. The flexible RA obligations should be allocated similarly.

The ISO should allocate the flexibility requirement to the LRA and allow the LRA to allocate flexible requirements to its jurisdictional LSEs. The ISO currently has a mechanism in place for LCR allocation and backstop, and there is no reason why it should depart from it.

"After the ISO has determined each LSE's particular assigned responsibility for Local Capacity Area Resources, the ISO aggregates the obligations of CPUC Load Serving Entities to obtain a collective obligation for LSEs under the CPUC's jurisdiction. This collective obligation will be communicated to the CPUC. In determining any prospective cost responsibility for reliability procurement by the ISO to be assigned to CPUC Load Serving Entities, the ISO will apply the allocation methodology, if any, adopted by the CPUC. This allows the CPUC flexibility to allocate the collective responsibility under a methodology other than historic contribution to the TAC Area's coincident peak.

However, to the extent the CPUC's adopted methodology does not fully allocate the collective responsibility assigned to CPUC Load Serving Entities, the ISO will allocate any difference to all SCs for CPUC Load Serving Entities in accordance with each LSE's proportionate load share ration in the TAC Area at the ISO coincident peak based on the CEC Load Forecast"²¹

Based on the above CPUC Staff recommend the following approach-

The ISO should determine flexible capacity obligations for the entire CAISO balancing authority. This would provide guidance to LRAs (such as the CPUC) when they attempt to create flexibility obligations for their jurisdictional LSEs.

²¹ CAISO Business Practice Manual for Reliability Requirements (page 70)

The ISO should communicate the collective obligation for the entire CAISO Balancing Authority to the LRAs such as the CPUC.

The LRAs will allocate flexible obligations to their jurisdictional LSEs based on input from the CAISO in the same manner that procurement obligations are allocated to LSEs currently. In other words, if an LRA requires all LSEs to procure renewable resources by load share ratio, then all its LSEs would procure flexible RA capacity in similar ratios. Each LRA should institute obligations for the LSEs under their jurisdiction, although there should be backstop processes for the CAISO in the event the CAISO balancing authority encounters reliability conditions caused by variability in wind, solar, or load conditions as studied. Each LRA will enforce compliance with obligations set by that LRA, by notifying LSEs of non-compliance.

In keeping with the existing CPM tariff, the ISO will designate CPM capacity in the event that there is a collective deficiency after taking into account the RA filings from all LSEs and after providing the opportunity for LSEs to cure by procuring additional flexible capacity themselves. Due to complexities of flexibility and the new way flexibility implies not just generic capacity, but also operational characteristics and bidding behavior, it may be important to have an iterative process in the first year where LSEs propose how they will meet flexibility deficiencies and work with ISO to find the best solution. Thus, allowing for more than one round of LSE “curing” may provide a more market-oriented solution for backstop procurement in the initial years of implementation.

ISO Response

The ISO will allocate flexible capacity requirements to each LRA based on its jurisdictional LSEs contribution to the flexible capacity needs. Additionally, the ISO will provide the component parts of its jurisdictional LSE’s contribution (i.e. contribution to change in load, wind, solar PV, etc.). Finally, the ISO believes that the proposed allocation methodology is generally consistent with the causation principles. The LRA may allocate the flexible capacity requirements to its jurisdictional LSEs as it deems appropriate.

The ISO has also included a proposal that would allow variable energy resources such as wind and solar to participate as flexible capacity. This would allow the LSE to use these resources to address flexible capacity requirements.

The ISO agrees that the benefits of the RPS mandate are statewide benefits. However, the costs associated with meeting these mandates should be allocated to LSE/LRAs based on their contribution to the costs. For example, while the ISO is still seeking comments on the appropriate factors needed to allocate the flexible capacity requirements, the ISO does not believe that an LSE should be subject to procuring flexible capacity because they have met their RPS requirements using either firmed or shaped RPS qualified resources. Finally, the ISO will continue to assess the need for provisions that would limit the amount of baseload or PMin as part of capacity showings and will work with the CPUC and other LRAs to address this matter should the need arise.

