

Stakeholder Comments

Flexible Ramping Products

Submitted by	Company	Date Submitted
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Southern California Edison (SCE) submits these comment on the Flexible Ramping Product Straw Proposal released on November 1st, 2011. This CAISO initiative will develop a Flexible Ramping Product to replace the Flexible Ramping Constraint now pending at FERC. SCE supports the CAISO's direction and views this as a high priority initiative, particularly in light of the expected increase in variability and uncertainty associated with an increasing penetration of Variable Energy Resources (VERs). A successful Flexible Ramping production should result in a market mechanism that efficiently addresses a key reliability issue of insufficient intra Real-Time Pre-Dispatch process (RTPD) ramping capacity. SCE appreciates the CAISO's speed in developing products to replace the Flexible Ramping Constraint.

At this point in the product design timeframe, critical details of the proposal must be adequately addressed and understood. SCE's comments thus highlight important elements of the design that have not yet been addressed or that can be improved.

I. Support For The CAISO's Direction

SCE supports the CAISO's direction on the Flexible Ramping Product design. By defining the role for Flexible Ramping services, the role of other products such as Regulation becomes clearer. This clarification in turn highlights how the CAISO's product suite should meet the full needs of the system efficiently. Ramping capabilities within an RTPD 15-minute interval are insufficiently addressed by the current product mix, warranting the rapid development and implementation of Flexible Ramping Products. The following comments detail areas where SCE strongly supports this initiative

A. **SCE Supports Changes Away From a Flexible Ramping Constraint and Towards a Flexible Ramping Product.**

A properly designed Flexible Ramping Product will offer improved market efficiency and cost-allocation over the proposed "Flexi-ramp constraint".¹ With increased uncertainty and variability originating from the increased VER penetrations, the need

¹ "Flexible Ramping Products, Straw Proposal", Lin and Tretheway, November 1, 2011, p. 3.
[Http://www.aiso.com/Documents/FlexibleRampingProductStrawProposal.pdf](http://www.aiso.com/Documents/FlexibleRampingProductStrawProposal.pdf)

for market mechanisms that incent flexibility and discourage uncertainty and variability grows.

B. Incorporating Cost-Causation Principles Into The Product Design Will Improve System Performance.

SCE is encouraged by the proposed cost allocation mechanism and the application of cost causation principles. Unlike the CAISO Flexible Ramping Constraint, the product design incorporates cost-causation principles for allocating the costs of the product.

SCE believes that, over time, consistently applying these principles stands to greatly benefit the grid. In addition to its direct influence on market participants, cost-causation principles also improve market efficiency indirectly by ensuring that contract structures and long-term procurement decisions factor in resources' full impact on grid operations. In response, the market should be in a better position of integrating clean energy consistent with State policy goals in the most cost-effective manner available.

C. Alignment With Guiding Principles Improves The Market Design Process.

The CAISO's adherence to guiding principles has smoothed and sped the Flexible Ramping Product market design process. In at least three instances, use of the guiding principles for the product – and for any initiatives developed as part of the Renewables Integration Market Product Review Phase II – has focused stakeholders and reduced superfluous deliberation.² Specifically, the CAISO leveraged its “cost-causation” principle in establishing a framework for cost-allocation. It appealed to the “cost-effective and implementable” principle in proposing a settlement approach that works with different metering protocols for different market participants. Finally, it aligned with the “transparency” principle in shifting from a constraint to a product. By guiding changes with these widely accepted principles, the process works more smoothly.

II. Comment On Specific Aspects Of The Current Proposal

The CAISO's straw proposal details numerous important aspects of the Flexible Ramping Products' design. SCE supports the direction of the straw proposal. Although future straw proposals will detail additional design aspects, several elements of the current straw proposal design should be changed.

A. Rather Than A Single Allocation Percentage, Establish Hourly Allocation Percentages For Flexi-ramp Cost Allocation

² "Renewables Integration Market Vision and Roadmap", October 11, 2011, pp. 2-4.

Apportionment of Flexible Ramping Product costs to the different categories of deviations should be determined separately for every hour. This allocation structure will have two benefits beyond the current structure: (1) it provides clearer price signals to certain resource groups each hour to encourage management of uncertainty and variability; and (2) it allocates costs more fairly. This latter benefit results when costs for providing flexibility can change throughout the day so resources that contribute to greater uncertainty and variability in high-need hours should see price signals commensurate with their impact on the system. This information could be valuable to resources with ability to self-manage their uncertainty and variability. Ultimately, this transparency enhances market efficiency. The proposed monthly average approach fails to capture these benefits.

