BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement Targets for Viable and Cost-Effective Energy Storage Systems.	Rulemaking 10-12-007 (Filed December 10, 2012)

COMMENTS OF THE INDEPENDENT ENERGY PRODUCERS ASSOCIATION ON THE ASSIGNED COMMISSIONER'S RULING PROPOSING STORAGE PROCUREMENT TARGETS AND MECHANISMS

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The Independent Energy Producers Association (IEP) submits the following comments on the topics raised in the Assigned Commissioner's Ruling (ACR) proposing storage procurement targets and mechanisms, issued on June 10, 2013. In these comments, IEP will first provide a general overview of the role of storage in California's energy industry. Second, IEP will comment on the specific topics and questions posed in the ACR.

Overall, IEP has long supported the development and deployment of energy storage as a product that can address specific needs of the distribution and transmission system. Energy storage also promises to mitigate the effects of intermittency, by storing and adjusting the delivery of energy to periods of relatively higher value. IEP members have attempted to deploy energy storage to increase the value of their deliveries to the California grid and, as third-party providers, independent power producers are active in the national energy storage market.

Energy storage has an important role in California's energy future. As noted by the ACR, however, achieving these objectives depends on developing cost-effective and viable

storage projects. From IEP's perspective, it is critical that the Commission *not rely* on uncommitted storage resources to set (or meet) resource or transmission planning goals. Currently, the state includes a significant amount of uncommitted Energy Efficiency (EE) and uncommitted Demand Response (DR) in its planning. Adding another layer of uncommitted storage will exacerbate this trend and, ultimately, increase the risk that planners will fail to have the operational resources needed to maintain the distribution and transmission system and reliably serve load.

I. GENERAL OVERVIEW OF STORAGE PROCUREMENT PROGRAM DESIGN

The ACR correctly points out that energy storage has the potential to transform the electric sector; it has the potential to offer services needed as California seeks to maximize the value of its generation and transmission investments; and it has the potential for optimizing the grid to defer new investment, integrate renewable power, and minimize greenhouse gas emissions.[1] In fact, storage has been deployed successfully, particularly in certain applications, in various contexts across the county. The key for California to reach its storage potential is program design and strategic deployments of storage technologies so that the resources are commercially supported and located on the grid in areas that maximize their benefit. What storage does not do is create energy; rather, it shifts the delivery of energy already generated from one time period to another. This capacity to control the time of delivery of energy has tremendous benefits, but only if storage can perform in a truly viable and cost-effective manner.

The goal of the ACR is to develop a program in which viable storage resources are procured and deployed in a cost-effective manner.[2] IEP supports this goal. While the ACR proposes an ambitious procurement target of 1,325 MW of contracted storage by 2020, the

[1] ACR, p. 2.
[2] ACR, p. 2.

ultimate goal should be the integration of cost-effective and viable storage resources over a reasonable period of time to meet public policy objectives or to serve the needs of the electric grid. From IEP's perspective, storage will prove its value for meeting the needs of the electric grid in the near term (*i.e.,* through 2020 or slightly beyond) only if it is shown to be technically viable. Storage will prove its worth from a cost-effectiveness perspective if it is commercially viable in light of available alternatives. The successful deployment of storage resources will depend on the functionality of the storage products in relation to the needs of the distribution and transmission systems. To determine whether storage is cost-effective, the Commission must compare viable storage with viable alternatives on a range of measures, including grid reliability, avoided curtailment, capacity value, and ancillary services value.

For storage to play a successful role in resource planning, the Commission and the California Independent System Operator (CAISO) must first specify which reliability services storage can provide (*e.g.,* local reliability, voltage, frequency, duration of storage). The Commission and CAISO must then integrate transmission and distribution upgrades and expansions with the procurement of storage and other resources to maintain system reliability. The best use of storage technologies likely will be applications strategically deployed on the distribution and transmission grid. Accordingly, storage procurement must be closely coordinated with grid planning.

The procurement targets and timelines need to link with reasonable expectations of product development, because some storage technologies are closer to commercialization than others. For example, lithium ion batteries used for frequency regulation appear to be relatively viable today from a commercial and technical perspective. Other technologies, such as those with long lead-time discharge cycles, are advancing, but may not be as ready for deployment at

current market values. Structuring the procurement targets to reflect what is available today and what can reasonably be expected to come forward in the future is critical to the success of the program.