Because the ISO will provide clearly defined requirements and EFC list, the ISO does believe it is necessary to provide multiple cure periods to address deficiencies in flexible capacity showings.

Please provide comments regarding what use-limitations are currently managed by existing or proposed ISO tools and what must-offer obligation should apply to these resources.

Should the ISO consider other minimum energy or run time limits for other types of use limited resources to be eligible to provide flexible capacity? If so, what should these limits be? Why?

Demand resources also appear to fall into the category of resources that can operate for a few hours (e.g. an energy limitation), even if they are able to bid for longer periods. Run time limits on demand response resources seem reasonable and should be considered when designing rules for DR resources. In fact it seems that by applying roughly the same methodology from hydro to demand resources they may be able to qualify as flexible capacity.

Energy Division staff support a limit on startup times for flexible capacity as referenced in section 6.1.3. At this time limiting the flexible capacity resources to a startup time of four to six hours seems like a reasonable compromise between the desire to preserve operationally flexible capacity and commit it close to real time to meet variable net load, and the desire to avoid reliance on facilities based on forecasts of need for the next day. CPUC staff questions whether a facility that takes more than four hours to start can be optimized in real time; start up decisions must be made several hours ahead of time, and likely cannot be second guessed. The CPUC staff thinks it is unreasonable to start resources that must be retained at their PMin for more than four hours based on speculative needs when other resources that can start up and operate faster than that are available.

ISO Response

The ISO is not proposing any additional limitations on start-up times. However, the ISO continues to assess the need for such provisions and will work with the CPUC and other LRAs to address this matter should the need arise.

The ISO is assessing how bid validation rules could work for flexible capacity resources that are subject to an economic bid must offer obligation. The ISO provided two examples of bid validation rules and potential interpretations. Please provide comments regarding how the ISO should address each of these examples and any others that may need to be considered.

Energy Division staff support option c – that of using generated bids to round out the amount of flexible capacity that ought to be bid from a RA resource, but allow the SC of the resource to schedule or bid the amount that is not “flexible capacity”. The CAISO presented three scenarios for how to enforce the must offer obligation and generate bids or adjust schedules to ensure compliance with the flexible must offer obligation. The options were presented of rejecting entire bids if they were over or under the required amount of flexibility bid. Option c was a measured approach where only the portion of the schedule that left too little “flexible” capacity bid into the market would be rejected and subject to generated bids; the rest of the generator’s bids/schedules would be accepted.

ISO Response

The ISO believes that the development of a flexible capacity availability incentive mechanism will provide a superior mechanism for ensuring compliance with a flexible capacity must-offer obligation. Therefore, the ISO is not proposing to use bid validation rules at this time. Further, the ISO will be seeking stakeholder input on the design of the flexible capacity availability incentive mechanism.

The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource’s start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

Energy Division staff is concerned about how opportunity costs would be calculated and applied in start-up costs or default energy bids. While seeking to avoid double counting (adjusting for opportunity cost

once in the default energy bid and again in the start-up costs) there may be good reason to have a factor that is variable throughout the month and year that adds the marginal value of the next dispatch into the bid, thereby accurately reflecting the rising value of starts in start-up costs as start-up opportunities are spent.

ISO Response

The ISO has proposed a four step process for calculating the opportunity cost of start-limited resources. The ISO will be seeking stakeholder input on this process as well as the need to make the consideration of opportunity cost dynamic or have periodic triggers that would require the need to modify the opportunity cost either up or down.

The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to 6 or 0 as appropriate.

As with the provisions around hydro resources, there may be a difference between submitting economic bids and having energy available. Constraints in the CAISO software and Master file related to minimum run times, maximum start up times, daily and monthly energy limits etc. seem appropriate ways to manage the diversity and uniqueness of constraints on different resource types.

