

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE:**

**Frequency Response Straw Proposal**

Submitted by	Company	Date Submitted
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The California Energy Storage Alliance (CESA)<sup>1</sup> offers these comments on the Frequency Response Straw Proposal.<sup>2</sup>

In the proposal, the CAISO contemplates a two-phase approach for compliance with NERC BAL-003-1, which basically deals with the CAISO’s Primary Frequency Response (PFR) capability. Near-term, the CAISO proposes to bolster its standards, use a look-ahead tool, potentially increase the percent of reserves allocated to Spinning Reserve (Spin) as opposed to Non-Spinning Reserve (Non-Spin) procurement, maybe procure extra Spin, and perhaps Exceptionally Dispatch generating units to ensure sufficient PFR capacity. The CAISO notes that it is still considering alternative approaches, noting it “has not yet concluded the performance needed cannot be achieved absent a market product” but that the need to implement by Fall 2016 makes a product infeasible.<sup>3</sup> Longer-term, the CAISO will evaluate if a market constraint or product is better suited to ensure adequate PFR capability.

CESA recommends the CAISO further consider in market solutions, potentially even if they require a Spring 2017 release. The BAL-003-1 standard measures compliance based on an assessment of the *Median* PFR response among 20 events selected by NERC after a twelve month period, from December 2016 to December 2017. It may be worthwhile and prudent to further develop a more effective in-market solution to have robust capabilities for nine-months of the year, rather than to have blunter potential solutions for the entire year.

CESA bases these views on the understanding that PFR is well-suited to in-market solutions, potentially as a product or constraint, that the CAISO’s will need PFR solutions b/c the

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<sup>1</sup> The views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (<http://storagealliance.org>)

<sup>2</sup> “[Frequency Response Straw Proposal](#)”, CAISO, Oct 12, 2015

<sup>3</sup> “[Frequency Response – Straw Proposal Stakeholder Meeting](#)”, CAISO, October 19, 2015, pg. 10

current status-quo approach will likely fail to meet BAL-003-1, and because the proposed approach seems inefficient and out-of-synch with market design principles.

**1. There is still time to consider in-market solutions.**

CESA understands the need for CAISO to take NERC Reliability Standards seriously! Ultimately, the CAISO will need a workable plan for compliance with BAL-003-1.

Concerns about a timely implementation, while valid, should not unduly rush the market design process. CESA believes that several further iterations of the proposal can still occur – allowing for more robust considerations of options – without endangering the CAISO’s ability to implement a bare-bones compliance plan.

As CESA understands it, the CAISO may even have more time to develop and implement a compliance approach than initially stated, as a result of the performance measurement structure of BAL-003-1. Compliance is based on the performance of the median response out of twenty events selected by NERC. Conceivably, NERC could select events from *across the compliance year*. If the new solution is implemented four months into the compliance year, eight months of measureable events would occur under any new PFR compliance. If NERC selected events pro-rata, it is plausible that a majority of events occur under the new PFR compliance plan. The median measure would thus occur in this majority of events under the new regime. These timing considerations are worth considering if they allow a superior PFR solution to be developed and implemented.

It also may be that much of the work for alternative approach will coincide with the proposed work for the Phase 1 solution.

**Table1: Rough Comparison of High-Level Tasks for Proposed vs. In-Market Constraint Solution**

Task	Needed for Phase I solution as proposed?	Needed for an in-market constraint?
Tariff Updates w/ FERC Approval	Yes	Yes
Compliance Penalty Allocation Considerations	Yes	Yes
Look-Ahead Tool to Determine PFR capabilities and/or incremental needs	Yes	Yes
Masterfile Updates re Governor Control or other	Yes	Yes
Develop, code, test, in-market constraints/solutions and related rules	No	Yes
Eliminate Contingent Spin	Yes	Maybe
Develop PFR Exceptional Dispatch Concept	Yes	Maybe

With further consideration of an in-market solution, the incremental work-loads can perhaps be more clearly assessed. Is it worth it to pursue an in-market solution?

## **2. The CAISO’s proposed out-of-market solution appears to be inefficient and may exacerbate problems.**

CESA appreciates the CAISO’s thought-work thus far in this initiative. Frequency Response is a complicated topic, and the CAISO’s proposed two-phase plan may be the most workable compliance plan for BAL-003-1.

That said, CESA has concerns with the proposed Phase 1 plan and believes it could be excessively inefficient likely procure sub-optimal PFR capability. By securing PFR through the existing market solution and Spin selection with no regards to PFR capability, the market will not select optimally for it. More inertial units or units with certain ‘at-the-ready’ PFR may never get selected if these resources have higher bids, even though these resources could lower total system costs and the need for PFR capability, as shown in the “High Inertia” case.<sup>4</sup> The ISO already recognizes that resources may also be unable to provide PFR due to various operating conditions. If the market optimization were informed of these limits and solving for least cost, such low-value PFR procurement could be avoided.