The ACR recognizes that the storage procurement program is not specifically tied to the need determination of the Long-Term Procurement Plan (LTPP) proceeding; rather, the storage program will operate in parallel with the LTPP proceeding's evaluation of need. IEP agrees that establishing storage procurement *targets* should be separate from the *need* determinations of the LTPP proceeding. Unless a resource, including storage, is contractually (or equivalently) committed to a specified commercial operation date, the Commission should not assume that the resource will be available to meet the need identified in the LTPP proceeding or in the Resource Adequacy (RA) program. On the other hand, to the extent that storage resources are actually committed to serve California consumers and are integrated into the electric grid by a date certain (*i.e.,* they are deemed viable and cost-effective and have a prescribed commercial operation date), then these resources should be included in the resource assumptions underlying the LTPP and RA assessments of future resource needs.

II. RESPONSES TO SPECIFIC QUESTIONS POSED IN THE STAFF REPORT

1) Please comment on this proposal overall, with emphasis on the proposed procurement targets and design.

The ACR proposes a rigid set of procurement targets by utility and use categories over the next seven years. This "hard wiring" of the procurement targets seems inappropriate given the emerging nature of the technology.

Within the framework of a specified storage procurement target for 2020, IEP suggests that the utility's biennial procurement targets should be based on the success of the prior storage procurement (except for the initial 2014 procurement). For example, under the

ACR, the first biennial storage procurement in 2014 is for 200 MW. In 2016, the procurement target automatically increases by approximately 35% to 270 MW; by 2018 the target is automatically increased to 490 MW. Rather than basing the biennial procurement target on an arbitrary percentage increase, IEP recommends that the procurement target should be adjusted upward or downward based on experience, i.e. the number of cost-effective, viable projects that secured contracts in the prior auction. For example, if few or no storage projects are found to be sufficiently viable and cost-effective in the initial solicitation in 2014, the Commission should be flexible and set less ambitious targets for the second auction to reflect the state of the storage industry. On the other hand, if the Commission determines that ample storage resources are sufficiently viable and cost-effective, and available, then the Commission has the flexibility to raise the procurement target for succeeding auctions to reflect this experience.

A critical issue that needs to be clarified early in the implementation of the storage program is how storage providers will earn revenues for their products. Will the storage solicitations follow the same structure as renewable solicitations and provide an all-in price for all the services storage can provide (regulation, transmission and distribution benefits, voltage support)? Will there be separate revenue streams depending on services the storage facility actually provides? Will the revenue streams be defined as part of the solicitation? The details of how revenues flow back to project developers will be critical to the success of the program, and these details may have important implications for overall program design.

In this context, IEP has concerns about whether a reverse auction procurement mechanism will meet the needs of the storage program. Storage resources will emerge in many forms, and a uniform payment structure may not meet the needs of all storage technologies and types. A standard form contract structure, as used in the Renewable Auction Mechanism (RAM)

program, designed for commercially "shovel ready" projects, is unlikely to work well for some storage projects based on emerging technologies. On the other hand, a model that may meet the needs of certain storage resources is a tolling arrangement in which the resource sells its capacity to the utility (with a commitment to be available when needed), and the actual operations of the unit is subject to dispatch by the utility (or the CAISO) to meet grid needs.

The ACR presents two significant design proposals. First, the ACR provides a set-aside for utility-owned storage facilities associated with distribution system planning and approved in an individual utility's general rate case.[3] Experience has shown that third-party ownership can provide cost-effective and viable resources, whether interconnected at the distribution or transmission level. Third-party providers have successfully developed and operated peaking units interconnected at the distribution voltage level. IEP notes that the Federal Energy Regulatory Commission (FERC) has determined that opportunities to develop economic and policy-driven transmission upgrades should be available to third-party providers. Only in relatively narrow circumstances associated with reliability-driven projects are utilities given a preference. This basic approach applies equally well to storage procurement. This market should not be closed to third-party providers. Only certain types of storage applications, *e.g.,* those that address operational functions of the distribution system that demonstrably cannot be provided by third parties, should be considered for utility ownership. All other storage resources ought to be competitively procured to maximize the benefits of competition and technology development, ensure that the least-cost solution is selected, and meet the statutory goal of cost-effectiveness.

