

Stakeholder Comments

Flexible Ramping Product Revised Draft Final Proposal

Submitted by	Company	Date Submitted
Alex J. Morris – (626) 664-9926 Andrew Dugowson – (626) 302-3549	Southern California Edison	August 23, 2012

Southern California Edison (SCE) offers these comments on the California Independent System Operator’s (CAISO) Flexible Ramping Product (FRP) Revised Draft Final Proposal.

Summary

The recent FRP proposal advances the product’s design significantly, albeit with added complexity. To ensure the proposal is fully understood and evaluated, SCE requests the CAISO host a technical workshop to review key design issues and the proposed solutions. SCE also strongly encourages the CAISO to simulate results (based on actual historical data) of this product design before finalizing the proposal. Because of their complexity, the full effects of the proposal are difficult to anticipate, and thus stakeholders should depend upon more than mere intuition or directional examples to evaluate it.

SCE supports the direction of the proposal and continues to formulate an understanding of the details. Contingent upon details and further understanding, SCE supports cementing several core aspects of the product’s structure, including real ramp procurement, cost allocation, and a combined explicit and implicit demand curve. SCE offers narrow questions and targeted suggestions on these features to develop them further.

In SCE’s view, the CAISO needs to expressly overhaul two key design components: rules for pricing the implicit demand curve, and rules by which Participating Intermittent Resource Program (PIRP) generators participate in FRP. Implicit demand curves should not be priced based on avoided power-balance violations (PBVs). SCE seeks to ensure inputs to the implicit demand curve link to real-world conditions rather than administrative model-based outputs which may incorrectly overprice power in Real-Time (RT) markets. With regards to PIRP, a program that already subsidizes resources and encourages them to remove their flexibility from the system, it is unreasonable to grant those resources additional benefits. Instead, rules should only permit these units to provide FRP when completely out of PIRP, e.g. for the full hour.

Finally, the CAISO should expand its design in two promising areas: using Regulation to meet FRP needs, and co-optimizing the IFM and RUC into an integrated Day-Ahead Market (iDAM). Allowing excess Regulation to address FRP needs makes conceptual sense, but the success of this idea depends on resolution of tricky design issues. SCE strongly supports the new iDAM idea but needs more information on its design. As the CAISO fleshes out these important enhancements, SCE also suggests the CAISO consider loose regional procurement for FRP to manage concerns with “trapped” flexibility. The CAISO should leverage upcoming proposals or workshops to expand these ideas.

Detailed Comments

1. SCE requests further technical workshops or stakeholder meetings to clarify stakeholders’ understanding of FRP’s core components.

The recent proposal is fairly robust yet also complex enough that SCE and likely other stakeholders need additional time to digest changes and consider implications. In light of this need and the importance of getting the product developed effectively down to a detailed level, SCE requests the CAISO host a technical workshop. This meeting should also help the CAISO deliberate on difficult design issues, trade-offs, and implementation priorities.

2. The CAISO should plan to simulate results to check for unintended consequences before finalizing the design.

CAISO staff has worked diligently to provide examples of how market pricing may change due to the FRP design. In light of the complexity and significance of FRP – a new biddable product layering into an already complex market and grid operations system – SCE requests the CAISO run market and grid operation simulations to ensure outcomes are reasonable. At a minimum, the CAISO should commit to a full simulation, analysis, and review of results before putting the proposal in to actual production. This is a major revision to the market, and consequences could be severe if the design is wrong.

3. FRP value should not link to the cost of power balance violations (PBVs) which cannot be perfectly solved with FRP.

The CAISO has not demonstrated a causal relationship between FRP procurement and PBVs. For example, PBVs have occurred frequently even with hundreds of MWs of Flexible Ramping Constraint capacity. Additionally, PBV prices often misrepresent the cost (or existence) of transient ramp shortages which may simply result from a modeling limitation. It is crucial that the CAISO address transient price spikes that often represent modeling limitations (rather than physical operating problems) prior to implementing FRP. So long as PBVs are substantive when caused in part by artificial spikes, their corresponding administrative price should not be used for any economic basis or justification for pricing

or procurement. SCE suggests the CAISO use the incremental cost of regulation as an input into its FRP implicit demand curve calculation.

SCE supports the CAISO's use of a blended implicit and explicit demand curve. Minimum procurement should address minimum real-ramp needs. Beyond that, the demand curve should reflect a prudent approach to manage flexibility for reliability purposes. The CAISO should emphasize that this product is not a price-spike-reduction tool, but a framework designed to manage system reliability and to ensure prudent utility practices. PJM uses demand curves in its forward capacity market, similarly reflecting a need for prudent and cost-conscious reliability planning.¹

4. The proposal should incentivize renewables to provide FRP, but should not provide free benefits to PIRP resources. FRP benefits should only be available to units that opt out of PIRP for an entire operating hour.

