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To: CAISO at InitiativeComments@caiso.com

From: Rachel Gold (Policy Director) and Susan Schneider (Consultant) for LSA

RE: Comments of the Large-scale Solar Association on Frequency Response – Issue Paper

The Large-scale Solar Association (LSA) appreciates the opportunity to comment on the CAISO's August 7, 2015 document, Frequency Response – Issue Paper (Paper), and the discussion of the Paper on an August 13 stakeholder conference call. In general, LSA recommends that the CAISO:

- **Assess its current ability to meet the new requirements** using the resources already available to it and/or expected to be available in the future;
- **Look to market-based solutions, to the extent that those current and expected future resources do not satisfy the requirements**, using current Ancillary Services markets as a model, requesting additional time for compliance if needed to implement that approach; and
- **Rely on expansion of mandatory requirements only as a last resort**, and only if market-based approaches are not feasible.

LSA's responses to the four specific questions in the Paper are given and explained below.

1. How should the CAISO ensure there is sufficient frequency response capability on the system in all hours to satisfy the new requirement?

The CAISO should first determine its unmet needs – the difference between its new Frequency Response (FR) obligations and its current and expected FR capabilities. Since the requirement seems to be fairly clear, the CAISO should complete its determination of whether existing and expected future resources will provide the needed capability. Use of FR sources that are already implemented would likely the simplest and most economical approach.

This review should include a full FR assessment from all sources, including the following:

- **Existing and new planned generation resources**, including FR capability that existing generation resources could provide now, or could do so with minimal modifications. There were suggestions on the conference call that the CAISO has not fully considered and/or properly modeled these capabilities – for example, the ability of some resources to provide FR capability above the minimum requirements – and that small adjustments to droop settings could also help.

- **Existing Spinning Reserve procurement.** As indicated in the Paper and discussed on the conference call, the current Spinning Reserve procurement leaves "headroom" that can be used to provide FR from resources with that capability. The CAISO's ability to procure Ancillary Services in real time should provide the flexibility to replace Spinning Reserve resources to the extent that additional amounts are needed.

- **Existing load-based programs:** The conference-call discussion indicated that there could be 200 MW or more of load under the IOU Base Interruptible Load Program already subject to Underfrequency Relay (UFR) trip at the setting that determines the total extent of the CAISO FR obligation (59.65 Hz).

  While it is true that the FR capability of these resources would not be available for less-severe disturbances (where frequency drops are less than 0.35 Hz), the need for FR would be less at those lower disturbance levels. Moreover, as suggested by CLECA on the call, these resources might be willing to continue participation at a higher trip setting, perhaps with no or only a small additional payment.

- **Extent of non-compliance with WECC requirements:** To the extent that synchronous generators have disabled their governors, and that action is a violation of WECC rules (as the CAISO stated on the conference call), the CAISO should identify those resources and require that they comply with the applicable rules. Bid-Cost Recovery and similar mechanisms should apply when provision of FR services result in any additional Imbalance Energy cost exposure for these resources, as an incentive for those resources to comply and a matter of basic fairness.

To the extent that the CAISO determines that there is insufficient FR capability from these sources, the CAISO should look first to market-based solutions. LSA supports the comments of others that the CAISO should determine whether a market-based product (for generation and load) can be implemented by the WECC/NERC compliance deadline (1/1/2016) or soon after; for example, if a small amount of additional time would be needed, the CAISO could request a short compliance delay.

2. Should the CAISO develop a market product to procure frequency response?

Yes – please see response above. The CAISO should look first to market-based solutions to meet its FR needs.

Development of a market could enable voluntary FR provision by asynchronous resources, potentially reducing the amount of FR needed. Installation of governors on wind and solar resources could allow those resources to provide both inertia and primary FR, to both reduce initial frequency drop (reducing the amount of FR needed) and stabilize the system[1]. However, as substantial equipment and opportunity (headroom) costs would be required, an FR market would be the best way to ensure that such services are provided economically and efficiently.

[1] See, e.g., Western Wind and Solar Integration Study Phase 3 – Frequency Response and Transient Stability, an NREL study posted at http://www.nrel.gov/docs/fy15osti/62906.pdf.

3. If the CAISO cannot develop a product in time for the fall 2016 software release, what interim solution would be appropriate? For example, using existing or modifying spinning reserve procurement.

Existing Spinning Reserve procurement should be considered regardless – please see above – and temporary increases in such procurement could be used to bridge any gap before implementation of market-based solutions. The CAISO should also consider temporary changes to generator droop settings, as suggested by Flynn RCI on the conference call.

4. WECC standards apply only to synchronous generators. Should the CAISO explore a requirement that non-synchronous generators have primary frequency response capability?

Mandatory standards should be considered as a last resort – for example, if market-based solutions are not feasible – and then only after: (1) A determination of unmet need; and (2) a thorough exploration of market-based alternatives. In short, the CAISO is a long way from consideration of additional mandatory standards.

If mandatory standards are considered for asynchronous generators, then those new requirements should only apply to resources not yet in the interconnection queue, similar to the CAISO's currently proposed approach for reactive power/voltage support needs, and all costs (including opportunity costs at the applicable PPA price) should be covered. Existing generators, and those advanced in the interconnection process, have made or may soon make commitments based on the current standards and would likely have limited or no way to recover the additional compliance costs.