Second, the ACR sets storage goals for transmission, distribution, and customer uses. IEP notes that the same voltage level may be classified as distribution voltage in one

[3] ACR, p. 15.

utility's system and transmission voltage in another utility's system, so a distinction based on the voltage of a storage resource's interconnection is less critical than the service or function the storage facility is expected to provide.

Finally, transparency is critical to making this program a success. For example, transparency in identifying the various storage categories is crucial for this program to work as envisioned by the ACR. In the current proposal, there seems to be no differentiation of storage functions within the distinct case categories. Within each of the three case categories, *i.e.,* Distribution, Transmission, and Customer, different storage applications may be relevant, each with a different set of technical specifications, value streams, and siting constraints. Accordingly, if this model is adopted, greater clarity in the product definition will be required to inform market participants about the specific products that a storage solicitation will be seeking. Storage providers should also be provided with information about which locations have the greatest need for storage resources.

2) Comment on whether any of the projects proposed to count toward the procurement targets be excluded, or any additional projects included, and on what basis.

In the context of an emerging technology program, whether or not a project is to be counted against the adopted storage procurement targets should depend on its commercial and technical viability. To make this determination, the Commission must develop and apply some standards of commercial and technical viability, and some measures against which these standards may be judged. IEP suggests that a number of measures of project viability are used today and may be appropriate in this context, including:

(a) Commitment to a firm commercial operation date in a contract,

(b) Willingness to commit to a security deposit equivalent to that imposed in the Renewables Portfolio Standard (RPS) or all-source solicitations; and

(c) Position in the CAISO interconnection queue.

Projects proposed by developers and by the ACR (at p. 9-10) that do not meet the Commission approved measures of cost-effectiveness and project viability should not be counted against the storage procurement targets.

On the other hand, the utilities should be allowed to count any storage capability that emerges from other resource-specific solicitations, particularly the RPS solicitation and the Combined Heat and Power (CHP) solicitation, against the storage procurement targets. One of the critical goals associated with the storage initiative is to assist in the integration of renewables and provide distribution-level functional support. If the RPS and CHP Requests for Offers (RFOs) were structured to solicit and provide compensation for the operational capabilities associated with storage resources, then the RPS and CHP RFOs could help meet the storage procurement goals articulated in the ACR in a cost-effective and viable manner.

IEP also requests clarity as to the treatment of pumped storage. The ACR mentions pumped storage twice, and in one instance suggests that third-party a pumped storage project would be ineligible to bid into the energy storage reverse auction.[4] The ACR's treatment of pumped storage appears arbitrary and capricious. First, apparently only third-party pumped storage projects are excluded from participating in the storage procurement program while utility-owned pumped storage projects are not. Second, the ACR's treatment of pumped storage may be inconsistent with statutory language because pumped storage may meet the statutory definition of an energy storage system. The ACR's intended treatment of pumped storage should

[4] ACR, p. 17.

be clarified in order to maximize the competitiveness of storage technologies and third-party participation in the storage procurement program.

3) Comment on how actual operational deployment should be defined for PIER- and EPIC-funded projects potentially eligible to count toward a utility's procurement target.

If storage projects are operational and integrated into the CAISO markets, subject to the rules and conditions that govern participation in those markets, then these resources should be considered deployed.

4) Comment on how any utility's procurement that exceeds a target in one year should be addressed and considered for future procurement targets.

Actual levels of procurement should depend on the experience of prior auction in which the viability of the resource or technology is tested technically and commercially. For example, if the 2014 storage procurement target is 200 MW, but only 50 MW of viable projects bid into the solicitation, then the 2016 procurement target should be adjusted downward to reflect that storage technologies have not yet evolved commercially to levels that can support a higher procurement target. On the other hand, if the 2014 storage procurement is 200 MW and the solicitation reveals viable storage in excess of this MW target, then the 2016 procurement target should be adjusted accordingly. Under this approach, the procurement target will match the amount of viable, cost-effective projects that emerge from the biennial procurements up to the prescribed ceiling for the program.