The daily dynamic between 5 am and 10 pm (ramping up load with wind generation, ramping down wind and ramping up solar, etc.) highlights the diverse ways that the system overall could optimize facilities such that all play a part in resolution of the problem. The “ramp duration curve” the CAISO presented highlights that small mitigations in small numbers of hours can have large impacts on reducing total flexible capacity procurement needs. Load curtailment and solar curtailment are viable if done a small amount of the time. It may be that different resources are best suited to the morning ramp and some are best suited to evening ramp. Thus it is important to explore ways that resources can meet both the ramping needs highlighted in the CAISO proposal but also the other types of needs for which the current proposal is a proxy.

ISO Response

The ISO is proposing flexible capacity must-offer obligations specifically designed to allow variable energy resources willing to be dispatched at levels lower than their forecasted output (i.e. those that are willing to be curtailed) can provide flexible capacity and should be counted towards meeting the flexible capacity requirement. Including variable energy resources as flexible means that a deeper pool of flexible resources will be available to the ISO to meet all ramping needs.

The ISO has proposed to include 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 backstop procurement provisions for flexible capacity should be commensurate with, and mirror the CAISO’s existing backstop mechanisms and protocols under the CPM. They should be modified to encompass flexible capacity requirements, but not to extend the reach of the CAISO’s backstop procurement jurisdiction to LSE filings in the absence of an overall lack of flexible resources individual SCs. Rather, all of the backstop procurement mechanisms should operate within the same scope.

ISO Response

The ISO believes that the currently proposed backstop provision for flexible capacity aligns with the overall existing structure of the existing CPM tariff provisions

Company	Date	Submitted By
Southern California Edison Company	July 11, 2013	Gina Dixon Gina.Dixon@SCE.com 626-302-3589
<p>1. The ISO has outlined the a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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. Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?</p>		
<p>But for the DG resource category, SCE believes the ISO’s proposed resource categories are reasonable for purposes of allocating the flex requirement. SCE recommends the ISO do away with a separate DG category and instead include individual DG resources in the wind, solar thermal or solar PV categories based on their underlying resource type.</p>		
<p>ISO Response</p>		
<p>The ISO has worked to refine the DG category to improve the allocation methodology. The ISO has and is still considering merging the DG with the solar PV component, but is still in the process of assessing the composition of resource types and distribution amongst LSEs.</p>		
<p>b. Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.</p>		
<p>SCE does not agree that peak load ratio share is a reasonable basis for allocating flex requirements attributable to load. The Joint Parties proposal advocated using peak load ratio share as the flex allocator not because it was considered the best representation of load’s contribution to flex requirements, rather, as a necessary process accommodation to ensure the JP proposal could be fully implemented in 2014 (i.e., by relying only on existing RA program data and processes). To best achieve the causation objectives of the ISO’s allocation proposal in 2015, SCE believes an allocator based on a “change” measure of load would more appropriately reflect load’s contribution to flex needs. Which change measure of load should be the topic of further stakeholder discussion, but SCE suggests a load allocator based on each LSEs’ average daily/weekly load factors (relative to ISO system load factor) is a good place to start that discussion. SCE agrees in concept that percent of total contract capacity is a reasonable basis for allocating flex requirements attributable to wind, solar thermal and solar PV resources. That said, SCE is concerned the processes and rules that will need to be developed in order to fairly implement this allocation could be administratively complex and overly subjective. For example, determining each LSE’s share of “planned” on-line resources using individual resource contracts could be a very contentious process given what is certainly a wide range of contract terms regarding initial production dates, dates of commercial operation,</p>		

allowances for schedule slippage, phased-in production, etc. Further stakeholder discussion will be required to determine if the practical implementation of contract-based allocators can be made workable, reasonable and fair.

ISO Response

The ISO has modified the allocation of changes to load. Currently, the ISO is proposing to use the LSE's/LRA's share of the average monthly load factor. However, the ISO is still willing to consider other options for allocating changes in load and will be seeking stakeholder input.

