

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Integrate and
Refine Procurement Policies and Consider
Long-Term Procurement Plans.

Rulemaking 12-03-014
Filed March 12, 2012

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
ON ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE'S
RULING REGARDING TRACK 2 AND TRACK 4 SCHEDULES**

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Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.

Rulemaking 12-03-014
Filed March 22, 2012

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
ON ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE’S RULING
REGARDING TRACK 2 AND TRACK 4 SCHEDULES**

In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”) the California Energy Storage Alliance (“CESA”)¹ hereby submits these comments on the *Assigned Commissioner and Administrative Law Judge’s Ruling Regarding Track 2 and Track 4 Schedules* issued on September 16, 2013 (“Ruling”).

I. INTRODUCTION.

Although the Ruling directed that parties may file comments on several ALJ questions from the Prehearing Conference held on September 4, 2013, CESA responds in these comments

¹ The California Energy Storage Alliance consists of 1 Energy Systems, A123 Systems, AES Energy Storage, Alton Energy, American Vanadium, AU Optronics, Beacon Power, Bright Energy Storage, BrightSource Energy, CALMAC, Chevron Energy Solutions, Christenson Electric Inc., Clean Energy Systems Inc., CODA Energy, Deeya Energy, Demand Energy, DN Tanks, Eagle Crest Energy, East Penn Manufacturing Co., Ecoult, Energy Cache, EnerVault, FAFCO Thermal Storage Systems, FIAMM Group, FIAMM Energy Storage Solutions, Flextronics, Foresight Renewable Systems, GE Energy Storage, Green Charge Networks, Greensmith Energy Management Systems, Growing Energy Labs, Gridtential Energy, Halotechnics, Hecate Energy LLC, Hydrogenics, Ice Energy, Innovation Core SEI, Invenergy, K&L Gates LLP, KYOCERA Solar, LightSail Energy, LG Chem Ltd., NextEra Energy Resources, OCI Company Ltd., Panasonic, Paramount Energy West, Parker Hannifin, PDE Total Energy Solutions, Powertree Services, Primus Power, RedFlow Technologies, RES Americas, S&C Electric Co., Saft America, Samsung SDI, Sharp Labs of America, Silent Power, SolarCity, Stem, Sovereign Energy Storage LLC, Sumitomo Corporation of America, TAS Energy, UniEnergy Technologies, and Xtreme Power. 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>

to the question of the: “interaction of Track 4 with Commissioner Peterman’s Proposed Decision in R.10-12-007”, issued on September 3, 2013 (“Proposed Decision”).

II. THE RFO PROCUREMENT METHOD BEING USED IN SCE’S LOCAL CAPACITY PROCUREMENT, INCLUDING ITS SPECIFIC LANGUAGE, SHOULD NOT BE TREATED AS A TEMPLATE FOR PROCUREMENT IN TRACK 4 OF THIS PROCEEDING

In its current procurement of energy storage resources, Southern California Edison (“SCE”) and other local capacity requirement (“LCR”) resources will be using a specific request for offers (“SCE RFO”) with specified requirements related to duration and operational lifetime. The Commission should in no way use the SCE RFO as a template for energy storage procurements called for in this proceeding. CESA has several concerns with the SCE RFOs requirements, including its restrictive and inflexible requirements for 30-year operational lifetimes and the minimum 4-hour discharge duration. Those requirements will lead to a potentially sub-optimal resource mix through the exclusion of cost-effective resources with shorter durations and/or operational lifetimes, especially for energy storage procured for other applications. Energy storage can be installed and brought on line within a much shorter time period than can conventional fossil resources and for many energy storage resources, the expected costs are declining over time. Thus, requiring an arbitrarily long contract period of 30 years may have the unintended consequence of locking in higher costs for ratepayers. Similarly, requiring an arbitrary duration of four hours may result in procuring certain energy storage capacity and may have unintended consequences.