PIRP subsidizes resources for behavior that may actively increase the system's need for flexibility while simultaneously restricting its supply. PIRP should sunset in order to end its problematic market effects. The longer PIRP exists, the more entrenched its subsidies and market distortions become, especially with expanding numbers of qualifying intermittent generators.

While PIRP persists, FRP rules should encourage PIRP resources to opt *out* of PIRP. It is inappropriate to allow resources in PIRP get the best of both worlds by receiving full PIRP subsidies and schedule deviation netting benefits while also "cherry picking" intervals with high FRP costs. Moreover, if a resource is already tailing off and cannot actually respond to instructions, the CAISO should not allow it to sell FRP.

Any resource that seeks payments for FRP should be required to leave PIRP, at a minimum for the full hour of participation, if not from the program entirely. When a resource submits an FRP bid for an interval, the next twelve intervals (one hour) should be settled as instructed energy. Settlement rules should not simply allow PIRP resources to capture outside benefits when risks are favorable. Instead, risks and rewards should correlate so that a resource chooses to opt out of PIRP in order to access the rewards of FRP.

The CAISO should also clarify that its bidding input and IT systems can accommodate this change. If such changes are costly and likely to be infrequently used, it makes more sense to sunset PIRP and allow all resources to participate in the Real-Time Dispatch (RTD) through FRP.

5. SCE supports substitution-like functionality, but rules for Regulation providing FRP need further development.

¹PJM's Reliability Pricing Model Training, Sections A – C, p32, <http://www.pjm.com/training/~media/training/core-curriculum/ip-rpm/rpm-training-sections-a-thru-c.ashx>

Substitution-like functionality should enhance market efficiency and lowers costs. These forms of functionality should be pursued where feasible. SCE supports economic buy-back of certain products so long as it does not encourage behaviors that lead to reliability risk.² The CAISO procurement rules should continue to ensure that FRP sales are backed by physical resources by requiring ramp rates and other physical qualifiers. The CAISO should also clarify that Day-Ahead (DA) awards are physically binding and that “buy-back” occurs off of these awards based on Real-Time (RT) bids, rather than through a rescission of payments similar to Ancillary Services buy-back rules (which apply to different circumstances).

The use of excess Regulation capacity for FRP makes conceptual sense but needs further development. SCE maintains that FRP’s ability to manage large amounts of variability and uncertainty in RTD should limit the amount of balancing capacity needed *within* a five minute interval and should *reduce* Regulation needs. That said, the proposal can further clarify how the CAISO will know if and when it has sufficient Regulation capacity to free some up for FRP purposes. Also, if parties received a Regulation award but are converted to FRP, their bid costs should be covered. How thus does the optimization know whether conversion is cheaper than buying new FRP? Will rules immunize Regulation bids from risks of lower value outcome if switched and no longer available for mileage payments? Moreover, cost allocation of any “Regulation” converted to FRP must follow the cost allocation of FRP. These details will require further discussion.

6. The iDAM has material potential upside but needs more details and design considerations.

SCE supports a transition to a cooptimized IFM and RUC in order to improve market efficiency and physical reliability. As the CAISO develops its iDAM approach, SCE requests the CAISO clarify key components, such as: How will price formation for RUC capacity occur? Will RUC capacity affect energy congestion? How will RUC costs be allocated? How will the design accommodate zonal RUC requirements? How will iDAM comport with the 72-hour RUC plan? Should iDAM produce an hourly capacity price given that Eastern ISOs do not? Some other markets do not compensate resources for participating in RUC, since RUC essentially puts the resource into an advantageous position to earn energy and Ancillary Services payments. This should also be considered.

7. With core structural pieces in place, the CAISO should consider the pros and cons of regional procurement.

While ramping capability can sometimes serve the entire system and enable RTD to solve efficiently, congestion may at times limit the ability of flexibility to reach the areas in which it is needed. The CAISO should assess the pros and cons of regional procurement. To the extent that this feature would

² One reason for 100% procurement of Ancillary Services in the Day-Ahead Market is to ensure resources never offer “financial”, rather than physical, A/S.

add significantly to the product's complexity or cost, this feature should be delayed until a tune-up of the product occurs. Moreover, flexible ramping capacity has not yet been shown to directly cause a reduction in PBVs, so this analysis should be thoughtfully done and properly defined. While regional procurement should be explored, cost allocation must not simply "flow to load in the region of procurement." Specifically, a certain region of the grid may have abundant renewable resources, and this may lead to the CAISO buying FRP in the same proximate region as the resources. It would be unreasonable to allocate the local procurement costs simply to local load as this would clearly violate cost-causation principles since local load had nothing to do with driving these integrating costs.

8. The proposal for cost allocation is conceptually sound but can be improved with a few enhancements.

SCE supports the overall approach and structure of the CAISO's cost-allocation for FRP. Costs should be allocated based on resources' contribution to net system balancing and ramping needs. SCE offers additional considerations to fine-tune the design.

a. The ISO should investigate the benefits of sub-hourly intervals for pricing and allocation.

