

## Stakeholder Comments Template

### **Flexible Resource Adequacy Criteria and Must-Offer Obligation Second Revised Straw Proposal, July 25, 2013**

Submitted by	Company	Date Submitted
Mohan Niroula <a href="mailto:Mohan.niroula@water.ca.gov">Mohan.niroula@water.ca.gov</a> 916-574-0712	California Department of Water Resources	08/15/2013

This template is for submission of stakeholder comments on the topics listed below, covered in the Flexible Resource Adequacy Criteria and Must-Offer Obligation second revised straw proposal on July 25, 2013, and issues discussed during the stakeholder meeting on August 1, 2013.

Please submit your comments below where indicated. Your comments on any aspect of this initiative are welcome. If you provide a preferred approach for a particular topic, your comments will be most useful if you provide the reasons and business case.

Please submit comments (in MS Word) to [fcg@caiso.com](mailto:fcg@caiso.com) no later than the close of business on August 15, 2013.

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

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

- a. CEC Load forecast in the need assessment: ISO mentioned in the August 1 meeting that Flexible Capacity Requirement (FCR) assessment will include the demand forecast from CEC's Integrated Energy Policy Report (IEPR) data. The FCR assessment is intended to be performed each month, so monthly load forecasts will be needed. However, the CEC IEPR data produces one annual number representing each LSE's coincident peak demand for the entire year; it does not have granularity at a monthly level. How will ISO utilize the CEC IEPR data to derive 12 monthly forecasts of load? It appears that the CEC IEPR requires reporting the last 2 years' historical hourly load data. How is an LSE's annual coincident peak demand

- forecast from IEPR going to be translated to LSE's monthly demand forecast for FCR assessment purposes?
- b. Annual flex RA demonstration: Is an annual showing of flexible RA only for summer months similar to the current annual system RA showing?
  - c. NQC and EFC correlation: The proposal indicates that in March, a list showing Effective Flexible Capacity (EFC) will be prepared. EFC depends on the Net Qualifying Capacity (NQC) of a resource. How does the EFC listing timeline correlate with NQC process including deliverability assessment for the next compliance year? Will the EFC be updated intra-monthly (for increase) as the NQC is today? CDWR believes that EFC should be allowed to be update within the compliance year similar to NQC today as updates become available.
  - d. Renewable production profile reporting for FCR assessment: Is there going to be a standard approach for reporting renewable production profiles? CDWR believes production profile can be useful in allocation process also.
  - e. Load modifying demand side programs-DR not bid into the market: How does ISO consider an LSE with wholesale load having decreasing load ramps coincident with ISO system need for flexible ramp up capacity (e.g. morning and evening ramp up periods)? Will such an LSE's load profile be recognized during FCR assessment and FCR allocation process? FCR assessment will not see the need for ramp up flexible capacity for such load during the ramp up period; however, allocation should consider the fact that allocation due to change in load for such LSE be recognized for not causing coincident flexible ramp up need but helping the ISO system by reducing ramp up needs. Thus, such loads should not be, at least, allocated FCR for change in load.
2. The ISO has outlined a methodology to allocate flexible capacity requirements to LRAs. It is based on one possible measurement of the proportion of the system flexible capacity requirement to each LRA and calculated as the cumulative contribution of the LRA's jurisdictional LSE's contribution to the ISO's largest 3-hour net load ramp each month. Please provide comments regarding the equity and efficiency of the ISO proposed allocation. Please provide specific alternative allocation formulas when possible. The ISO will give greater consideration to specific allocation proposals than conceptual/theoretical ones. Also, please provide information regarding any data the ISO would need to collect to utilize a proposed allocation methodology. Specifically,
- a. Over the course of a day or month, any of the identified contributors to the change in the net load curve may be positive or negative. How should the ISO account for the overall variability of a contributor over the month (i.e.

how to account for the fact that some resources reduce the net load ramp at one time, but increase it at others)?

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

### Example: Month-August

LSE A portfolio: solar PV, Solar Thermal, Wind, DG,

FCR assessment hours:

ISO Morning Ramp Up period: 5 am -9 am

ISO Evening Ramp Up period: 4 pm-8 pm

FCR allocation factors for LSE A:  $\Delta$  Load,  $\Delta$  Solar PV,  $\Delta$  Solar Thermal,  $\Delta$  Wind,  $\Delta$  DG

Time Period for allocation of FCR:

ISO Morning Ramp Up period: 5 am -9 am

ISO Evening Ramp Up period: 4 pm-8 pm

Morning ramp contribution assessment for LSE A:

