June 24, 2014

Submitted by email to the CAISO at FRP@caiso.com

RE: LSA comments on Flexible Ramping Product revised Straw Proposal

The Large-scale Solar Association (LSA) hereby submits these comments on the June 2nd Flexible Ramping Products Incorporating FMM and EIM – Straw Proposal (Proposal), and the subsequent discussion at the June 9 stakeholder meeting. LSA supported the CAISO's suspension of the earlier FRP effort to focus on market elements that could reduce the need for the Flexible Ramping Product (FRP) – i.e., the 15-minute market and decremental bidding for Participating Intermittent Resource Program (PIRP) resources – and welcomes the opportunity to comment on the CAISO's latest proposed FRP framework.

Consistent with its earlier FRP comments, LSA's remarks here address the cost-allocation portions of the Proposal, including some elements where LSA raised concerns raised in the last FRP effort and have yet to be addressed. LSA urges the CAISO to make the changes to the Proposal that are listed below and described further in the remainder of this document.

- **Revisit the FRP cost-allocation framework.** The FRP framework and cost allocation should be consistent with CAISO practices for reserve products and be coordinated with California Public Utilities Commission (CPUC) procurement policies. In essence, FRP is a type of reserve or ancillary product intended to improve system operation, and its cost should be allocated in the same manner as other such products.

  If FRP costs are to be borne by generators, it is critical that the CAISO work with the CPUC to ensure that FRP costs (the first direct CAISO-market "integration costs") are not effectively imposed twice, i.e., in the procurement process (via use of "integration cost adders") and then again by direct allocation in CAISO markets.

- **Cap FRP charges for beneficial schedule deviations at those for harmful deviations.** The proposed monthly aggregation of FRP metrics could help ensure that charges for deviations in the "right" direction (e.g., in response to real-time price signals) are less than those for deviations in the "wrong" direction, but the Proposal contains no mechanism to ensure that this will be the case. LSA believes that helpful deviations should not be charged at all, but at a minimum, if those deviations are charged, a small quantity of such deviations should not result in unreasonably high charges.

- **Adjust the benchmark for assessing FRP charges.** FRP charges for variable resources should be assessed for deviations from 5-minute forecasts, not the "averaged" benchmarks derived from those forecasts that are used to derive regular Imbalance Energy charges.

- **Modify the proposed "deadband" for deviations before FRP charges are applied.** The threshold should be the greater of 3% or 5 MW per hour – the same threshold as the Uninstructed Deviation Penalty – and not the lesser of the two. Otherwise, large projects would be subject to unreasonably tight tolerances (e.g., 1.7% for a 300 MW project).

- **Incorporate a grandfathering element.** This limited provision would apply to resources with Power Purchase Agreements (PPAs) executed before the November 1, 2011 issuance of the CAISO's original FRP Straw Proposal (i.e., those where suppliers could not have anticipated FRP costs) and where suppliers would be responsible for FRP costs.

Coordination with current practices and procurement framework

As a general issue, a ramping product is really no different than Ancillary Service products, which contribute to the reliable and efficient operation of the system and the market. The FRP is one tool for reducing scarcity and out-of-market interventions, improving market price development and transparency, and generally helping the overall system operate more reliably and efficiently.

MISO's recent FERC filing for its Ramp Capability Product (2014-06-10 Docket No. ER14-2156-000) supports this argument. MISO's filing shows that a properly designed ramping product results in a net benefit to load and states: "The costs of ramp capability will be allocated like the costs of the existing Operating Reserve products because, like MISO's operating reserve products, ramp capability is similarly needed for reliable system operations."

Alternatively, if FRP costs are allocated to generators (or their Scheduling Coordinators (SCs)), they should be treated similar to transmission costs. A Network Upgrade (NU) transmission-cost "adder" counts against supply bids in the CPUC procurement process, because transmission costs are largely reimbursable to suppliers (and are thus ultimately borne by ratepayers). The adder ensures that a cheaper bid from a project with high NU costs is not selected over a more expensive supply bid that will cost ratepayers less overall.

From the supplier's perspective, the transmission cost is "paid" once, through the procurement-process adder, since its transmission costs are reimbursed.

Similarly, the CPUC is considering adoption of an "integration cost adder" in the procurement process. The concept – as with transmission costs – assumes that operational costs to accommodate different supplier technologies and projects will ultimately be borne by ratepayers and, therefore, should be counted against supply bids.

As noted above, FRP will be the first separately identified CAISO "integration cost." If the CPUC adopts use of an integration adder in the procurement process that includes expected FRP costs, and then the CAISO charges FRP costs to generators (or their SCs) directly, then the combination will effectively charge generators twice.