5) Comment on whether and to what extent utilities should be permitted flexibility in procuring among the use-case "buckets" (transmission, distribution, and customer-sited) of energy storage within one auction, and whether a minimum amount in each "bucket" must be targeted.

If this were a Research, Development and Demonstration (RD&D) program, IEP would have less concern about "siloing" specific storage use cases. On the other hand, as an

emerging technology program premised on cost-effectiveness, at a certain point too much siloing undermines the viability of the individual projects and thus the program. IEP urges the Commission to resist excessive siloing when conducting storage procurements.

6) Comment on the appropriate "off ramps" for relief from procuring up to each target and what metrics should be used to evaluate the appropriateness of the off ramps.

If this were a pure RD&D program, the off-ramp would be the exhaustion of program funds. In this case, where the goal is to identify and procure cost-effective storage projects, the off-ramp for relief should be the point at which the storage programs are determined to be (a) not commercially or technically viable or (b) not cost-effective.

7) Comment on how this proposal may be coordinated with Renewable Portfolio Standard procurement plans, as set out in Public Utilities Code section 2837.

Storage resources do not create renewable energy. Rather, they store renewable energy and release it when it is determined to be more valuable. The best value of storage will be its strategic value on the electric grid. In addition to the potential locational value of storage, the value of coupling storage directly with renewable technologies depends, among other factors, on the renewable resource type and the level of renewable resource dispatchability required. If the storage project is directly integrated into an eligible renewable generation facility, the storage project is assisting in the delivery of eligible renewable energy at a time of higher value. This result can best be furthered by aligning the time-of-delivery (TOD) payments to generators to the high-value periods.

To the extent that the Commission authorizes storage uses outside of an RPS procurement mechanism, it is possible, and perhaps likely, that storage resources will simply move system power from one delivery period to another. This type of storage program, not

linked to the procurement of renewable energy, will function in parallel to the RPS program, rather than being integrated into the RPS program.

On the other hand, as noted above, the utilities should be allowed to count against the storage procurement targets any storage capability that emerges from other resource-specific solicitations, particularly the RPS solicitation and the CHP solicitation. If the RPS and CHP RFOs were structured to solicit the operational capabilities commonly associated with some storage resources, *e.g.,* the ability to move power from one time of delivery to a higher valued time of delivery (and compensated accordingly), then the RPS and CHP RFOs could help meet the goals of the storage procurement program in a cost-effective and viable manner.

Regardless of the approach taken, it is critical that procurement be informed by grid planners at the distribution and transmission levels. Ideally, the CAISO would work with utility distribution planners to identify area of the grid where storage will be most beneficially deployed. That key information should flow into utility procurement targets.

8) Comment on the options presented for ESPs and CCAs to either a) be required to procure an equivalent amount of storage projects commensurate with the load they serve or b) have their customers assessed the costs of the IOU procurement of energy storage projects through a cost allocation mechanism.

If this were an RD&D program, IEP would see no need to pass-through to ESPs and CCAs the cost of storage procurement. On the other hand, if this is a mandatory procurement imposed on all load-serving entities, then existing procurement obligations and cost allocation methods should apply.

9) Comment on how the preliminary results of the cost-effectiveness models should be applied to the question of setting procurement targets.

Given the emerging nature of storage technologies, IEP is doubtful that any existing cost-effectiveness model can reliably value storage or account for its contributions to

grid reliability ten years from now. Thus, IEP would not recommend building a program based on the cost-effectiveness models developed to date. Rather, IEP recommends building a storage procurement model based on the viability and cost-effectiveness of storage resources that emerge from the sequential auctions as outlined above (see answer to Question 1).

10) Based on the preliminary results, should the utilities set a cost cap for offers to be submitted in the 2014 auction? If yes, what should the cap be and how should the auction be structured to incorporate the cap?

The existing cost-effectiveness models have little, if any, relationship to the market cost of viable storage resources, and IEP does not recommend setting cost caps solely based on the preliminary studies. Reasonableness of bids, cost-effectiveness, and a standard for viability should set the cost cap for the 2014 procurement and subsequent procurements.

III. CONCLUSION

IEP respectfully urges the Commission to consider these comments as it deliberates on the many issues raised by the effort to integrate viable, cost-effective storage resources into the electric grid.

Respectfully submitted this 3rd day of July, 2013 at San Francisco, California.

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