

**CALIFORNIA ISO
FLEXIBLE RAMPING PRODUCTS**

**COMMENTS OF THE STAFF OF THE
CALIFORNIA PUBLIC UTILITIES COMMISSION
ON THE NOVEMBER 1, 2011 STRAW PROPOSAL**

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November 14, 2011

The Staff of the California Public Utilities Commission (CPUC Staff) appreciate this opportunity to comment on the California ISO's (CAISO) November 1, 2011 Straw Proposal and November 7, 2011 stakeholder meeting presentation on the proposed Flexible Ramping Products (FRP). The CPUC Staff understand that FRP proposal is at an early stage of development. These comments accordingly describe several important aspects of the proposed FRP that need to be disclosed or require substantial clarification in the next iteration of the proposal, additional discussion with stakeholders, and in some instances additional supporting analysis.

A critical concern of the CPUC Staff is the absence of disclosure and rationale regarding the method (or tools) the CAISO proposes to use to calculate the magnitude of FRP procurement targets. This includes how the method relates to the method for calculating the flexible ramping *constraint* planned for deployment before the end of the year. The CPUC Staff also are concerned about potential inefficiency and unnecessary costs stemming from the way FRP is procured and compensated, and then subsequently deployed and compensated for energy. Further, although the CPUC Staff support the CAISO's general rationale for cost allocation, the CAISO should consider providing market participants with the ability to flexibly manage their own exposures to FRP costs. The CAISO also needs to provide additional details on its proposed method for allocating FRP costs and how that method can be refined over time as events, market design, and supporting technologies evolve.

1. The CAISO's next FRP proposal should disclose and explain the proposed method for determining FRP procurement targets.

The method for determining the amount of FRP the CAISO will procure in the Real Time Pre-Dispatch (RTPD) or day-ahead market is critical to understanding the FRP proposal. It drives other critical design choices and their consequences, including co-optimization,

deployment for energy, settlement (compensation), and cost allocation. The CAISO should transparently relate this method to its underlying assumptions and information sources, the flexibility provided by other market processes, and studies and other information sources used to estimate forward flexibility needs. The CPUC Staff ask the CAISO to describe the following aspects of the method for calculating FRP targets:

- What is the definition, origin, and scope of the “uncertainties” driving the need for FRP, and for which FRP will be applied? How do these uncertainties and the resulting flexibility needs relate to other kinds of flexibility needs met by other sources of system flexibility?
- Would FRP requirements reflect, at least in part, *expected* within-15 minute ramping needs (i.e., forecasted variability, as opposed to load and resource forecast uncertainty)? If so, what does this mean for subsequently determining when to deploy FRP for energy in Real Time Dispatch (RTD)? If the CAISO intends the FRP to partly help manage *expected* ramps in generation or load, perhaps its deployment for energy should not be triggered *only* by the “realization of uncertainties.”
- How will the method for determining FRP procurement requirements quantify what *additional* flexibility is needed, and thus account for available up and down flexibility *already* inherent in the energy stack and existing ancillary services? For example, will existing (outside of FRP) flexibility be deployed without payment of FRP prices, will it be ignored in determining FRP requirements if the resources in question do not provide FRP bids, or will it be automatically treated as available for FRP (contingent on resource ramp rates and commitment for energy) as if it entailed a default FRP bid of zero? Under what conditions and criteria would there be manual operator override of FRP requirements calculated by the designated “tools”?
- How do FRP requirements and the uncertainties that drive them relate or compare to those flexibility requirements that the CAISO has defined and studied via “operational” (integration) studies, particularly “net load following” requirements? Looking ahead, what is the timeline for determining and filling significant FRP needs (e.g. in months, years), and why?

- What are the specific analytic tools and data that the CAISO will use to calculate *the flexible ramping constraint* in the near term, where will these be posted for review, and how will they differ from those tools and data used to calculate FRP requirements?