There are two ways to avoid this double-counting.

The first way is to include estimated FRP costs in the procurement process integration adder and then allocate FRP market costs to the Load-Serving Entity (LSE) (or its SC) that has contracted to buy the output of the generation project. That way – like transmission costs – the LSE can consider FRP costs in its resource selection. As with transmission costs, this allocation would not interfere in any way with bilateral supplier-LSE negotiations, and those parties could still decide between them to share FRP costs in a different manner.

In many or most cases, the generator and LSE SCs are the same entity; in those situations, the allocation of FRP costs may be less of an issue. However, in others – e.g., contracts executed before that became the standard model (see below) – the generator and LSE SCs may not be the same entity. (LSA notes that that allocation of FRP costs to LSE SCs would also likely obviate the need for a grandfathering provision, since (as explained below) those generators would not be allocated these additional costs that they have no means to recover.)

The second way is to allocate FRP costs to the generator (and its SC) but ensure that the CPUC does not include FRP (or other integration costs billed directly to generators) in any integration-cost adder.

This approach is less optimal, because it would require developers to estimate FRP costs and include them in their bid prices to LSEs. Developers are far less able than the CAISO or LSEs to be able to estimate likely FRP costs, and the resulting uncertainty will make it more difficult to finance generation projects under those terms. The higher financing costs would also have to be reflected in generation bid prices and would ultimately be paid by ratepayers.

However, despite the inefficiency of this approach, if the CAISO decides to allocate FRP costs to generators (or their SCs) through CAISO-market settlements, LSA requests the CAISO, as an explicit part of its next Proposal version, commit to working with the CPUC (e.g., making filings in any CPUC proceeding where integration-cost adders are considered) to help ensure that FRP costs are not also included in any adder.

FRP charges for helpful scheduling deviations

As stated in its prior comments, LSA believes that the CAISO should not charge at all for schedule deviations in the "right direction" (that help the system by moderating net load ramps). The CAISO should encourage these deviations, and not send price signals to reduce them. For example, generation deviations in the upward direction in hours when net load is increasing help the system and should not be charged, and the same is true of deviations in the downward direction in hours when net load is decreasing.

In fact, because of the cost-sharing aspect of the cost allocation, it is possible that charges for deviations in the "right" direction will actually be higher per MWh than those in the "wrong" direction – i.e., if there are few deviations in that "right" direction, so the costs would be spread over few MWh. If only a few resources are helping the CAISO, it seems perverse for the CAISO to charge them more as a result.

In the earlier FRP effort, the CAISO did not adequately explain its reasons for rejecting this suggestion. The proposed hourly FRP cost allocation granularity, and the monthly aggregation of hourly costs and deviations, might increase the likelihood that FRP charges for deviations in the "right" direction will at least be lower than those in the "wrong" direction, but that is not certain under the Proposal.

At a minimum, there should be a cap on charges for deviations in the "right" direction at the same level as deviations in the "wrong" direction for each hour. If the CAISO monthly/hourly cost-allocation methodology yields this result, then so much the better. If not, this rule would ensure that generators helping the CAISO manage its system are not penalized through charges that are higher than those to whose deviations harm the system.

Measurement of 5-minute deviations for FRP cost allocation

Under the current 15-minute market (15MM) structure, the CAISO adds the 5-minute forecasts from its own (PIRP participants) or SC-provided forecasts (e.g., forecasts that reflect expected ramping) to get a 15-minute schedule. It then divides that 15-minute schedule total to derive average 5-minute figures that are used as benchmarks; positive or negative deviations from those benchmarks are paid or charged at real-time prices, as appropriate.

So, for example, a PIRP resource with 5, 10, and 15 MWh forecasts (upward ramp) for the three 5-minute intervals within a 15-minute interval, then following those exact 5-minute forecasts in actual operations, faces the following situation:

SCHEDULING/SETTLEMENT ELEMENT	*INT 1*	*INT 2*	*INT 3*
Submitted 5-minute schedules	5 MWh	10 MWh	15 MWh
15 MM schedule (sum of submitted 5-minute forecasts)	30 MWh		
5-minute Instructed Energy (15 MM schedule divided by 3)	10 MWh	10 MWh	10 MWh
Actual operation (same as 5-minute forecasts)	5 MWh	10 MWh	15 MWh
Imbalance Energy (I/E)	-5 MWh	0 MWh	+5 MWh

Thus, VERs with completely accurate 5-minute forecasts that reflect expected ramping behavior (i.e., whose production follows those forecasts exactly) are still exposed to I/E price risk. As LSA's comments in the Order 764 stakeholder process pointed out, this result basically negates the rationale and increased accuracy from 5-minute forecasts. However, the CAISO maintained at that time that its 15MM software did not have the capability to use the 5-minute forecasts and had to use the smoothed numbers.

