

**CALIFORNIA ISO
FLEXIBLE RAMPING PRODUCTS**

**COMMENTS OF THE STAFF OF THE
CALIFORNIA PUBLIC UTILITIES COMMISSION
FOLLOWING THE MAY 29, 2012 TECHNICAL WORKSHOP**

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June 7, 2012

The Staff of the California Public Utilities Commission (the CPUC Staff) appreciates this opportunity to comment on outstanding issues and future directions in the CAISO’s Flexible Ramping Products (FRP) initiative, including market design options addressed up through the Draft Final Proposal of April 9, as well as further design issues and analyses discussed in the May 29 technical workshop. Regardless of whether the CAISO ultimately pursues a significantly revised design for FRP to incentivize efficient behavior, the initial rollout should be transparent, avoid excessive complexity, and be amenable to both fine tuning and market power/gaming protections. The FRP will represent complex and unprecedented new market products, including parameters and dynamic relationships designed to incentivize provision of flexibility as well as to support economically efficient procurement, compensation and cost allocation. For example, particular parameters or relationships may be used to determine target amounts of FRP procurement, the portion of FRP procured in day-ahead (DA) versus real-time (RT) markets, the role of energy bids in selection of FRP providers, how reserved FRP capacity is dispatched for energy in RT, and the magnitude of penalties for non-performance.

The CPUC Staff does not oppose such parameters and relationships in concept, but strongly recommends that the CAISO avoid a high level of complexity for the *initial* FRP design and rollout, such as would result from including the full, detailed level of various design elements presented over past months. The particular design parameters, and the interactions between them, will be difficult or impossible to “get right” the first time. If the initial design is too complex this could be self-defeating by hindering transparency, reducing stakeholder support and understanding, and hampering ability to fine tune the design going forward based on post-deployment monitoring and analysis. In addition, other ongoing market reforms will interact with FRP deployment, which only increases the risk of having too many new, interacting moving

parts needing to be assessed and refined virtually at the same time. Accordingly, the CPUC Staff recommend attention to six FRP issues that should be more specifically illustrated, discussed and assessed in order to achieve an FRP design that is rational and efficient without being overly complex, and that best allows for subsequent adjustments based on post-deployment information and analysis.

- 1. The initial FRP design should use “explicit” FRP procurement targets with limited relaxation based on “price versus value.”**
- 2. The CAISO needs to further explain its proposal to release FRP for energy based partly on ramp rate and capacity constraints before including this in an FRP design implementation.**
- 3. The CAISO should provide more detailed assessments of how it will apportion FRP procurement between day-ahead (DA) and real-time (RT) markets, and the initial FRP deployment should anticipate a need for adjustments and corrections.**
- 4. FRP procurement should be based on both FRP bids (option prices) and on associated energy bids (strike prices).**
- 5. Cost allocation refinements and potential problems need to be more fully examined in the coming months.**
- 6. Additional detailed discussion and/or concrete numerical examples are needed in several areas.**

Finally, two limited but potentially useful topics should be included in the remaining discussions under this initiative.

- Use of closer-to-real time load and generation forecasts, including wind and solar forecasting, should be considered for Real Time Unit Commitment (RTUC) and FRP procurement purposes, also taking into account consistency with likely or possible changes in west-wide energy trading and interchange timelines.
- The FRP stakeholder process should consider the potential impact and desirability of schedule biasing such as could result from contrasting FRP Up versus FRP Down Prices, or from potential allocation of FRP costs based only on “bad” deviations (in the same direction as overall system deviation).

1. The initial FRP design should use “explicit” FRP procurement targets with limited relaxation based on “price versus value.”

The CPUC Staff recommend that the initial FRP design and rollout use “explicit” FRP procurement targets whose relationship to supporting data, studies of flexibility needs, and actual market conditions can be easily understood by stakeholders and market participants. It may also be reasonable to have these targets be situation-sensitive since different hours, seasons etc. will likely present different magnitudes of flexibility challenge. Furthermore, the CPUC Staff would support implementing a limited, straightforward relaxation function, so that high FRP prices result in relaxed procurement targets (perhaps down to a reliability-driven floor) if this can be clearly and simply defined.

However, any movement to a full “implicit” (or dynamic) approach for setting FRP procurement targets that would be based on a supply-demand (or supply-value) curve should be done gradually and transparently, after the initial FRP rollout. While such an approach can increase economic efficiency, it raises important questions about the role of reliability versus economic efficiency as FRP drivers. Further, how “value” will be defined is not obvious and likely not simple, and must be clarified in some detail. These questions need to be addressed and discussed with stakeholders before any strongly “implicit” approach to FRP targets is developed. Thus, while it may be possible to use an implicit/dynamic approach in the future, the CAISO should begin the initial FRP deployment using an explicit approach with only a limited, transparent procurement target adjustment mechanism.