CESA strongly opposes any excessively long operational lifetime requirements, especially one of 30 years as is being used in the SCE RFO. Additionally, CESA advocates that, if operational lifetime restrictions are established, entire system lifetime (rather than any repowering timeframe) is used as a measure of operational lifetime. So, if a battery energy

storage system must repower every 10 years, but given repowering can operate for at least 35 years, it should be considered to have a 35-year operational lifetime (instead of a 10-year operational lifetime). The SCE RFO is silent on this matter, and CESA advocates that it be explicitly defended in any operational lifetime requirements, if they are included in procurement policies.

Regarding duration requirements, there are two main reasons that an arbitrary duration requirement of four hours will produce unintended negative consequences for California's system: First, handicapping a flexible capacity resource like energy storage that can easily be dispatched and aggregated in smaller increments by arbitrarily requiring a resource to be able to dispatch in at least 4-hour blocks may result in purchasing capacity that is not needed. For example, if system needs call for 50 MW of capacity to provide ramping in 15-minute bids, then it is reasonable to assume that resources with under one-hour dispatch durations would be required; and, for some services with 15-minute bids (i.e. frequency regulation), 15-minute resource durations are sufficient. So, it is possible that a full four to sixteen times the amount of required resources would be procured to meet the same 50 MW capacity need. This would be an extremely wasteful use of resources.

Second, a shorter duration requirement will enable a much larger pool of energy storage resources to bid, increasing competition among energy storage resources, as well as among all resources. This will help drive down costs and increase the amount of valuable services provided by procured resources. Diversity of energy storage means that some resources will most economically provide short-duration bids best suited for regulation energy management, while others will provide mid-duration bids and some (such as pumped storage) will provide longer-duration services. Energy storage is an optimal resource class to meet the need for all of these services as products to the California Independent System Operator ("CAISO"), but will

not be able to provide them most economically with an arbitrary four-hour requirement. Indeed, best-fit energy storage resources may not be able to participate in markets at all with such dispatch requirements. For example, most, if not all energy storage systems able to cost-effectively provide frequency regulation have dispatch durations shorter than 4 hours, so such a dispatch requirement would essentially exclude energy storage from frequency regulation markets, with consequent detrimental impacts to system performance and costs to ratepayers. Any must offer obligation and resource requirements for energy storage should thus be appropriately tailored to the desired service, of which energy storage can provide many.

This is yet another reason why the energy storage procurement methodology should be developed in a transparent manner, essentially from the ground up, rather than simply copying the SCE RFO or using it as a template. With such a significant procurement target procurement target and multiple domains, the Commission and utilities should carefully develop methodologies that work for achieving these targets in the most cost-effective manner, rather than creating carbon copies of existing requests for offers with potential flaws.

III. THE CPUC HAS CLEAR AUTHORITY TO REQUIRE PROCUREMENT ABSENT IDENTIFIED SYSTEM NEED.

The Proposed Decision correctly states that “AB 2514 is silent on any requirement to conduct or apply a system need determination as a basis for procurement targets. Based on AB 2514, as well as our overall energy policy, we find that it is reasonable to establish procurement targets to encourage the development and deployment of new energy storage technologies.” (p. 22-23). Further, the proposed procurement policy framework eliminates the argument for determination of need for energy storage by ensuring that procured resources are cost-effective. The Proposed Decision states that “to the extent that a storage device or technology is able to

demonstrate it can meet the operational requirement, and provide net benefits over its projected life, it could be considered having met a defined market need.” (24)

California's needs span a broad range of possible uses of energy storage, all of which are being determined in real time. If we wait until all system needs are identified, the potential delay will be extremely disruptive for both system development and stakeholder learning through project implementation. The Proposed Decision’s biennial procurement schedule and triennial reviews encourage a thoughtful approach to implementation that will generate tremendous learning over time – the evolution of which will both reflect changing system requirements and energy storage technology capabilities, resulting in increased applicability and effectiveness of energy storage for California’s electric power system.

