California Department of Water Resources Comments on

Flexible Resource Adequacy Criteria and Must Offer Obligation-Phase 2

Working Group Meeting (July 22, 2015)

August 5, 2015

California Department of Water Resources (CDWR) appreciates the opportunity to submit its comments to the California Independent System Operator (CAISO) on July 22 Working Group discussions on Flexible Resource Adequacy Criteria and Must Offer Obligation- Phase 2. CDWR respectfully submits following comments:

a) New methodology to calculate flexible and inflexible capacity requirements: Examples with data on proposed methods such as setting flexible and inflexible capacity needs would better substantiate the proposal.

b) Inflexible capacity allowances: CAISO's proposal on allowances is not clear; providing some examples would be helpful to illustrate how allowances would be determined for an LSE. In particular, CDWR would appreciate seeing an example of how inflexible capacity allowances would be determined for demand response resources such as a participating load.

c) In discussing CAISO's existing tools to address over-generation (at Slide 19), the presentation mentions Operating Procedure 2390 and explains that Pumping Load can be turned on (if possible) to mitigate over-generation. CDWR agrees that pumped load is an important tool for addressing over-generation but believes that a market process—not an operating procedure—is the best way to use pumped load. CDWR urges CAISO to ensure that the pumping load will be eligible to provide the envisioned downward flexible capacity. CDWR also believes that, in order to facilitate pumping load's participation in downward flexibility, an appropriate product should be developed for such resources.

d) The presentation appears to contemplate adding two constraints—a Minimum Run Time of 6 hours and a Minimum Down Time of 4 hours—on top of the existing Effective Flexible Capacity (EFC) rules. Adding such constraints may limit the amount of flexible capacity available to CAISO, without any clear benefit. For example, Minimum Run Time is defined as "the minimum amount of time that a Generating Unit must stay on-line after being started-up prior to being Shut-Down, due to physical operating constraints." If the purpose is to mitigate over-generation, why should a generating unit should stay on-line after being started up for minimum of 6 hours? Similarly, Minimum Down Time is defined as "the minimum amount of time that a Generating Unit must stay off-line after being Shut-Down, due to physical operating constraints." Restricting EFC to units that have Minimum Down Time of 4 hours does not appear to help ensure the resource can provide less than 3 hours ramping capacity needs if it has to stay off-line at least for 4 hours after being shut-down.

e) CDWR urges CAISO to incorporate the concept (which was in the issue paper) of providing credits to negative load ramps.

CDWR would also like to reiterate its comments submitted to CAISO on the issue paper which is as follows:

1) (**Section 4.1**)- **Need for upward ramping speed**: LSEs that provide negative load ramps at the time of flexible ramp up need should be credited towards such requirement. LSE's that consistently craft their load profile such that negative ramps coincide with ISO's need for ramp up capacity should be recognized and rewarded.
2) (**section 4.2**)-**The need for downward flexible capacity**:
The issue paper states, *"This will push the net-load even lower on low- load days, increasing the number of days with excess generation. Further, the ISO's LTPP studies show a growing frequency and magnitude of over-generation scenarios. In the ISO's 40 percent RPS study, there were frequent and large curtailments of wind and solar resources, potentially putting the state's renewable energy goals at risk"*.
Merely having a ramping down capacity will not fix the curtailments of wind and solar; it will only stabilize the electric grid such as keeping frequency and Area Control Error within the set standard. How the curtailments of wind and solar will be addressed is not clearly stated in the proposal. Will demand response including participating load be made more active by providing incentives or designing a mechanism that will promote and facilitate demand response participation to mitigate over-generation?

As an example, an LSE's load profile that modifies so that the load ramps to consume energy helps mitigate need for downward ramping capacity should be rewarded with some form of credit. If an LSE's load ramps up when ISO needs ramp down generating capacity, the LSE should be credited for mitigating ramping down flexible capacity.
Moreover, a Participating Load that could mitigate over-generation should be allowed to provide flexible ramp down by increasing load for over-generation mitigation. 3 hour ramp down capacity can be provided by a participating load by consuming energy coincident with lower energy price and over-generation conditions.

3) (**Section 4.4**): **Study enhancements**
Re-evaluation of Flexible Capacity allocation to LRA or LSEs
The issue paper states, "The ISO will also explore alternative treatments for allocating of flexible capacity requirements to LRAs when an LRA has a negative contribution to the flexible capacity requirement. This occurs when a LRAs allocable share of the flexible capacity requirement is less than zero. If an LRA has a negative contribution to the flexible capacity requirement, its requirement is set at zero. However, there may be benefits from allowing this LRA's flexible capacity requirement to be negative and then allowing the LRA's LSE to sell this credit to an LRA's LSEs as part of its flexible capacity showing".
CDWR strongly supports developing an allocation mechanism that will allow LSE's negative load ramps (that help mitigate ramp up needs) coincident with the ISO's largest net load ramps. CDWR had proposed in FRAC MOO Phase 1 stakeholder process that negative load ramps should be credited if they help mitigate the ramping up needs. On June 26, 2013 [1]CDWR provided in its comments the following example that illustrates how negative load ramps should be credited in response to CAISO questionnaire:

> *"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*

[1] http://www.caiso.com/Documents/CDWR-Comments-FlexibleResourceAdequacyCriteriaMustOfferObligationsRevisedStrawProposal.pdf

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. An LSE that has negative load ramps or runs flat during the coincident peak (when maximum flexibility would be needed) would be penalized by allocating FCR obligation. For example, LSE A has negative gross load ramps in the morning = -200 MW and evening gross load ramp of -100 MW coincident with the ISO system coincident peak. 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 "load modifier" as described in the CAISO Demand Response Roadmap. An excerpt from the CAISO Demand Response Roadmap:*

> ***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 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 ÷ISO system change in load (gross load ramp in 3 hr) at the largest ramp up need) × ISO determined flexible capacity need attributed to Δ Load.

Where,

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

Allocation of FCR to LSE A = (-100 ÷ 3600) × 4000

= -111 MW, this negative allocation should be treated as credit, capped to the LSE's negative gross load 3 hr 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 due to intermittency of LSE portfolio resources."

CDWR reiterates its position that negative load ramps should be recognized and rewarded for their contribution to grid reliability. CDWR appreciates ISO for its consideration in FRAC MOO Phase 2 initiative. The issue paper further states, "Shifting the burden of managing over-generation into real-time instead of ensuring sufficient flexible capacity ahead of time is not an optimal solution. As the probability of over-generation increases, so will the frequency of manual, pro-rata, non-economic curtailment of resources or manually soliciting Balancing Areas WECC-wide to accepting the excess energy from the ISO uneconomically. The ISO believes that ensuring flexible capacity is available to the ISO day- ahead and real-time markets through the RA procurement are essential to avoid these situations." With regard to this statement CDWR observes that wind and solar, under FRAC MOO 1, have real time availability requirement only; Will the wind and solar resources that participate in flexible capacity be subject to DAM availability under FRAC MOO 2?

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