2. The CAISO needs to further explain its proposal to release FRP for energy based partly on ramp rate and capacity constraints before including this in an FRP design implementation.

The CPUC Staff understand that the CAISO has suggested basing the RT decision to release particular FRP capacity for energy dispatch (versus preserving it for potential later use) not only on energy bids, but also on a FRP resource’s ramp rate and its capacity constraint on cumulative ramp deliverable over the operating time frame. This may be rational and yield the most efficient use of procured FRP. However, it also introduces complexities and interacts with other key aspects of FRP design (e.g., setting FRP targets, use of energy bids and other information to select FRP providers, determination of FRP procurement DA vs. RT). The

mechanism for determining FRP release for RT energy can also impact compensation prospects and bidding strategies of FRP sellers, which in turn impact FRP and energy prices.

The CPUC Staff therefore recommend that the CAISO better describe its proposed process for releasing FRP for energy based on multiple criteria. Stakeholders should be presented analyses supported by concrete examples for discussion. Examples should explain and explore the interaction of FRP release criteria with FRP procurement criteria and FRP compensation. To reiterate, the CPUC Staff recommend generally limiting complexity of FRP design parameters and algorithms in the initial FRP rollout, and specifically recommend that FRP release (energy dispatch) criteria and their interactions with other FRP design complexities be carefully considered.

3. The CAISO should provide more detailed assessments of how it will apportion FRP procurement between day-ahead (DA) and real-time (RT) markets, and the initial FRP deployment should anticipate a need for adjustments and corrections.

The split between FRP procurement in DA versus RT will have major impacts on FRP markets and costs, as well as on the potential for inefficiency or gaming. However, there appears to be insufficient basis at this time to determine the optimal split or how it should vary in response to specific conditions.

The population of resources available to provide FRP will likely be larger in DA markets than in RT markets, but procurement needs will be more certain in RT. A capacity-limited FRP provider will be able to offer a higher level of FRP in RT due to the shorter operational interval (15 minutes versus an hour) over which ramp is required to be maintainable. FRP bidders will have different information, opportunities and constraints in DA vs. RT. For these and likely other reasons, it is important that any ultimate FRP design provide a clear, transparent basis for adjusting the split of FRP procurement between DA versus RT after the initial product rollout, based on both prevailing (instantaneous) market conditions and cumulative post-deployment experience. Further, the FRP design assessments and discussions with stakeholders in the coming months should explore both conceptually and with concrete examples the implications of procuring FRP in DA versus RT markets. These discussions should take into account interaction with other design complexities such as use of energy bids in procurement, the criteria for

releasing FRP for energy, and the method of determining the procurement targets in DA and RT markets.

4. FRP procurement should be based on both FRP bids (option prices) and on associated energy bids (strike prices).

The energy bids should be weighted by estimated likelihood of dispatch, and RT energy bids should be “capped and floored” for DA FRP procurement purposes. There should be further discussion and assessment of how such weighting of energy bids should occur, as well as if/how any other factors (such as capacity constraints) should be considered in procurement decisions. The weighting of energy bids should be more continuous (starting at lower energy bid levels and then increasing) than was previously proposed.

5. Cost allocation refinements and potential problems need to be more fully examined in the coming months.

CAISO and stakeholders should assess the relative merits of aggregating deviations over groups of hours within a month (e.g., peak, off-peak) or using a tiered approach, as alternative means for avoiding the extremes of monthly summing (high socialization) and hour-by-hour allocation (high volatility). If a tiered approach is considered it should be more fully explained and justified, including explanation of whether allocation of costs partly based on generic, expected deviations (as opposed to actual hourly deviations) would not reduce resources’ incentives to control variability or improve forecasting.

Furthermore, cost allocation to SCs may produce financial difficulties depending on contract terms, especially in situations where SCs are generators rather than LSEs, and this needs to be addressed.

6. Additional detailed discussion and/or concrete numerical examples are needed regarding the following:

- Slide 5 from the May 29 technical workshop.

- False opportunity cost and double payment issues, using more concrete examples taking into account variations in how FRP might be released for energy
- Statistics showing (hypothetically) UIE-based allocation of FRP costs to load and supply, as previously shown, but with supply broken into variable energy resources (VER), self-scheduled non-VER, and dispatchable non-VER resources.
- And, post-implementation, CAISO should be prepared to compare bid-driven FRP procurement costs with opportunity cost (flexible ramping constraint)-based procurement costs

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