To determine these hourly allocation amounts, historic telemetry data should be used and studied. Telemetry data provides actual performance that allows a robust assessment of uncertainty and variability, more so than metering data in many cases. A statistical analysis should be used for apportionment of costs to the settlement buckets, and possibly to better define the buckets. Telemetry data will enable this analysis more so than just revenue-grade meter data.

B. Load Should Not Finance Flexible Ramping Costs For Other Resources.

The current settlement proposal for the Flexible Ramping Product unnecessarily requires load to pay all costs for the product until other market participants are billed after a month's worth of procurement. This structure unfairly and unnecessarily burdens load with financing costs and credit-risk associated with the Flexible Ramping Products. SCE understands that the CAISO may have selected its current approach due to the fact that a mechanism is needed each month to finance product costs until meter data can be analyzed for more detailed billing, but the current proposal is unfair to Load Serving Entities (LSEs) and should be abandoned

Instead, SCE recommends the CAISO bill settlement costs based on *expected* allocations, and require a true-up at the end of the month. This approach should work because it leverages the statistical analysis done to determine procurement standards and also allocates costs, financing duties, and counterparty risks in a reasonable manner based on historic performance. The CAISO should adopt this or an alternate financing structure for the Flexible Ramping Product in its subsequent straw proposals.

C. Substitution Between Regulation And Flexible Ramping Products Can Be Considered in Specific Circumstances.

Once Flexible Ramping or Ancillary Services Capacity is set aside (e.g., after an RTPD and Real-Time Unit Commitment (RTUC) run), system dispatches should leverage capacity as efficiently as possible, even if co-mingling products. If very little RTPD uncertainty is realized, for instance, the excess capacity available for subsequent Real-Time Dispatch (RTD) intervals should be used as efficiently as possible given the diminutive need for Flexible Ramping Capacity. This objective may entail the use of ramping capacity from energy providers (rather than exclusively from Flexible Ramping Product providers) or the use of energy from Flexible Ramping Product providers instead of from energy providers when most efficient. Assuming that Flexible Ramping Capacity needs are sufficiently met, these transactions in no way violate system requirements or threaten reliability. Dispatch protocols and resources' capabilities must be considered in this sharing process.

D. Ensure Ramping Needs From All Drivers Are Addressed By the Flexible Ramping Product, Including Ramping For Import Blocks.

Based on CAISO's proposed settlement system, it is unclear if integrating costs (due to the Flexible Ramping Products) associated with large block imports ramps are accounted for. It appears the Flexible Ramping product will address both *uncertainty* (i.e. the differences between the 15-minute RTPD forecast and the 5-minute RTD forecasts), and *variability* (i.e. overall predictable trends such as inter-tie ramps between the hours). The integration services required to manage both uncertainty and variability should be fully considered and incorporated into the procurement and billing of the Flexible Ramping Product. This suggests that that the current cost-allocation proposal does not appropriately consider the impact imports/exports will have on Flexible Ramping procurement.

E. Since Regulation Addresses Sub-RTD Uncertainties and Variability, the CAISO Must Change Cost-Allocation For This Product.

The CAISO's proposal represents an attempt to limit the role of Regulation to only address intra-RTD uncertainties and variability. Because these sub-RTD uncertainties result from changes in output from VERs and other unrelated factors including changes in load, cost-allocation for Regulation should reflect this array of drivers. In line with cost-causation principles, this change in cost allocation of Regulation will improve markets by encouraging efficient resource performance within an RTD interval. This improvement will occur in the short-term through corrective actions and behaviors by resources or scheduling coordinators responsible for intra-RTD uncertainty and variability, and in the long run through long-term procurement and contracting decisions that reflect costs for Regulation services.

III. Areas of the Product Design Requiring Additional Details

As the CAISO has noted, additional elements of the product design must be designed and should be developed in the next straw proposal.³ Many of these design elements are both critical and complex. This section details some of these elements and, where appropriate, recommends approaches for the CAISO.