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

SCE does not agree with the ISO's proposed method of allocating flex requirements based solely on the characteristics of the monthly max 3-hr net load ramp. As originally conceived in the Joint Parties Proposal, and throughout the CPUC RA proceeding, the max 3-hr net load ramp was discussed only in the context of it being a reasonable basis for determining the total quantity of flex capacity needed to maintain reliability. Joint Parties never intended it to be, nor was the max 3-hr net load ramp ever vetted as a reasonable means of representing load's and each resource type's contribution to the ISO's flex needs over time. Consider the now-famous "duck chart" which clearly shows how wind and solar resources each negatively and positively impact net load changes over the course of a typical day. To snapshot one 3-hr portion of a month and conclude from that snapshot that a particular resource type either always increases or always decreases the ISO's flex needs over the entire course of that month – which is the very implication of the ISO's proposal – is not only inconsistent with what we know to be the overall impact of intermittent resources on flex requirements, it also threatens to create inefficient and unstable RA procurement and showing objectives for LSEs¹. To better achieve the causation objectives of the ISO's proposal, SCE strongly recommends the ISO develop an allocation methodology based on load and each resource type's overall contribution to flex needs measured over the entire month, not just the snapshot of the highest 3-hr period in that month. The specifics of defining what "overall contribution" means should again be the topic of further stakeholder discussion, but SCE is aware of at least two existing methods that should be considered: one would be to apply the ISO's existing method to all 3-hr periods of the month (effectively take load and each resource type's average contribution to all 3-hr net load ramps), another would be to adapt the Westar statistical method for allocating regulation costs to load and intermittent resources². SCE does not have a current point of view on which of these methods best accomplishes the causation objectives for allocating flex, but does believe either would produce results more representative of the actual contribution of load and resources to flex needs, and would create more consistent, predictable procurement targets for LSEs.

ISO Response

The ISO reviewed the monthly averages of the daily net load ramps. This assessment showed the monthly maximum 3-hour net load ramp is within one standard deviation of the monthly average. Therefore, the ISO is not, at this time proposing a change to the methodology for allocating the component parts. However, the ISO's assessment also showed a fairly wide distribution for each component. That, combined with a relatively small sample size, has lead the ISO continue to search for alternative allocations factors for these components and will continue to seek stakeholder input on this issue. The ISO is still assessing the applicability of the Westar method to this problem.

2. The ISO believes that there are either tools in place or under development to manage a resource's use-limitations while still be subject to economic bid must offer obligation. The ISO,

consistent with the CPUC's RA proposed decision, will require hydro resources to be able to provide a minimum of 6 hours of energy at Pmax to be eligible to provide flexible capacity. However, some resources, including demand response and storage resources may have use limitations that may do not fit well within these mechanisms.

1 To encourage multi-year forward procurement, LSEs must have some reasonable ability to forecast their forward RA requirements, including flex. Depending on the relationship of forecast net load ramps in future months, the ISO's proposal could result in a spurious "togglng" of flex allocations where a given month's max 3-hr net load ramp could occur in the evening in year 1, in the morning in year 2, then back to evening in year 3. The ISO's "snapshot" proposal would change dramatically the allocation of flex requirements to individual LSEs even though the ISO's total flex need for that month may have changed very little and the total solar capacity on the system (and LSE-specific contract holdings of that capacity) were fixed. This also creates a false impression that the integration costs of solar are higher in years 1 and 3, but lower in year 2, when in fact nothing really changed at all.

2 The Westar method, while developed as a means of allocating regulation costs, could be easily and appropriately adapted to measuring the relative contribution of loads and intermittent resources to monthly flex needs. Westar has the further benefit of being a FERC approved methodology already deployed in two jurisdictions. The following link provides more details on Westar:

http://www.caiso.com/Documents/SCE_Comments_StrawProposal_Pay_PerformanceRegulation.pdf

ISO Response

We have revised the cost allocation based in part on these concerns. We look forward to comments on the revisions.

7. Are there any additional comments your organization wished to make at this time?

The CAISO proposes to allocate "Flexible Capacity" requirements to LSEs based on their portfolio of Variable Energy Resources (VER) contract holdings [as well as their load characteristics.] While matching VER contracts to LSEs may be a workable construct for determining LSE obligations, the proposal fails to address VER resources that do not have contracts with CAISO LSEs or are only partially contracted with LSEs. For example, a merchant VER generator located within the CAISO's balancing area will place flexibility burdens on the CAISO. The same holds for a dynamic VER resource imported into the CAISO. Following principles of causation, such resources should have a comparable flexible capacity obligation to address this burden. However, the CAISO's proposal fails to address how such resources will be allocated a flexible capacity requirement. The CAISO should develop rules that treat such partially contracted or uncontracted VERs and Dynamic Imports in a manner comparable with the obligation placed on LSEs with associated VER contracts.