The CAISO's data indicate ramping needs (and presumably prices) can fluctuate significantly within an hour. Market efficiency could improve if FRP pricing and allocation occur in periods that are more granular than resettled hourly costs. The CAISO should instead consider sub-hourly pricing and allocation, likely on a ten minute cycle.

As the severity and volatility of ramp need is expected to increase greatly in the coming years, the need for cost allocation to send proper price signals, tightly synchronized with resources' behavior, will grow and should be prioritized. If synchronized with costs and risks, a phased roll-out of cost allocation granularity may make sense. This enhancement could thus be part of the CAISO's FERC Order 764 "VER Order" Compliance efforts which may shift markets to briefer scheduling and settlement periods.

b. Schedules in HASP rather than schedules submitted after HASP are most appropriate for measuring deviations. FRP cost allocation rules should reflect this.

The CAISO expressly seeks to allocate "costs for flexible ramping product based upon movement that requires changes in Real-Time dispatch of resources."³ Since HASP reflects the baseline schedule information for interties and other resource schedules (including PIRP resources) these schedules serve as a likely measuring point for deviations driving FRP needs and definitely trigger the allocation rule of "[requiring] changes in Real-Time dispatch of resources." Per the ISO's principles⁴, resources deviating from their HASP schedules may be driving a need for integration and Real-Time dispatch and should be subject to FRP cost allocation based on this deviation from the

³ Flexible Ramping Products: Revised Draft Final Proposal, CAISO, August 9, 2012, p.33

⁴ *Ibid.*

HASP schedule. As a result, until the CAISO implements 15-minute schedules, SCE objects to the proposal to allow PIRP resources to reduce cost allocation of FRP based on updated 15-minute forecasts. Again, any deviations resources have from the HASP schedule will likely result in “Real-Time dispatch of resources”. Updated forecasts do nothing to change the need to move resources in Real-Time.

In general, SCE supports efforts to incorporate updated schedules to the degree that such new information can materially improve market dispatches and commitments. Accordingly, when intertie decisions are made closer to RT – for example, should the CAISO moves to 15-minute markets – it also makes sense to consider these 15-minute schedules in the allocation of FRP costs.

c. Billing determinant calculations should be based off of gross deviations rather than changes in deviations.

FRP cost allocation should incentivize resources to adhere to their schedules (and CAISO dispatch instructions). Assessing costs based on gross deviations, rather than delta deviations, has two key advantages. First, it strongly incentivizes resources to adhere to their schedules. That is, if they are off schedule, they have an immediate incentive to return to schedule to limit FRP exposure. Second, it penalizes resources for occupying the flexible resource that was dispatched to handle its deviation. If costs are only assessed to resources for their delta deviations, the resource will be charged for its first deviation from schedule, as is proper. However, per the proposed rule, it will also face charges for *returning* to its schedule, since that is also a change in deviations. While this outcome discourages further changes in deviations and ramp response, it sends the wrong marginal incentive: a unit should not be penalized for returning to its schedule. The delta approach provides the perverse incentive that “once you deviate, you maintain the deviation in perpetuity to avoid additional FRP costs.” When costs are assessed by gross deviations, the unit will receive charges in each interval until it returns to its original schedule, providing the incentive to meet its original schedule.

Furthermore, when a resource deviates from its schedule, the CAISO must dispatch a flexible resource to balance that deviation. So long as the original resource continues to deviate, that flexible resource must continue to mitigate the resulting energy surplus or shortage. Until the original resource returns to its schedule, the flexible resource cannot liberate its flexibility to the system. SCE is concerned that the CAISO will have to purchase additional FRP to deal with variation (rather than reusing the original FRP over-and-over as it is used and then released), which in turn will increase costs unnecessarily. The continuing charge from gross deviations reflects this.

d. Miscellaneous adjustments should be incorporated

The CAISO should detail its cost-allocation rules for various real-world situations. For generators operating under multiple scheduling plans, e.g. a generator with a self-scheduled component and an economically scheduled component of his capacity, rules should clarify where and how the resource’s performance is measured and allocated FRP costs, and what the hierarchy is for

measuring performance or deviations. The CAISO should also develop rules for self-scheduled internal resources that deviate.

9. The CAISO should continue to develop its Real-Ramp idea, rather than its earlier “Unexpected Ramp” approach.

The examples of LMP calculation in the most recent stakeholder process are very useful. SCE continues to develop its understanding of this option and appreciates the CAISO’s help in this process. While the real ramp approach appears reasonable, stakeholders should continue to look for harmful implications, including unreasonable increases in total costs.

Contingent on further validation, Real-Ramp seems beneficial to SCE for multiple reasons. These include: 1) explicit prices for ramping capability within an interval 2) improvements to the dispatch in periods of steeper ramps 3) reductions in BCR associated with some units providing flexibility 4) easier and more appropriate cost allocation based on causation and 5) elimination of a potential opportunity cost concern.