A. Flexible Ramping Product Design Should Consider No-Pay and Pay-For-Performance Structures. At the Minimum, Performance Controls Must Be Developed.

The CAISO needs to document in detail its performance requirements and No-Pay structures for the Flexible Ramping Product. The No-Pay structure guarantees that compensation is paid only when the product is delivered according to approved performance standards. This protection will be important for grid operators who rely on Flexible Ramping Products for reliability. Such controls also ensure procurement is efficient and limit the need for excess procurement. The CAISO's revised straw proposal should detail No-Pay structures and other performance requirements.

Pay-for-performance structures encourage the most appropriate resources to compete to provide balancing products. This competition yields more efficient outcomes. While it may be premature to develop full pay-for performance features for this new product, the CAISO should clarify when this consideration will take place. As the CAISO will soon overhaul Regulation to incorporate pay-for-performance compensation, it may be appropriate to combine those changes with corresponding changes to the Flexible Ramping Products.

B. Additional Details on RTD Constraint Enforcement is Required

SCE seeks clarification on how the RTD "look-ahead" process will work in conjunction with the Flexible Ramping Product, as well as the impact this look-ahead will have on the dispatch of energy from Flexible Ramp capacity. Specifically, SCE requests clarification regarding how Flexible Ramping Product constraints enforced in RTPD may limit resource positioning in RTD, and when are such constraints enforced? For example, will the RTD "relax" the constraint in the current interval or in the current interval plus the remaining intervals in the corresponding 15-minute RTPD block? Will RTD enforce the Flexible Ramping targets beyond the 15-minute look-ahead, and if so, how far in advance? Without understanding this, SCE cannot fully assess the possible impacts the product will have on real-time energy prices, and on the likelihood that energy will be dispatched from Flexible Ramping capacity.

C. Day-Ahead (DA) Procurement Rules and Goals Must be Detailed.

In many ways, SCE simply cannot draw conclusions on the effectiveness of the current proposal until the DA structure is detailed. Core questions on this topic must first be addressed, such as: What will be the objective of DA procurement?; What

³ "Flexible Ramping Products and Cost Allocation" Presentation, Lin and Tretheway, November 7th, 2011, slide 13. [Http://www.caiso.com/Documents/Presentation-FlexibleRampingProductMeeting_Nov_7_2011.pdf](http://www.caiso.com/Documents/Presentation-FlexibleRampingProductMeeting_Nov_7_2011.pdf)

portion of the product does the CAISO anticipate will be purchased in the DA versus the real-time market?; How will the expectation (or lack thereof) of energy delivery from Flexible Ramping be treated in the optimization?; How will the CAISO use “current information” to drive procurement decisions, and what information will be utilized? SCE expects the development of these rules and inputs to be complex. To manage procurement in light of these uncertainties, several elements should be included in the revised straw proposal.

a. The methodology for determining CAISO’s procurement target for any given RTPD must be clarified.

The Flexible Ramping Product should be procured to the point where uncertainty and variability can be managed to a reasonable level. The CAISO should clarify its procurement target in terms of standard deviations or other statistical metrics and provide justification for such targets. This analysis should rely on historical data to demonstrate reliability risks and needs, as well as the drivers for procurement. This data-based approach will reveal all sources of variability and uncertainty, and mitigate their reliability impacts to a reasonable degree. The approach should be compatible with the cost-allocation methodology for the product, ensuring those who contribute to uncertainty and variability pay for its resolution. It should also reveal how much Regulation has been used to address the post-RTPD uncertainties and ramping needs for which the Flexible Ramping Product was created. Also, given the CAISO proposes no fundamental changes to real-time hourly bidding or timelines, SCE also questions how this product ensures the real-time market has sufficient capacity to deal with Flexible Ramping needs in all four 15-minute RTPD intervals. Thus, in addition to its interaction with the DA market, SCE needs to better understand how constraints are modeled in the HASP process so that the CAISO can make tradeoffs between inflexible imports/exports and 5-minute flexible internal resources.

b. Flexible Ramping Product should be procured elastically.