ISO Response

The quantity of merchant VERs currently located in the ISO is very small. The ISO is not proposing a mechanism to allocate flexible capacity requirements to uncontracted or merchant VERs at this time. However, the ISO also recognizes that non-ISO entities may have VERs located in the ISO

system and that the number of uncontracted VERs may increase over time. Therefore, the ISO will continue to look for appropriate measures to address this concern.

Company	Date	Submitted By
California ISO DMM	July 12, 2013	Department of Market Monitoring

The Department of Market Monitoring (DMM) appreciates this opportunity to comment on the ISO’s proposal for Flexible Resource Adequacy Criteria and the Must-Offer Obligation. Managing flexible resources is an important part of California’s goal of increasing utilization of renewable and other preferred resources while maintaining grid reliability. DMM supports efforts to ensure that sufficient flexible resources are maintained or developed through a forward capacity obligation. DMM views this type of forward capacity requirement as the foundation needed to ensure that sufficient flexible capacity available to meet ISO requirements for two other products that will be incorporated in the ISO markets to address operational flexibility needs: the 5-minute flex-ramp product and a 30-minute corrective capacity constraint.

DMM is supportive of the approach being taken by the ISO and CPUC, and recognizes the need to develop an approach that meets the operational needs of the ISO as well as the state’s policy preferences.

We have comments on three aspects the initiative at this time:

Flexible capacity counting and requirements

The ISO currently has initiatives to develop two spot market products that will be incorporated in the ISO markets to address operational flexibility needs a day-to-day, hour-to-hour and minute-to-minute basis through the ISO market software: the 5-minute flex-ramp product and a 30-minute corrective capacity reservation. The ISO originally proposed three ramping products for forward procurement which were closely tailored to anticipated spot market products: regulation, load following and continuous three hour ramping. DMM understands that in response to input from the CPUC and some stakeholders, the ISO’s latest whitepaper paper includes a version of the counting of Effective Flexible Capacity (EFC) that is only applicable to the 3 hour ramping capability. Since the proposal was altered to include only a 3-hour ramping requirement, the ISO has stated that it believes meeting the 3-hour ramping requirement will also be likely to ensure that sufficient flexible capacity is available to meet market requirements are met for more granular 5-minute flexible ramping product and 30-minute corrective capacity.

DMM believes that the flexible capacity requirements, counting rules, and must-offer provisions for flexible capacity procured through the RA process should be set so that sufficient flexible capacity is procured on a forward basis prior to the ISO spot markets and is then made available at a reasonable cost to meet the new flexible ramping product and constraint being developed. Any payment premium needed to cover the fixed costs or other non-marginal costs of flexible capacity should be reflected in this capacity procurement process, rather than capacity bids for these flexible capacity products in the ISO’s day-ahead and real-time spot markets. Therefore, DMM believes that compensation for both these products should be based on opportunity costs, and should not include capacity bids for this flexible capacity since the marginal costs of making this capacity

available for the flexibility needs is minimal or zero.

ISO Response

We would like clarification- is DMM suggesting we add a pricing rule into the must-offer requirement? These details may be more appropriate in the individual Flexible Ramping Product and Contingency Modeling Enhancements stakeholder process.