2. *The FRP design should address and mitigate the potential for economic inefficiency, excessive costs, gaming, and market power.*

The FRP proposal presents potential for economic inefficiency, excessive costs and gaming and market power. The CAISO needs to clarify, assess, and, if necessary, propose mitigation to address these concerns beginning with the next iteration.

First, one major concern of the CPUC Staff is the apparent risk of unwarranted double or other over-payment for both FRP capacity reservation *plus* a subsequent deployment for energy in RTD. The risk appears to arise where (1) providers are compensated for FRP based on a shadow price inherently reflecting opportunity costs across all market products in real time pre-dispatch (RTPD) or the integrated forward market (IFM) *and* (2) they have a high probability of being subsequently dispatched and paid for energy (from the reserved FRP capacity) at 5-minute RTD prices, which could differ from energy prices used to calculate opportunity cost-based FRP prices.

In the November 7 stakeholder meeting CAISO staff expressed the view that allowing FRP providers to retain all FRP capacity procurement revenues plus any market-based energy revenues from subsequent deployment of FRP capacity for energy is analogous to the current practice for ancillary services. But the analogy is not apt because ancillary services are reserve products designed to be dispatched rarely, whereas FRP is inherently designed to be dispatched frequently as a balancing product. Further, bid cost recovery should take into account all FRP-related revenues from both FRP capacity procurement and subsequent deployment for energy.

In order to inform a discussion of the risks of double- or over-payment, the CPUC Staff request that the next draft proposal provide more complete examples of bids, procurement and settlement for FRP in RTPD with subsequent deployment and settlement for energy in RTD. The examples should address different conditions regarding (1) FRP provider energy bid is high vs. low relative to other energy bids, (2) “realized” RTD uncertainty (requiring FRP energy) is high versus low relative to RTPD energy forecast, and (3) RTD energy price is high versus low relative to energy price assumed for RTPD opportunity cost (shadow price) calculation.

Second, the CPUC Staff are concerned that, particularly in intervals where substantial amounts of FRP are procured, the methodologies for deploying FRP for energy based on “realized uncertainty” and for physically restoring FRP capacity previously deployed for energy could result in unnecessarily costly system dispatch and energy prices. This may occur if FRP energy is under-utilized, or if requirements or criteria for restoring FRP capacity for availability in subsequent RTD intervals or for a subsequent RTPD commitment create inefficient dispatch situations. These RTD methodologies and issues regarding deployment of FRP energy should be more fully explained and discussed with stakeholders.

Third, to track and assess efficiency, costs and potential gaming with this new and complex product, the CAISO should commit to reporting the total amounts of FRP procured along with prices and costs with sufficient temporal granularity. Reporting should include amounts actually deployed for energy and the associated energy prices and costs. To the extent applicable, this reporting should also be provided for the near-term flexible ramping *constraint* in a timely manner to inform evaluation and design of FRP.

Fourth, the CAISO has raised the idea of procuring less than the target FRP amounts or requirements under appropriate conditions. While this is a promising means to manage FRP costs, it requires fuller explanation and discussion of how the overall FRP design will minimize FRP procurement costs within the context of minimizing overall market costs, any minimum floor amount of FRP procurement and its basis, and any ceiling on FRP costs or prices. The role of demand response in these situations should be considered and accommodated.

Finally, the CAISO should request and provide timely information for Market Surveillance Committee review of key economic efficiency issues and their implications for market power and gaming. In particular, this includes the proposed settlement process and potential for double payments described above, as well as the methodology and implications for constrained (limited) deployment of FRP for energy and for restoration of FRP capacity previously deployed for energy, within RTD.

3. The CAISO should consider and provide options for non-conventional resources to manage and mitigate FRP costs.

In designing the FRP, including the methods for calculating FRP requirements and cost allocation, the CAISO should provide and take into account full opportunities for diverse sources and strategies for managing the uncertainties addressed by FRP and the costs of procuring FRP.

Such opportunities should include participation by demand response, storage, wind and solar curtailment and ramp control, and for market participants to both create and operate complementary resource portfolios that minimize FRP requirements and costs across the portfolios. The CAISO should also explore options for allowing self-provision of FRP or other means of flexibly allocating FRP responsibilities, with appropriate gaming and market power protections.