For example, investment in energy storage has already been deployed by SDG&E to help enable renewable resource integration. In its recently Commission-approved general rate case decision, SDG&E obtained \$26 million in approved inclusion in its rate base for energy storage projects in its service territory to prudently invest in energy storage to help mitigate the impacts of dramatically increasing amounts of distributed photovoltaic (“PV”) generating facilities on SDG&E’s distribution system. Specifically, SDG&E identified two cost-effective applications of energy storage resources:

“One solution will place distributed energy storage systems on circuits with high penetration of customer photovoltaic systems. Additionally, energy storage systems will be strategically located in substations to mitigate the impact of multiple circuits with PV as the second budget item.”²

SDG&E’s request for approval of \$55 million in capital funding was trimmed to \$26 million in the Commission's decision on its general rate case. The Commission recognized that expanded PV generation and its impact reasonably justified some amount of funding for projects

² See, https://www.sdge.com/sites/default/files/regulatory/SDG&E-11-CWP%20Bialek_Z.pdf.

that were well underway, but limited the funding because SDG&E's request must be balanced with the work and possible outcomes that will result from the Commission's energy storage proceeding. Since the Commission has not yet adopted the energy storage policies and targets as required by AB 2514, it would be unreasonable and premature to authorize full funding of SDG&E's energy storage request.³

SDG&E and the Commission have identified significant potential benefits of energy storage systems for optimizing solar resource integration, and SDG&E is continuing to install additional energy storage projects to demonstrate and better understand their impacts. As more energy storage projects are implemented across the grid (for solar integration and other services), the state will undoubtedly find more beneficial and cost-effective applications; it will also better understand best practices with associated impacts on cost-benefit ratios and overall performance. Additionally, multiple grid aspects will change going forward, opening further system needs and opportunities for cost-effective storage integration. The system characteristics, as well as developments in energy storage cost and performance, will transform drastically over the procurement target milestones, so there will almost certainly be expanded opportunities for cost-effective energy storage solutions system-wide.

IV. DIVERSITY OF PROCUREMENT MECHANISMS, INCLUDING RFOS, BILATERAL CONTRACTS AND RATEBASING OF ENERGY STORAGE ASSETS IS APPROPRIATE.

Diversity of energy storage assets runs itself to a diversity of ownership models and procurement mechanisms. This will by definition encourage competition and cost reduction for ratepayers. However, CESA strongly encourages the Commission to further define when such circumstances may be warranted, and also encourages both the Commission and utilities to

³ See, D.13-05-010, issued May 9, 2013.

specifically outline when bilateral contracts would *not* be appropriate. With regard to other procurement options, CESA generally recommends using a term-sheet approach rather than pro-forma agreements. Pro-forma language is convenient for projects in industries that have become a bit more standardized over time (i.e., wind and solar). With storage, however, the technologies and the applications are still in a “discovery” phase. A term-sheet will thus allow for greater flexibility and creativity in project proposals, which will help bring a multitude of resources online in a relatively more cost-effective manner.

V. **THE COMMISSION SHOULD ALLOW OWNERS OF EXISTING POWER PLANTS TO PROPOSE ADDITION OF ENERGY STORAGE SYSTEMS FOR ALL COMPETITIVE PROCUREMENT PROCESSES AND BILATERAL CONTRACTING OPPORTUNITIES THAT SHOULD BE VALUED ON A BASIS COMPARABLE TO ALL OTHER TYPES OF RESOURCES.**

The Commission should adopt new, and adapt existing, utility procurement rules to allow for addition of energy storage systems to existing power plants by means of competitive procurement process such as requests for offers, and also allow for bilateral contracts.⁴ The addition of energy storage systems, the impact of which is newly generated megawatts that would not have otherwise been possible to be generated, can be just as valuable as entirely new facilities, and arguably of greater benefit to the ratepayer. In fact, additions to existing power plants can provide the new megawatts needed by the grid for a fraction of the cost, time, and development required of greenfield sites. As this would be reflected in the cost, CESA supports the principle that such retrofits be valued comparably with other resources. Likewise, the same

⁴ *Commissioner’s Ruling Issuing Procurement Reform Proposals and Establishing a Schedule for Comments for Comments on Proposals*, filed December 12, 2012, in R.11-05-005: “Generally speaking, where the addition of energy storage increases the value of the renewable electricity generation by firming, shaping, smoothing or shifting output and the resulting increased value is defined within existing accepted commission rules (e.g., more of the generation can be compensated by being subject to a higher time of delivery factor) and/or the developer bears the cost of the addition of the energy storage then such projects should be presumed to be in the interest of ratepayers and not subject to further Commission review.” (p. 5).