Must offer hours

DMM supports the requirement for all flexible RA resources to offer into the market during the times when flexibility is expected to be needed. The hours of 5 am to 10 pm will most likely cover the ISO's needs for upward flexibility. However, there are sometimes significant and persistent downward ramping flexibility shortages in the off-peak hours that have a pronounced impact on market prices. This was highlighted in a DMM study in 2011 and has continued since that time. The findings of that study suggest that an increase in available downward ramping capability in the off-peak hours could significantly curtail over generation and the resulting negative prices.¹ Restricting self-scheduling during this period through requiring an economical offer from Flexible RA capacity may have a pronounced impact on reducing over-supply and associated price impacts during this period. Therefore, DMM suggests that it may be important that the must-offer requirement – particularly for conventional thermal units – require that these resources submit economic bids for all off-peak hours or include significant limitations on self-scheduling during these hours.

ISO Response

We agree this is a concern. Other participants have suggested creating an informational target or Pmin requirement for LSEs. We are evaluating whether these options could be incorporated into this stakeholder process or could be prioritized at a later date.

Use limited resources

DMM believes that provisions for use plans for use limited resources in the current tariff and BPMs are not sufficiently detailed to ensure that use limited resources used to meet flexible capacity obligations can be efficiently or effectively utilized to provide this flexibility on day-to-day basis. DMM recognizes that developing more effective rules for counting the flexible capacity of use limited resources and the resulting must offer obligation represents a significant challenge.

As noted by numerous stakeholders, counting rules and must-offer obligations may need to be tailored to different resource types, while still ensuring that the overall mix of resources procured to meet a forward capacity obligation provides the needed flexibility. The consideration of specific use limitations should be consistent with demand for the ramping capacity, the ability of the ISO market system to account for limitations, and the need to reduce manual interactions with the operation of the market or dispatch of resources.

DMM recognizes that inclusion of opportunity costs for use limited resources (as discussed below) can eliminate the need for resource-specific use plans and relaxation of must-offer requirements for those resources. If the ISO chooses to retain these elements in addition to including various opportunity costs associated with use limitations, DMM recommends that the ISO closely track the extent to which use plans are followed and have in place measures that can be taken to reduce or eliminate eligibility in cases where they are not.

ISO Response

How to incorporate use-limited resources is still being evaluated. It is a fair point that the consideration of specific use-limitations should be consistent with the use (or demand) of ramping capability. We are evaluating whether a “bucket” approach might be more efficient than allowing full participation by all use-limited resources with strict must-offer requirements.

Opportunity costs

DMM supports the principle of including valid opportunity costs in the start-up and/or minimum load cost bids for use-limited resources. However, opportunity costs in this context are, by their nature, not knowable and must be projected. This may involve a somewhat complicated formulation and will always embody a significant degree of uncertainty. When the concept of including opportunity costs into start-up and/or minimum load costs came up in the stakeholder process that addressed changes to bidding and mitigation of commitment costs in the first half of 2010, DMM noted that the details of the calculation must be specified clearly in advance to ensure an accurate approach that was administratively feasible and would result in rational and reasonable calculated opportunity costs.

DMM notes that there is ample historical market data available that can be used to provide empirical analysis of the results of proposed methodologies for calculating opportunity cost and encourages the ISO to provide such analysis as the details of the calculation are discussed in this stakeholder process. If the ISO does move forward with this idea, it is important that opportunity costs are calculated in a dynamic fashion to accurately reflect the extent to which the resource has already been used as well as potential changes in anticipated market conditions.

In general, DMM supports the concept of including opportunity costs into start-up and/or minimum load bid costs, and looks forward to reviewing and commenting on rules that are proposed by the ISO and market participants as this process moves forward.

ISO Response

Thank you, more details are included in the next draft.

Company	Date	Submitted By
BrightSource Energy, Inc.	July 28, 2013	David Schlosberg dschlosberg@brightsourceenergy.com (510) 250-8816
1. The ISO has outlined a methodology to allocate flexible capacity requirements to LSE SC based one possible measurement of the proportion of the system flexible capacity requirement to each LSE SC based on its contribution to the ISO’s largest 3 hour net-load ramp change each month. Please provide comment regarding the equity and efficiency of the ISO proposed allocation. Please provide specific 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. Has the ISO identified the core components for allocation? Are more needed? If so, what additional components should be considered and how should ISO consider them? Are fewer needed? If so, what should the ISO include?

