

California Department of Water Resources (CDWR) State Water Project Comments on CAISO's December 4, 2014 Flexible Ramping Products Draft Final Proposal

January 2, 2015

On December 4, 2014, the CAISO released an updated version of the Flexible Ramping Product (FRP) Proposal. On December 11, 2014, the CAISO held a workshop to review and discuss the Draft Final Proposal. CDWR appreciates the opportunity to submit comments.

CDWR supports the CAISO's efforts to create a product that resolves the need for greater ramping capability which in large part is exacerbated by increasing levels of variable energy resources while at the same time allocate costs fairly among all market participants.

Comments:

1. CAISO does not clearly explain in the Draft Final Proposal that Use-Limited Resources (ULRs) with flexible resource adequacy requirements in the Day-Ahead Market (DAM) can opt out of being awarded the FRP. In the previous version of the FRP proposal, the Revised Straw Proposal (released August 13, 2014), CAISO noted that "Scheduling coordinators can enter a zero MW bid to prevent the resource from being awarded flexible ramping products in the day-ahead market".¹ Prior to CAISO's release of its Revised Straw Proposal, DWR commented on this issue in the Straw proposal.² The CAISO responded with "The ISO has included provisions in the Revised Straw Proposal to allow use limited resources to opt out of being considered for flexible ramping product awards in day-ahead by limiting the MW quantity bid."³ The Draft Final Proposal does not clearly state that ULRs with flexible resource adequacy requirements can opt out of being awarded FRP in the DAM by submitting a zero (0) MW FRP Bid. The proposal only states that "the ISO did not change the proposal from the revised straw proposal". The Draft Final Proposal states that Scheduling Coordinators are allowed "to establish a maximum MW quantity to be awarded in the IFM" in order to "opt out of the flexible ramping product because the resource wants to be economically scheduled in day-ahead, but does not want those hourly schedules changed by the real-time market." However, this "opt out" concept is contradicted later on by: "resources must bid a MW quantity equal to or greater than the amount of their capacity used to meet their

¹ http://www.caiso.com/Documents/DraftFinalProposal_FlexibleRampingProduct_includingFMM-EIM.pdf

² http://www.caiso.com/Documents/CDWRcomments_FlexibleRampingProduct_StrawProposal.pdf

³ http://www.caiso.com/Documents/StakeholderCommentsMatrix_FlexibleRampingProduct_strawproposal.doc

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monthly resource adequacy flexible capacity requirements less the resource's Pmin" and "the resource adequacy flexible capacity minus the resource's Pmin is the minimum MW quantity of flexible ramping products that must be offered in IFM".

CAISO must clearly state in a revised proposal or the Tariff that ULRs with flexible resource adequacy requirements will be able to opt out of being awarded FRP by entering a zero FRP MW Bid quantity in the DAM.

~~Miscellaneous grammatical suggestions are noted below in yellow highlight:~~

Miscellaneous corrections and suggestions are noted below in yellow highlight:

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handle the 5-minute to 5-minute system load and supply changes. Insufficient ramping capability sometimes manifests itself in triggering power balance violations, which means **the** there is no feasible system wide RTD schedule to maintain supply and demand power balance. In this case,

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net demand, and a power balance violation is triggered. This happens because **this there** is no margin of error between the interval ramping needs in a multi-interval optimization, and any deviation beyond the forecasted ramping need. The purpose of the flexible ramping products is to create

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ISO did not change the proposal from the revised straw proposal. By allowing a MW quantity to be bid, but no price, **addresses** concerns raised by resources that want to be economically scheduled in the IFM, but are not available for RTD dispatch. For resources

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services are standard products to deal with the forecast uncertainties. There are two types of uncertainties to be accounted for based on **the** timing that uncertainties are realized: one is realized

Page 6, near the middle. This sentence is confusing.

for the provision of the regulation service separately. From an operational point of view, **more** procurement of more regulation service can provide more regulation capacity to address uncertainties that are realized before the binding RTD interval through the movement or resources on regulation to address events that occur during the interval. However, from a market efficiency

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bid caps (currently \$1000/MWh and -\$150/MWh). In addition, when regulation services are dispatched, they will be paid the RTD prices, **if** more regulation is procured to handle uncertainties, the additional dispatched energy will be compensated at the penalty prices even when there is no actual operational issue, but just an artificial power balance issue in RTD created

by the over-procurement of regulation.

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A resource can provide flexible ramping as long as it is RTD dispatchable and has an economic energy bid in **the** real-time market. It does not need to have a certified flexible ramping capability. The

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From the LMP structural differences, we can see that the LMP **form from** the look-ahead optimization is actually not a pure energy price, but rather a price **that** consists of energy price and flexible ramping prices. When net system demand is increasing, which creates more upward ramp need, the look-

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cover its bid cost. However, this perception is incorrect. To demonstrate this, assume all resources exactly follow instructions, and the load forecast for interval $t+105$ is 620 MW. To produce uniquely

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rate, and G2 has 100 MW/minute ramp rate. G1 is more economic in energy than G2. They both have zero cost **bids** for providing flexible ramping.

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different because there is an interaction between the energy price and flexible ramping price. Let's denote the LMP in scenario 2 interval t as LMP_{s2} , and the LMP in scenario **23** interval t as LMP_{s3} . The

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flexible ramping prices. When net system demand is **decreasing**, which creates more downward ramp need, the look-ahead optimization will increase the energy price in the binding interval.

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the prior interval. When regulation resources **s** have **been** providing regulation down, other resources **s** will be dispatched lower to allow **low** regulation resources **s** to increase their output to their set point. The RTD

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All resources in a given category will be netted prior **to** determining the initial division of system wide costs. By netting across all supply resources and scheduling coordinators with fixed ramps, the

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supply resources, and net movement in fixed ramps. Assume that load was ramping up 200 MW, fixed ramps **imports** were ramping up 50 MW and there was no supply category movement, the procurement target for flexible ramping up would be 150 MW and the flexible ramping down

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of their deviations. At the end of the month, these hourly charges will be reversed, and the scheduling coordinator will be charged the monthly rate for each of its five minute deviations for each hour of the day.