length of contracts offered to new generation should also be offered to allow addition of energy storage systems.⁵

CESA is on record in this proceeding as supporting essentially any reasonable utility procurement process that values energy storage technology on a comparable basis with other preferred resources.⁶ This approach would include focus on “evaluating and quantifying *performance characteristics that vary among resource type (e.g. time to start, output at various times, variable cost, effectiveness in meeting contingencies)* [Emphasis added].”⁷ CESA supports both formal all-source procurement and bilateral contacting that allows for cost-effective improvement of efficiency and reliability of existing resources to meet the increasingly apparent system need for flexibility of both new and existing utility generation.

VI. ENERGY STORAGE PROCUREMENT PROGRAM DESIGN, INCLUDING THE SOLICITATION APPLICATION AND COST EFFECTIVENESS METHODOLOGIES, SHOULD BE UNDERTAKEN IN A TRANSPARENT MANNER, WITH OPPORTUNITIES FOR STAKEHOLDER REVIEW AND INPUT.

Utility-specific resource solicitation application and cost-effectiveness methodologies are foundational to the direction and success of statewide energy storage procurement. Accordingly, the development of solicitation applications and cost effectiveness methodologies should be conducted via a transparent process with opportunities for external stakeholder input. External stakeholder input will be extremely valuable during such development, as the energy storage

⁵ Imperative to ensuring retrofits are able to participate in the RFO process is the explicit mention within RFO’s that assets currently under contract would not have their existing contract reopened to account for the new investment in new generation through upgrades to the site. Rather, a separate contract, or overlay contract must be offered to the entity bidding the retrofit project for such investment, separately from the existing site’s operating contract. Without this needed change, independent power producers are unwilling to bid such retrofits.

⁶ See, e.g., *Comments of Energy Storage Alliance on Administrative Law Judge’s Ruling Seeking Comment on Workshop Topics*, filed October 12, 2012.

⁷ D.13-02-015, p. 90.

market contains a vast diversity of expertise with the ability to identify best practices and areas for improvement based on successful commercial deployment outside of California. The energy storage industry, markets, and stakeholder knowledge are also constantly evolving, so transparency and stakeholder input should continue with biennial revisions of both applications and methodologies, consistent with the planned procurement schedule. CESA advocates that the Commission should ultimately maximize transparency and stakeholder input into the development and execution of the energy storage procurement process, including but not limited to evaluating showing of need and utility adherence to burden of proof standards developed by the Commission.

CESA recognizes that precedent exists in other proceedings for creating a balance between transparency and the safeguarding of utilities' proprietary and/or confidential information. CESA thus recommends that transparency and stakeholder input in energy storage procurement (both in policy development and execution) is undertaken so as to be consistent with transparency and input in other resource procurement proceedings.

A key focus of stakeholder input should be the least-cost, best-fit ("LCBF") analysis outlined in the energy storage procurement methodology, as it is integral to determining the benefits of energy storage resources. CESA advocates that any LCBF analysis should include all benefits of energy storage, including societal and market transformation benefits including environmental benefits and greenhouse gas ("GHG") emissions impacts. The list of benefits that energy storage provides includes, but may not be limited to, the following:

- a. Increased resiliency/reliability
- b. GHGs reduction (including reductions in CO₂, CH₄, NO_x, and SO_x). GHG reductions should be prioritized in LCBF analysis
- c. Locational benefits and locational market value
- d. Transmission upgrade deferral
- e. Transmission congestion relief

- f. Voltage/VAR Support
- g. Faster build time
- h. Reduced fuel cost risk (if charged by renewables)
- i. Resource mobility
- j. Flexibility of purpose: storage dispatch can be changed to meet grid needs, which reduces long term risk
- k. Ramping and voltage support for fossil generators or renewable generation resources
- l. Firming of renewable energy
- m. Energy and ancillary services
- n. Resource adequacy, including flexible resource adequacy/capacity
- o. Economic development and local job creation

It is important to note that not all of the benefits of energy storage resources were modeled in the EPRI and KEMA analyses during the Storage OIR – as such, those analyses should not be established as the official ongoing LCBF analyses framework. Instead, CESA advocates that these models be used as a helpful starting point, and that the resulting LCBF analysis be developed with multiple stakeholders’ input and revised for each procurement cycle in a way that fully incorporates all benefits of energy storage resources as these resources, markets and related business models evolve.

