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Submitted by email to the CAISO at [FRP@caiso.com](mailto:FRP@caiso.com)

**RE: Comments of the Large-scale Solar Association on the CAISO's Flexible Ramping Products – Revised Straw Proposal**

The Large-scale Solar Association (LSA) submits these comments on the CAISO's November 29<sup>th</sup> document entitled Flexible Ramping Products – Revised Straw Proposal (Proposal). The Proposal contains the latest CAISO proposals for what has been referred to as the "FlexiRamp Product" (FRP). The FRP is one of the initiatives included in the Renewables Integration – Market and Product Review, Phase 2 (RI-MPR2), a set of market reforms to manage operations under a 33% Renewables Portfolio Standard (RPS) that would be implemented in the 2013-2015 timeframe.

LSA's comments focus on the FRP cost-allocation provisions in the Proposal. The Proposal returns to the earlier RI-MPR2 course of action by: (1) using the same allocation formula for FRP as the current Regulation methodology; and (2) deferring consideration of new cost-allocation methodologies until a broader examination of cost-causation is conducted later.

LSA believes that this change is a prudent and rational return to an earlier CAISO position. While some LSE representatives characterized this position as a "step backward at the December 5<sup>th</sup> stakeholder meeting, LSA believes that the CAISO's current position offers an opportunity for a more reflective and comprehensive approach toward costs. LSA strongly supports this position in the Proposal, for two main reasons:

- The CAISO should conduct the broad cost-causation review originally contemplated for RI-MPR2 before imposing new allocation methodologies, in order to develop a fair and reasonable FRP cost-allocation methodology.
- The proposed FRP "buckets" and metrics do not necessarily represent an accurate measure of variability "cost causation."

LSA provides the reasons for its support of the CAISO's proposal below.

**Background**

An earlier RI-MPR2 document – the October 11<sup>th</sup> Renewable Integration Market Vision and Roadmap – stated that the CAISO would initiate a separate, comprehensive effort to examine the issue of "cost causation" in a broader context, instead of examining that issue on a "product-by-product" basis. LSA supported that approach in its October 20<sup>th</sup> filed comments.

However, the FRP proposal that followed – the November 1<sup>st</sup> Flexible Ramping Products – Straw Proposal – would nevertheless have moved ahead with FRP-specific cost-allocation components. That proposal would have:

- Calculated the portion of total FRP costs attributable to each of six cost “buckets” shown below; and
- Apportioned the costs in each bucket to each load or resource, using some measure of deviation based on the metrics shown below. The metrics for generation would be based on the 5- and 10-minute deviations used for imbalance-energy settlements.

<i>FLEXI-RAMP PRODUCT</i>	<i>BUCKET</i>	<i>ALLOCATION METRIC (CAISO-area resources)</i>
<b>Upward FRP</b>	Load	Metered Demand (load + exports)
	Hourly Schedule	Negative imbalances from schedule
	Real-time Dispatch	Negative imbalances from RT dispatches (flexible resources)
<b>Downward FRP</b>	Load	Metered Demand (load + exports)
	Hourly Schedule	Positive imbalances from schedule
	Real-time Dispatch	Positive imbalances from RT dispatches (flexible resources)

### **“Cost causation” definition**

LSA supports the proposed broader, separate examination of cost causation, and the subsequent application of results to current and proposed market products, including FRP.

Fundamentally, LSA believe that an incremental cost-causation approach applied to generators through CAISO wholesale markets is inconsistent with current California regulatory and market rules and procedures. Integration costs, and the signals they send, should be directed to the parties best able to manage and minimize those costs and optimize the necessary tradeoffs. For procurement of resources under the RPS, Resource Adequacy (RA) capacity, and long-term procurement processes, that entity is the Load-Serving Entity (LSE), and jurisdiction is largely under the California Public Utilities Commission (CPUC).

On the other hand, LSA agrees that Variable Energy Resources (VERs) should have the incentives to respond to real-time dispatch instructions, as noted in discussions related to PIRP reforms. Integration costs associated with different portfolios (and even technology types) should be simulated ex ante (as is being done in CPUC/CAISO integration studies), as well calculated ex post, and made known to the market to inform the entry of other technologies. These technologies may include storage, or retrofit or design decisions on next-generation renewable and conventional generation.