Type	Hour 5	Hour 6	Hour 7	Hour 8	Average hourly ramp during the morning assessment period (5 am-9am)	Comments
Load	500	450	400	250	$\{(450-500)+(400-450)+(250-400)\} / 3$ $= (-)150$	<p>These hourly data for a month can be based on LSE's historical hourly load for the month, say for last 3 years or 2 years &amp; on-peak days; Forecast option may be considered but may be less transparent. For entities that have an issue with historical load, forecast may be an option.</p>
Solar Thermal	0	0	10	12	$\{(0-0)+(10-0)+(12-10)\} / 3$ $= (+)11$	<p>These hourly data may be based on the LSE provided production</p>

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

Evening ramp contribution assessment for LSE A:

Type	Hour 16	Hour 17	Hour 18	Hour 19	Average hourly ramp for the assessment period	Comments
Load	600	650	700	700	$\{(650-600)+(700-650)+(700-$	These hourly data for a month can be based on LSE's historical

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

DG	1	1	0	0	$\{(1-1)+(0-1)+(0-0)\} / 3$ $=(-)0.3$	These hourly data may be based on the LSE provided production profile.
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FCR allocation factors for LSE A are the result of netting of morning and evening contribution assessment.

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

PV	$\frac{25+(6-17)}{3}$ = $(+)$ 21	$\frac{25+(6-17)}{3}$ = $(-)$ 6.3				
Wind	$\frac{\{(0-20)+(0-0)+(0-0)\}}{3}$ = $(-)$ 7	$\frac{\{(15-10)+(12-15)+(13-12)\}}{3}$ = $(+)$ 0.3	$(-)$ 6.7	2000	$-0.3\%$	7
DG	$\frac{\{(0-1)+(0-0)+(0-0)\}}{3}$ = $(-)$ 0.3	$\frac{\{(1-1)+(0-1)+(0-0)\}}{3}$ = $(-)$ 0.3	$(-)$ 0.6	500	$-0.12\%$	1
LSE A total FCR allocation=						$(-50+8+16+7+1)$ = $(-)$ 18

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

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

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

CDWR's response: CDWR generally supports the CAISO's proposed methodology for allocation of responsibility for flexible capacity costs as consistent with the principles of cost causation. That said, the proposed



allocation methodology for FCR attributed to change in Load ( $\Delta$  Load) is somewhat unclear. As proposed, allocation based on  $\Delta$  Load will be the product of Monthly Average Load factor and total change in load. The ISO proposal should clarify following questions: How is monthly average load factor defined? How is it calculated? What is the data involved? How is change in load calculated? A numerical example would be helpful to precisely understand the proposed allocation methodology. While CDWR seeks clarification on monthly average load factor, CDWR proposes a methodology for allocation illustrated in 2(a) above consistent with previous set of comments.

In the previous set of comments, submitted on 6/26/2013, on the revised straw proposal<sup>1</sup>, SWP has suggested an equitable allocation approach for  $\Delta$  Load (also shown in the above example for  $\Delta$  Load). SWP reiterates the same suggested approach on allocation of FCR with regard to  $\Delta$  Load. In principle, an LSE's change in load that contributes to ISO system's 3 hr maximum ramp up need should be measured coincident with the occurrence of the ISO system's 3 hour maximum ramp up. In this second revised proposal, while monthly average load factor definition and calculation is not clear, any inter-hour averaging within 24 hour period that feeds into allocation may not reflect the true cost causation on with regard to ISO 3 hour maximum ramp up needs. An LSE's 3 hour gross load ramp coincident with the ISO maximum 3 hour ramp for the month is the true metric that reflects its contribution and follows cost causation. As an option, an LSE's last 2 years historical hourly load data (a part of IEPR reporting could be utilized to calculate average load for each hour of a day for last 2 years to calculate LSE's monthly 3 hour gross load ramp based on average hourly load). Forecast of hourly load may be used; however it could be complex, erroneous, and less transparent than historical average hourly load.

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

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<sup>1</sup> <http://www.caiso.com/Documents/CDWR-Comments-FlexibleResourceAdequacyCriteriaMustOfferObligationsRevisedStrawProposal.pdf>

CDWR proposed methodology under 1 (b):

CDWR proposes the following formula for FCR allocation:

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

CDWR's response:

- a. Loads that respond to severity of the ramps during grid operations by shifting loads to less stressful hours and adjusting loads during the ramps should not be allocated FCR obligation as if they were sources of variability. Instead, they should be recognized as a solution to the variable resources' induced variability. When enough generation is available including over-generation, such loads could be very helpful in mitigating reliability problems. Allocation method should identify such loads and not allocate FCR if the contribution from such loads coincident with ISO's maximum 3 hr ramp need is zero and provide credit, if contribution is negative.
  - b. ISO described the rationale for necessity of contingency portion of FCR that a resource counted to meet 3 hour maximum ramp may be providing contingency reserve and in the event of contingency dispatch, resources' capacity providing 3 hour max ramp would be reduced. Allocation of such FCR to coincident peak load seems to be a reasonable approach. However, if an LSE's load profile indicates zero or negative load ramps at the coincident peak period, such LSE should not be allocated contingency portion of FCR because the LSE's load does not cause flexible capacity need.
3. The ISO has proposed must-offer obligations for various types of resources. Please provide comments and recommendations regarding the ISO's proposed must-offer obligations for the following resources types:
- a. Resources not identified as use-limited
  - b. Use-limited resources
    1. Please provide specific comments regarding the ISO's four step proposal that would allow resources with start limitations to include the opportunity costs in the resource's start-up cost.
    2. Please provide information on any use-limitations that have not been addressed and how the ISO could account for them.

CDWR's response: CDWR has provided associated use limitations on its resources including participating load resources in its comments on revised straw proposal<sup>2</sup>.

c. Hydro Resources:

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

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

1. Demand response resources

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

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

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<sup>2</sup> <http://www.caiso.com/Documents/CDWR-Comments-FlexibleResourceAdequacyCriteriaMustOfferObligationsRevisedStrawProposal.pdf>

## Example of flexible capacity availability incentive mechanism calculation

- Flexible capacity = 40 MW
- Short start resource

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

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

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

1. The formula used to calculate compliance

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

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

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

1. Is the 2.5% dead band appropriate?

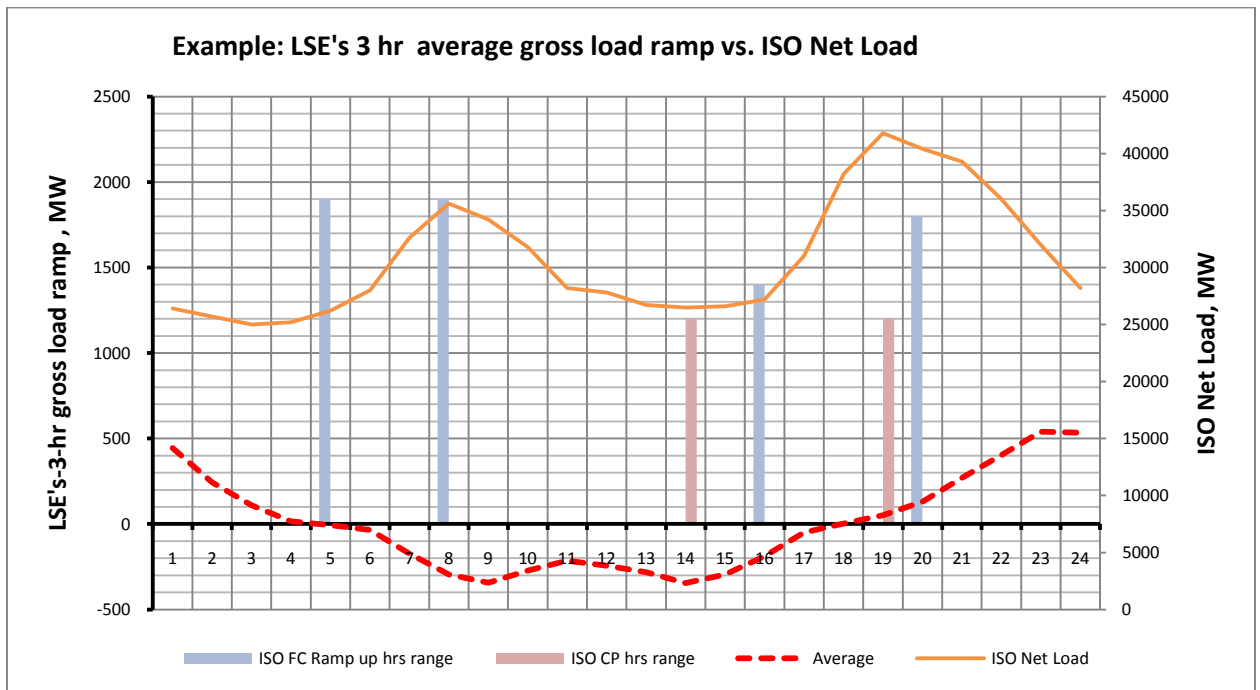
2. Is the prevailing flexible capacity backstop price the appropriate charge for those resource that fall below 2.5% of monthly target flexible capacity availability value? If not, what is the appropriate charge? Why?

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

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

CDWR's response:

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



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