No comments on this item at this time.

b. Has the ISO used the right allocation factors for the identified components (i.e. load ratio share, percent of total capacity contracted)? If additional or fewer components should be considered as identified in 1a, above, please provide specific allocations factors for these components.

BrightSource agrees that the portion of the flexible capacity requirement resulting from the monthly maximum three hour net load ramp should be allocated based on an LSE's contribution to the ramp.

For the change in distributed energy resources ("DERs"), the allocation factor should be the Actual Model Change in output during the monthly maximum three hour net load ramp period in the LSE's service territory, not the proposed Load Share Ratio. This approach could also be considered for the change in load, wind, solar PV and solar thermal resources (except solar thermal resources with storage – see c. below). DERs and load contribute to the overall flexible capacity requirement and should be taken into account when procuring variable supply resources which participate in meeting net demand.

The ultimate incentive of the allocation factors should be to for each LSE to minimize net cost within its own portfolio and therefore across the system.

ISO Response

Thank you, we have revised the allocation factors and look forward to your comments.

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

- 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. They will have output profiles based on energy market results, Scheduling Coordinator decisions and underlying solar availability. Their output profiles cannot be predicted based on a uniform, geographically-based solar profile forecast. The dispatchable characteristics are more akin to the thermal or hydro supply resources, which are also not contemplated as components in the allocation formula.

- The proposed allocation for the maximum 3-hour net load ramp portion of the flexible capacity allocation formula would not account for short-term energy purchases or sales from intermittent resources occurring after the annual deadline to provide contract information. This could have impacts in future years if LSEs have early procured RPS resources or if merchant generators come on-line to take advantage of expiring federal and state tax incentives. The CAISO may need to consider a post-hoc examination of intermittent resource portfolios to determine if short term transactions had a significant impact on allocations.

- The Straw Proposal does not define "distributed energy resources". Is this limited to DERs that are interconnected behind a customer meter? Does this include other DERs besides solar and wind

resources?

- The Straw Proposal is not explicit as to where information regarding the DER portfolios will be sourced. What generation profile(s) will the CAISO apply to this component? In the case of behind-the-meter resources, are DERs properly disaggregated from load variation? How will DER growth over the course of the upcoming year and future 5 years (if applicable) be forecasted?

ISO Response

We have revised the draft to distinguish between solar thermal with and without storage. Thank you for bringing up this point.

We will better define DERs in the next draft- we agree this was initially vague. At this time we have not finished evaluating all aspects of DER calculations, but will look into these issues further.

4. The ISO currently has a tool in place that allows for a resource to include the opportunity costs associated with run-limitations into the default energy bid. The ISO is considering a similar mechanism to allow resources with annual or monthly start limitations to include the opportunity costs of start-up in the resource's start-up and minimum load costs. Please provide comments on how the ISO should consider the opportunity costs for start limitations and how that opportunity cost should be calculated.

Solar Thermal facilities with storage will face opportunity costs that require consideration in hourly bidding, such as the impact of early in the day generation on Net Qualifying Capacity under the Resource Adequacy program, the value of ancillary services outside of the must-offer obligation window, among others. Scheduling Coordinators and/or facility owners will need to work with the CAISO to ensure its aforementioned tool is enhanced for and accurately applied to Solar Thermal facilities with storage.

ISO Response

Agree the CAISO and SCs/facility owners will need to work out these details.

5. The ISO is proposing that all flexible capacity resources should be required to submit economic bids between 5:00 am and 10:00 pm. Please provide comments regarding this proposed must-offer obligation. Please connect to the response to this question to any responses to questions **Error! Reference source not found.**as appropriate.

Similar to hydro facilities, a Solar Thermal facility with storage shall have fulfilled their must-offer obligations so long as it has submitted economic bids until such time that its stored energy has been depleted. From the time that the facility has fully discharged until the facility has re-achieved a minimum charge, the facility should no longer have a flexible capacity availability requirement. Once the facility has re-achieved a minimum charge level, it would resume submission of economic bids.

ISO Response

Agree that there should be no economic bidding requirement when a resource is technically unable to produce energy.