As we have said before, if the CAISO decides to apply cost-causation methods, they should apply to all resources that cause ancillary service, energy imbalance, or other costs due to their operational characteristics, and not just products/services related to VERs. Such an application should include integration and other costs imposed by other resource types, e.g., reserve needs imposed by the “largest single resource” in an area, environmental limitations on resource dispatch, minimum run/down times or ramping limitations (and Bid-Cost Recovery impacts), and special dispatch needs for Multi-Stage Generators.

Moreover, the cost impacts of VERs are difficult to assign to individual VERs, since the CAISO system is operated to the aggregate “net load”. As shown most recently by Steven Stoft at an MSC meeting,<sup>1</sup> the variability of load and renewable generation is not additive, such that the joint effect can be disaggregated by a simple rule.

<sup>1</sup> Allocating Ramping Costs, Steven Stoft, presented at September 30<sup>th</sup> MSC Meeting.

The impacts of VERs, and their variability can vary widely even for units of the same technology, depending on weather, location, and/or the relative locations of complementary resources. Any cost-causation assessment should also consider beneficial impacts, e.g., the reduction in market energy prices that the CAISO seems to expect will occur as VER penetration rises (as evidenced by its concern about the continuing economic viability of older gas-fired resources).

Any cost-allocation mechanism for VER operational requirements will be complicated, as it will have to isolate incremental impacts of only those intermittent resources and distinguish the individual contributions among them. For example, since RPS buyers are constructing portfolios of resources that could consider production correlation among technologies and locations, it would be unfair to penalize a resource that was not intended to be producing independently of the full set of resources.

Finally, any assessment of VER costs must be coordinated with the CPUC procurement process. For example, the CPUC is considering inclusion of an integration-cost metric in its assessment of jurisdictional LSE procurement contracts. It would be double-counting for the CPUC to reduce prices paid for VER resources because of potential integration costs and then for the CAISO to charge those same resources for the same costs through market mechanisms.

For all these reasons, a comprehensive look at costs and benefits of VERs, the services associated with them, and the interaction of those factors with the CPUC procurement process is needed in order to determine a fair and reasonable outcome.

### **FRP cost causation**

The proposed “buckets” and metrics do not necessarily represent an accurate measure of FRP “cost causation.” The deviation metrics are based on the CAISO’s current 5- and 10-minute intra-hour settlement/operating benchmarks. Construction of these benchmarks effectively assumes that all resources can operate like gas-fired or storage-based hydro resources, through the interaction of two factors.

First, the CAISO markets require schedule submission far ahead of real time. The CAISO has a 15-minute unit commitment algorithm but requires resources to submit schedules long before that – 12-39 hours for Day Ahead schedules and 75 minutes for Hour Ahead schedules. This inflexibility greatly impairs VER scheduling accuracy and increases CAISO balancing/integration needs to an extent that has not yet been analyzed. Certainly, as more flexibility is introduced into the generation fleet over time, unit commitment timelines will be shortened and procurement of integration services can move closer to real time, thus minimizing costs.

Second, the proposed deviation metrics are based on the current CAISO methodology for translating hourly schedules into 10-minute operating/settlement increments – a method that does not reflect VER operations. That method assumes that resources should:

- Operate evenly at the scheduled level for intervals 2-5 in the hour;
- Smoothly ramp to the scheduled level during the last interval of the first hour and the first interval of the next hour;
- Stay there for intervals 2-5 of that hour, and so on.

These 10-minute interval benchmarks do not reflect even entirely predictable intra-hour operational patterns, like regular daily solar ramping. Submission and settlement of four 15-minute schedules (instead of one hourly schedule), for example, would allow VERs to reflect regular ramping patterns in their schedules, increase the accuracy of intra-hour CAISO dispatch, and reduce scheduling imbalances for those resources.

Similarly, schedule adjustments during the hour (which the CAISO said in RI-MPR2 stakeholder meetings that it could technically manage), consistent with the CAISO's 15-minute unit commitment runs, would further increase solar and wind scheduling accuracy and, as a result, could reduce the need to procure and commit conventional resources to deal with scheduling inaccuracies.

More-granular scheduling, as well as intra-hour schedule adjustments, were considered in the initial RI-MPR2 proposal. However, the CAISO then decided to remove examination of these possible reforms from that effort. These reforms may or may not reduce overall integration costs, but the CAISO should conduct an examination of their potential impacts before imposing additional costs based on the proposed "deviation" metrics.