This built-in inaccuracy actually benefits solar projects at least in part, since solar generation generally follows load in many ramping situations. In the example above, the Interval 1 negative imbalance charge to the generator would likely be lower than the Interval 3 positive imbalance payment to the generator, since imbalance prices would probably increase along with load during this upward ramp.

However, the CAISO's proposed FRP cost allocation would not have that same offsetting effect. The Proposal would charge generators for the deviations in both Interval 1 and Interval 3.

Thus, a generator following the 5-minute forecast exactly would be penalized for the forecast "smoothing." For that reason, LSA's earlier comments urged the CAISO to fix its software problem before the 15MM was implemented, and certainly before FRP implementation. LSA again urges the CAISO to do this. If this is not possible, then LSA strongly recommends the CAISO use the 5-minute forecasts, and not the "smoothed" 5-minute benchmarks, to calculate deviations used to allocate FRP costs.

Tolerance threshold for FRP cost allocation

The Proposal retains the prior CAISO "tolerance band" feature, i.e., FRP charges would only apply for deviations exceeding the lower of 3% of capacity or 5 MW per hour (~0.42 MWh per 5-minute interval). This is, on the surface, the same tolerance band used for Uninstructed Deviation Penalties (UDP), which are included in the CAISO tariff but have not been activated.

However, the UDP tolerance band is set at the greater of the two metrics, while the FRP tolerance band is proposed to be the lower of the two metrics. LSA believes that the FRP tolerance band should be the same as the UDP tolerance band, for the reasons set forth below.

The 3% UDP tolerance-band was initially set because the CAISO agreed that it would be unreasonable to expect large generation projects (not just variable resources, but gas-fired and other technologies also) to control their output with significantly greater precision than that. The 5 MW alternative was added to accommodate smaller projects, where 3% could constitute small fractions of a MW and even large percentage deviations would have little impact on the CAISO system. Thus, setting the UDP tolerance band at the greater of 3% of capacity or 5 MW recognized both practical output control limits and deviation impacts.

The proposed FRP tolerance band sets this reasoning on its head by setting the limits at the lower of the two metrics. Thus, any generation project above 167 MW would be charged for deviations greater than 5 MW, e.g., a 300 MW project would have a limit of 1.7%.

The Proposal does not explain why a 3% tolerance band is reasonable for large projects under UDP but a lower limit should apply for FRP. LSA believes that the tolerance bands for both UDP and FRP should be based on the same metrics and applied in the same way.

Grandfathering proposal

As noted above, LSA recommends that the CAISO exempt generators in a limited number of situations from imposition of FRP charges. This exemption would only apply where sellers could not have anticipated these costs and have no realistic way to recover them. Specifically, generation projects would only qualify where:

- Their PPAs were executed before the November 1, 2011 issuance of the CAISO's initial Straw Proposal;
- Those PPAs did not anticipate the imposition of integration charges (i.e., the parties did not already consider the possibility of such charges);
- They would be responsible, fully or partly, for FRP charges; and
- Their PPAs do not allow them to control their exposure to such charges, e.g., contain requirements generally that they produce all the energy that they can. In other words, they cannot moderate their ramps or schedule deviations in order to manage their exposure to the new costs without violating their PPA terms.

The ability to transfer FRP cost responsibility from the seller to the buyer – an element of the 2012 CAISO FRP proposals – would not mitigate this problem, because those sellers have no leverage to require their buyers to accept this responsibility. Likewise, any transitional mechanism to allow for "renegotiation" of contracts would not mitigate this problem either, because those sellers have no leverage to require buyers to accept such contract revisions.

SCE stated in 2012 that the above criteria would apply only to a small number of projects, e.g., that it would be responsible for most or all the FRP charges assessed to generators under the terms and conditions of its own supply contracts. LSA understands that this is likely the situation for SCE contracts, however, it is likely less true for the other large investor-owned utilities and perhaps many municipal utilities as well; for example, some of them (e.g., earlier contracts) do not designate the buyer as the SC, so the generator bears any additional CAISO market costs and (as noted above) many of those contracts do not allow the generator to make operational changes to mitigate those risks.

Market Participants, such as LSA members, are only able to assess their own contracts and are unable to obtain information about contracts of other entities. If the CAISO wishes to gauge the extent of contracts might meet these criteria, LSA recommends that it conduct its own survey of generation owners, e.g., requiring a response by a date certain to qualify for the exemption.