An in-market solutions will also avoid a theoretically costly standards-based approach. In a standards-based approach, units may face costly changes to provide PFR capability, whereas others could do it cheaply. Requiring it of every resources provides little incentive to resources with potentially high and inexpensive PFR capability. Overall, a standards-based approach is less likely to ensure the CAISO’s PFR needs are met efficiently.

The current approach may also increase ‘p-min burden’ challenges and raise uplift costs through more Spin solutions. This outcome seems counterproductive to the CAISO’s current views and needs, as expressed in the Flexible Resource Adequacy Capacity and Must-Offer Obligations Phase 2 initiative (FRAMOO 2) where the CAISO posited that p-min burden and ‘overgen’ challenges could be sub-optimally addressed by the current fleet mix and or must-offer obligations. A PFR design that commits more units will exacerbate this challenge.

## **3. In-market solutions will provide better efficiency, competitiveness, and an overall commitment.**

The CAISO’s market is an impressive tool for determining a least-cost solution to feasibly match supply with demand while securing ancillary services and honoring complex sets of constraints. This solution also optimally commits units in a manner to minimize overall costs, inclusive of start-up and min-run costs.

Given the effectiveness of this comprehensive tool, it likely makes sense to leverage it for PFR capacity procurement. By including the procurement of PFR into the market optimization, the capacity reservations for PFR, the differing capabilities of resources, the varying dispatch limitations, and the dispatch, commitment or reservation costs can all be optimized. There is

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<sup>4</sup> [“Frequency Response Straw Proposal”](#), CAISO, Oct 12, 2015, pg. 10.

little doubt that an in-market solution will yield a more accurate and likely more-efficient solution set of PFR capacity.

The two main options for in-market solutions are a constraint and a product. A constraint is the simpler of the two, yet still will ensure the opportunity costs to a resource of providing PFR capacity are factored in. A product, which could reasonably fit as another Ancillary Service, involves more complexities relating to market power mitigation, and bid formation, new bidding fields in the market interfaces, and other complexities. Since PFR seems to have no locational limitations, the supply pool for a product could be fairly liquid and deep, minimizing market power mitigation.

CESA would welcome discussion of these efficiency-inducing designs.

#### **4. Asynchronous resources like energy storage can provide high quality PFR.**

The CAISO's compliance plan for BAL-003-1 should factor in the overall benefits of how fast and accurate asynchronous resources like energy storage can reduce overall needs and provide superior responsiveness. To select for and solicit these capabilities, however, correct market designs and incentives need to be in place. The CAISO should note the capabilities of energy storage to provide PFR, and should design a market that efficiently leverages the resource

Due to Smart inverter capabilities and the discharge capabilities of energy storage, storage resources have the highest capabilities of PFR as spin resources. While traditional 'inertia' resources have governor response and other capabilities to provide PFR from *a portion* of their capacity, storage can provide an elite one-to-one ratio of PFR for every MW of reserved capacity. As the CAISO contemplates its Look-Ahead tool, it should consider how to treat the capabilities of energy storage and other inverter-based asynchronous resources.

#### **5. Cost-Allocation practices need to be realistic, measurable, and practical.**

Cost-Allocation can, where feasible and material, incent behaviors and promote market efficiency. In the CAISO's Flexible Ramping Product, lengthy discussions have occurred to develop a principled cost-allocation structure. This effort, however, was neither easy nor simple.

The CAISO's considerations of cost-allocation is inadequately defined and detailed. Numerous issues need to be detailed before this proposal can be reasonably adopted. CESA recommends the CAISO and stakeholders contemplate the following questions: How will performance be measured? Are 'slow' and 'fast' resource evaluated similarly? How will causation principles apply, given that compliance will be based on the median response among twenty events? Or if a resource responded quickly and effectively in nineteen events but 'stumbled' in the one median event? If other performers responded poorly in the many other event, e.g. the worse ones, does a poor performer from the median event warrant the penalty? Are resources exposed to the full penalty amount, or a just a portion of it?

**6. The CAISO should conservatively assume its Frequency Response challenges will increase in the near-term.**

The CAISO notes that its recent historical response to frequency deviations failed to meet BAL-003-1 requirements.<sup>5</sup> To CESA, this indicates the CAISO should assume the PFR designs will be used to ensure more PFR capability. Moreover, more asynchronous resources are already queued to come on-line, some of which may lack incentives to provide PFR. For all intents and purposes, the CAISO should assume it will have a growing need for PFR. With a growing need, inefficiencies in the CAISO's approach could become costlier.

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<sup>5</sup> ["Frequency Response Straw Proposal"](#), CAISO, Oct 12, 2015, pgs. 8-9