Unlike with Ancillary Services which are fully procured to a fixed target in the Integrated Forward Market (IFM), the Flexible Ramping product has no mandated reliability target, and given its role in dealing with uncertainty, has no “correct” hard target value. Moreover it can be purchased in the IFM or in the real-time market and each market offers different advantages (e.g. greater/more accurate information vs. a larger pool of potential sellers). Procurement decisions could thus potentially consider prices in each market and the benefits of delayed procurement versus the additional reliability benefit obtained. Mechanically, this suggests a Flexible Ramping Product demand curve be supplied in both the IFM and Real-time. SCE expects this demand curve to be elastic to avoid paying unduly high costs for the Flexible Ramping Product. The CAISO must detail its approach to this issue.

c. For Day-Ahead Markets (DAM) to work efficiently, co-optimization between energy, RUC, Flexible Ramping Products and Ancillary Services should be enforced.

Under current rules, the RUC process is conducted after the IFM, potentially excluding resources from inclusion in system-wide optimization. With the inclusion of a Flexible Ramping Products in the IFM, however, the ramping considerations of RUC resources should be included in the optimization, necessitating a full co-optimization of RUC and IFM. By combining all requirements, bids, and constraints into a single optimization run, the selection and dispatch of resource will be superior to a system where unit optimization occurs prior to the inclusion of additional capacity resources.

D. The Role of Non-Contingent Spin needs to be Clarified and Justified.

The CAISO needs to clarify the problem(s) it is trying to solve with non-contingent Spin or further, whether non-contingent Spin should be allowed. For the most part, the product mix should reflect robust market-based solutions to operating needs or problems. Cost allocation for the products should be logical and based on cost-causation.

The CAISO's revised straw-proposal should include plans for non-contingent spin and foster discussion of this product's role and cost-allocation. It appears that non-contingent spin may address grid needs similar to those resolved by the Flexible Ramping Up Product – that is providing access to energy during normal operations – whereas contingent Spin is only utilized in the event of a contingency. SCE does not object to load paying for “contingency reserves” but does object to paying for more than its fair share of capacity simply to give the CAISO additional operating flexibility to deal with daily and routine operations.

E. Settlement Rules for HASP Need to Support Reliability and Work in Concert with the Flexible Ramping Products.

The CAISO's consideration of rules for the HASP settlement is underway, but this process should incorporate and address key needs and goals for Flexible Ramping Product. Specifically, the CAISO needs stronger penalties for importers that fail to deliver and should enforce such penalties. Without such signals, Flexible Ramping capabilities could be impacted. For example, if large numbers of energy imports are scheduled for a certain operating hour, the CAISO might assume that ample Flexible Ramping Product capacity will be available from in-state flexible resources. If the imports fail to show in large numbers, however, these in-state resources may be needed for energy purposes, leading to a shortage of either energy or flexible ramping capacity. Rules should be adopted to discourage importers from failing to deliver and from offering energy they cannot provide. These changes can be detailed in clarifying the role of HASP in Flexible Ramping Product procurement.

F. Flexible Ramping Product Compensation Should Be Included in Bid-Cost Recovery (BCR) Calculations.

Flexible Ramping Product payments should represent operating profits for all but the marginal seller. These profits should be counted against BCR calculations to avoid overpayments for services. This premise aligns with long-standing practices at the CAISO, but the change may be complicated due to the complexity and ongoing adjustments to BCR practices. The CAISO's plans for this change should be detailed in the revised proposal.

G. Clarify if Flexible Ramping Products Act as Ancillary Services such that Scarcity Events for the Flexible Ramping Products Trigger Scarcity Pricing

The CAISO needs to clarify how markets should function when Flexible Ramping Products are scarce. Scarcity events may yield extreme market outcomes. Scarcity pricing provides the CAISO with an administrative tool to ensure more reasonable pricing during scarcity events. The treatment of scarcity events can impact procurement strategies and must be discussed.

H. The CAISO Should Address Objections Raised by the Market Surveillance Committee's (MSC) Scott Harvey on Possible Double Payments if Parties Submit Flexible Ramping Bids

The MSC raised concerns at both the November 7, 2011 stakeholder meeting and the September 30, 2011 MSC meeting on price formation if participants are allowed to submit "Bids" for the Flexible Ramp product.⁴ Scott Harvey instead maintains that a clearing price should be formed (in real-time) based on lost opportunity cost. The CAISO needs to address these concerns and explain why bids should be part of the Flexible Ramp product design.

⁴ "Flexi Ramp Economics and Design Concepts", Presentation by Scott Harvey, Market Surveillance Committee Meeting, September 30, 2011.