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.	R.10-12-007 (Filed December 16, 2010)

COMMENTS OF DIVISION OF RATEPAYER ADVOCATES ON ADMINISTRATIVE LAW JUDGE'S RULING ENTERING INITIAL STAFF PROPOSAL INTO RECORD AND SEEKING COMMENTS

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COMMENTS OF DIVISION OF RATEPAYER ADVOCATES ON ADMINISTRATIVE LAW JUDGE'S RULING ENTERING DOCUMENTS INTO RECORD AND SEEKING COMMENTS

The Division of Ratepayer Advocates (DRA) commends the Energy Division for its efforts to establish a framework and identify areas to be considered in developing energy storage targets in California. DRA provides the following comments on the Initial Staff Proposal pursuant to the Administrative Law Judge's Ruling issued on December 14, 2011.

I. INTRODUCTORY COMMENTS

DRA continues to recommend against setting arbitrary procurement goals for generic energy storage. This would most likely result in sub-optimum solutions and higher costs for ratepayers. Rather, the amount of energy storage needed to support particular applications should be identified in, and authorized by, each relevant proceeding (e.g. Resource Adequacy, Long Term Procurement Plans, Rewnewable Portfolio Standards) based on the system need, viability, and cost-effectiveness of energy storage solutions relative to other resources. The technologies available to meet specific system needs should be given an opportunity to compete against each other or the market in general (including other types of resources) and without identifying any certain technology as a preferable option over other technologies. Accordingly, DRA supports the Initial Staff Proposal's statement that the Commission can assist the process of gaining experience with energy storage by pursuing a policy framework to promote a

technology-neutral competitive environment where energy storage can be a viable commercial option.

DRA also supports Staff's proposal to adopt an "end-use" framework to be utilized in several future activities, including cost-effectiveness evaluation methods, and to take an incremental approach to achieve progress by revising the framework as issues become more precise. This incremental approach should prioritize applications, not technologies. Any cost-effective viable technology which can meet the needs for a specific application prioritized should be considered in a relevant selection process or competitive Request For Offer (RFO).

II. COMMENTS ON THE 'KEY NEXT STEPS' (SECTION 4.2)

A. Regulatory Framework

The Storage Barriers Regulatory Matrix (Figure 1) and proposed categories of "end uses" (Figure 2) appear to be very comprehensive and largely complete. DRA offers the following additional comments on program areas impacted by energy storage:

1. Long Term Procurement Planning (LTPP)

Any RFO process resulting from long-term procurement planning (LTPP) proceedings should consider—and expressly avoid creating barriers to—bids by energy storage products to meet operational needs, either on a stand-alone basis or in combination with other generation technologies (such as renewable resources). If the Commission ultimately authorizes additional procurement as a result of the 2010 LTPP proceeding, it should direct the IOUs to structure their RFO solicitations to allow energy storage companies to participate and compete on a fair basis with other providers of generation (including flexible generation). Defining and structuring products to allow competition by energy storage will broaden the pool of competitive resources and will help ensure that operational needs are addressed on a least-cost best-fit basis. For example, energy storage may have an advantage over competing resources in terms of the greenhouse gas compliance costs and values. It is also consistent with the statutory directive that "the commission may consider a variety of possible policies to encourage

the cost-effective deployment of energy storage systems, including refinement of existing procurement methods to properly value energy storage systems."[1]

2. Renewables Portfolio Standard (RPS)

One end use or value provided by energy storage that is not expressly included in Figure 2 is a greenhouse gas (GHG) benefit. Energy storage can provide GHG benefits under end-use No. 11 (peak shaving) by avoiding the need for inefficient high-heat-rate peaker plants. The Staff Proposal should make that benefit more explicit so that it may be accounted for in whatever valuation methodology emerges for energy storage.

The Commission should develop a more explicit methodology for quantifying renewable integration services provided by energy storage (see Figure 2, Nos. 8/9 for wind and solar). Avoiding integration costs appears to be one of the primary considerations driving the push for energy storage for these end-use applications, and it is crucial to appropriately quantify and model the value of this benefit (including the locational benefits of placing energy storage in areas with large amount of intermittent generation). It should be possible to build off of completed modeling work and models developed in the LTPP proceeding seeking to quantify the value of avoided integration costs.

Finally, DRA notes a correction needed to Figure 1 in the RPS column, row [7], which states that "[f]air market price determinant for RPS energy is still in flux and evolving." Legislation now directs the Commission to determine a cost limitation mechanism in total expenditure terms, there is no longer a requirement to set a "market price determinant", (i.e. the MPR).

3. Resource Adequacy (RA)

The RA program should determine counting rules and protocols for storage to count towards RA requirements. This would expressly open up RA markets to competition by energy storage end-use applications and thus could provide several potential benefits (revenue streams) for storage. The RA program recently opened a new

[1] PU Code § 28326(a)(1).

rulemaking that currently does identify energy storage as a candidate issue for Phase 2.[2] Establishing RA rules for energy storage (or other resources that provide flexible grid attributes) will involve significant alterations to the current methodology, which were designed for large conventional generators. Due to the complexity of issues involved, rules and protocols for how energy storage will be counted for RA compliance should be in place before the adoption of any procurement targets in this proceeding.