The CAISO should also provide opportunities to allow use of updated (closer to real time) wind and solar forecasting and intertie scheduling to minimize FRP procurement and associated costs. This is especially important in the mid-to longer-term because although the use of improved forecasting (availability updates) has been an important part of ongoing renewable integration discussions in CAISO forums and elsewhere, it was recently taken off of the table by the CAISO in the renewables integration initiative. Improved forecasting is generally acknowledged to be a valuable no-regrets component of the renewables integration toolkit, and the CAISO should explore how it could be factored into FRP design and/or mitigate FRP requirements and costs.

4. The CPUC Staff support the general cost allocation rationale but the CAISO needs to address significant concerns.

The CPUC Staff ask that the CAISO's next straw proposal provide more detail and clarification on how the CAISO intends to most effectively achieve the following objectives of the straw proposal:

1. Cost Allocation mechanisms create incentives for resources that lead to lower procurement targets of operating reserves.
2. FRP procurement targets decrease over time as the resources adjust performance due to feedback based on cost allocation.
3. Resources benefit from reducing the underlying drivers that lead to the procurement of operating reserves, which then reduces future requirement for operating reserves.
4. As variability and uncertainties between RTPD and RTD decrease, the target procurement of FRP should also decrease, resulting in enhanced grid reliability, improved market efficiency, and lower overall costs in the market.

First, stakeholders need additional detail on the allocation of costs to the three proposed broad “buckets” (load, generation not subject to dispatch instructions but deviating from hourly schedules, and generation subject to but deviating from dispatch instructions). The CPUC Staff preliminarily agree that allocating responsibility for deviations to loads and generation *within* buckets should be based on *monthly* summing of gross up and down deviations. The next draft proposal should provide additional detail on the proposed method for fairly allocating responsibility for up and down deviations *among* the three up and three down buckets (load, hourly scheduled generation/imports, dispatchable generation). The proposal should including methodologies for (1) updating this allocation over time (e.g., how the FRP calculation will incorporate “feedback” as participants adjust over time to reduce the total amounts of FRP procured and as more information and experience are gained regarding need for and use of FRP), and (2) developing different allocations for different system conditions in different seasons and for on- versus off-peak.

Second the CPUC Staff are concerned that unfair disparities in FRP cost allocation could result so long as the meter data interval for load, imports and generation are calculated using dissimilar timeframes. While pragmatism may entail using the best meter data available at this time, it is unclear whether the use of one-hour intervals (rather than six 10 minute intervals) has a significant effect on the amount of uninstructed imbalance energy (UIE) determined. The CAISO should provide more granular examples that contrast the effect of calculating UIE for generation on a 10-minute interval versus over a full hour. Because the cost allocation method precedes future relevant market design changes by several years, unfair or overly burdensome cost allocations to certain market segments may persist for an unreasonably long time.

Third, the CAISO should also provide more detail regarding how it will allow market participants (including variable energy resources) to manage their exposure to FRP costs. For example, as the CAISO considers the design of a day-ahead FRP, it should consider allowing market participants to have responsibility for their own deviations and self-procurement of FRP based on portfolio or pooled deviations. This could be similar to existing mechanisms for self-procured ancillary services and could be conditioned on the participant demonstrating sufficient control over and responsibility for the aggregate resources in question. The CPUC Staff believe this could encourage development of resource portfolios that support mitigation and cost

management with respect to uninstructed deviations, both on a forward planning and procurement basis and in operation.

Finally, the cost allocation methodology should be evolutionary and the CAISO should consider using more robust technology (software and hardware) to facilitate such evolution. Ultimately, market changes such as the sub-hour dispatch of imports, load metered on the same interval segment as generation, and increased dispatchability of renewables will impact the amount of FRP capacity procured and corresponding allocation of costs. The CAISO should strive to anticipate these evolutionary steps sooner rather than later in the design and implementation of FRP.

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