For example, the capacity needed to meet RA requirements is determined based on the peak demand conditions, which exist for a small percentage of hours during the year. If energy storage facilities are eligible to provide RA for meeting local RA requirements, it is possible that storage applications could compete against other resources (e.g., Once Through Cooling resources or building a new peaking power plant). Energy storage applications can also assist with renewable resource integration and may enhance the RA value of RPS energy products. The CAISO has also submitted a proposal to incorporate grid reliability products under new protocols in the RA program which energy storage may be capable of providing. The landscape of RA rules and protocols will have a significant impact on the cost/benefit analyses and development of cost-effectiveness methodologies for specific storage end-use applications. This is an important precursor to determining if storage is both a viable and cost-effective solution, and should be completed before the Commission initiates Phase 2 of this proceeding.

B. Cost Effectiveness Methodologies

DRA urges the commission to *not* pre-judge the appropriateness of using any particular methodology for evaluating the costs and benefits of energy storage. While the Commission should certainly consider and seek *general* consistency with cost-benefit tests developed for energy efficiency, distributed generation, and demand response, it may be inappropriate to use these methodologies to evaluate the expected benefits of energy storage overall or particular energy storage applications. In many of the identified 'end uses', energy storage will be more analogous to generation and/or transmission and

[2] R.11-10-023, Phase I Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge (Dec. 27, 2011), p. 7.

distribution facilities operated by independent merchant generators or the investor owned utilities (IOUs), not demand-side management programs such as demand response, energy efficiency, and distributed generation.[3] Thus, for end-uses where storage participates directly in the ISO or bilateral energy or capacity markets to compete with generation resources, it may be more appropriate to value storage's benefits using expected market revenues (even if they are unpredictable) rather than basing a cost-effectiveness methodology primarily on avoided costs. In applications where energy storage is used to support other resources (e.g. firming renewable resources), the cost and benefit of energy storage should be included in evaluation of the cost of that resource.

Further, even if cost-effectiveness methodologies similar to those used in other demand-side management programs can be used for certain storage end-uses, adjustment factors will still need to be applied. For example, Permanent Load Shifting (PLS) programs (which include battery storage and thermal energy storage technologies) shift energy usage from one time period to another on a recurring basis by storing electricity produced during off peak hours and using the stored energy during peak hours to serve loads. PLS is therefore different from other Demand Response programs because PLS shifts energy usage on a permanent basis instead of decreasing energy usage. Because of these differences in operating characteristics between PLS and other demand response programs, certain adjustment factors may need to be applied to the cost-effectiveness analyses of PLS compared to other demand-side programs.

However, to the extent that the Commission determines it is useful to use any of the Standard Practice Manual Alternatives, then the cost-effectiveness evaluation of energy storage resources should be conducted using all four tests identified in the Initial Staff Proposal, p. 16. The Total Resource Cost Test (including the Societal Cost Test) may provide the most comprehensive analysis tool, as it measures the total benefits and

[3] For example, D.10-12-024 notes that avoided electricity costs "comprise the major benefit of most demand response programs, and are similar to the avoided costs of other demand-side management activities such as energy efficiency and distributed generation." By contrast, many storage end uses are not analogous to "demand-side management" and may have the ability to generate actual revenues (energy, capacity, or transmission based) as their primary benefit rather than avoided costs.

costs of the program and includes all participant and utility costs and benefits. In addition, the Societal Cost Test includes societal benefits such as environmental benefits, non-energy and non-monetary benefits, and market benefits. Further any cost-effectiveness methodology should include the Ratepayer Impact Measurement Test. Comparison with the costs and benefits of other resources, or market prices where applicable, would be an effective way to determine the cost-effectiveness of an energy storage project. The viability of the proposed energy project(s) should also be compared to the viability of other options to determine the optimum choice for the ratepayers.

Finally, regardless of any procurement targets that could ultimately be adopted, the Commission should establish necessary pre-conditions to approval of specific projects. If storage projects are submitted for Commission approval outside of competitive solicitations to meet procurement needs, then the Commission should require a demonstration that either (1) a *specific* end-use application is cost-effective or (2) the energy storage end-use application is more cost-effective than utility procurement of other supply-side or demand-side resources.

C. Roadmap and Procurement Objectives

The Initial Staff Proposal asks parties to submit criteria for evaluating procurement targets. DRA continues to recommend against setting arbitrary procurement targets or goals for energy storage that are separate from specific and established system needs that storage can compete to fulfill. DRA therefore recommends that the commission not adopt any criteria for evaluating generic storage procurement targets. Instead, if any specific procurement targets are adopted for storage energy systems, they should be based on needs identified in a relevant procurement proceeding (e.g. RA, LTPP, RPS), or goals should be included within already-existing programs in which storage can participate (e.g., demand response, Self Generator Incentive Program).

Targets set within specific proceedings should be based on the suitability of storage to meet program-specific goals, in light of the storage application's technical viability and cost-effectiveness relative to other competing solutions. For example, storage end use applications may be suitable to satisfy reliability product needs in RA, or

defer new capacity contracts with conventional generation in LTPP, satisfy demand response program goals in a cost-effective manner (e.g., through providing permanent load shifting or through vehicle-to-grid applications), or complement distributed generation. If viable storage solutions can meet the "end-use" needs (see Figure 2) in a cost-competitive fashion, then these solutions should be able to compete for procurement contracts in existing proceedings or compete for funding through existing program budgets that provide subsidies to help achieve market transformation. Thus, the amount of energy storage procured would be based on the actual need identified by each application or applications. This approach will yield more efficient market outcomes. Setting arbitrary, stand-alone storage procurement targets will likely result in sub-optimal solutions and ultimately higher costs for ratepayers.

Respectfully submitted,

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