CESA further recommends that any “showings” related to the cost-effectiveness of energy storage should compare the cost effectiveness of potential energy storage resources with the next best alternative, rather than requiring that energy storage resources are unequivocally cost-effective (benefit to cost ratio greater than 1). Many procured *status quo* energy resources are not generally cost-effective: for example, a gas peaker would never be justified based on its market value alone. Resource adequacy is a value historically paid to generators to compensate them for the difference between the amount they can earn in the market and their total resource cost. If a certain system requirement has to be met through procurement of a new resource, and a

given energy storage resource meets the stated need, is not unequivocally cost-effective, but is more cost-effective relative to the next best alternative, then that energy storage resource should be procured to meet the stated need. However, notwithstanding the foregoing, CESA strongly agrees with the Proposed Decision that there is ample precedent for the Commission to set targets “without a system needs determination”:

“To the extent energy storage is treated akin to a ‘preferred resource’, as it has been designated in D.13-02-015, the Commission has clear precedent to administratively establish storage procurement targets without a system needs determination”. (Page 24)

VII. ENERGY STORAGE PROPOSED DECISION APPLICATION FRAMEWORK SHOULD BE MAINTAINED AND UTILITY OWNERSHIP WITHIN ANY ONE DOMAIN SHOULD BE LIMITED TO 50%.

CESA appreciates the Proposed Decision’s clarification that defines storage grid domains based on point of interconnection. This clarification is very helpful and will help promote energy storage application and business model diversity and healthy competition, and will also help facilitate procurement compliance tracking and accounting over time. Diversity of ownership models also facilitates market dynamism and confidence. However, unlimited utility shifting between domains and unlimited utility ownership across domains could result in 100% utility owned storage for distribution support only. This would be an unfortunate outcome that would reduce competition to the detriment of ratepayers.

It should be further noted that aggregate project size can impact an energy storage projects’ cost effectiveness. Such large sized projects may exceed the energy storage proposed decision’s proposed biennial megawatt goal of either utility owned or third party owned systems. If such projects are found to be cost effective, then such projects should be procured and the biennial MW goal increased accordingly. In particular, very large energy storage projects in the transmission and distribution domains maybe possible in the 50-100-200 MW size range under

LTPP. Such projects, if found to be cost effective, should be pursued and the Energy Storage OIR biennial procurement target be adjusted upwards accordingly.

Finally, it should be noted that generation-classified third-party owned resources can provide distribution system benefits (customer sited and distribution sited), and when proposed energy storage does so its value should be acknowledged. This is consistent with SCE's proposed evaluation process in its LCR solicitation.⁸ Cost effective future transmission domain projects maybe large, and exceed the biennial MW goal of either utility owned or third party owned systems. If such projects are found to be cost effective then such projects should be procured, and the MW goal increased accordingly.

VIII. THE COMMISSION SHOULD EXPLICITLY STATE ITS SUPPORT FOR LARGE-SCALE PUMPED HYDROELECTRIC RESOURCES, AND RECOMMEND THAT OTHER PROCEEDINGS PURSUE THE PROCUREMENT OF PUMPED HYDROELECTRIC RESOURCES WITH NAMEPLATE CAPACITIES GREATER THAN 50 MW.

While CESA concurs with the Commissions' explicit support for large scale pumped hydro, CESA recommends that the Commission encourage a separate study to be undertaken and workshop devoted to pumped hydro storage to be scheduled and closely coordinated with other

⁸ It would follow that if a "reliability" application project receives credit for a generation function (i.e. SCE's procurement plan proposes that "dual use" storage would receive LCR credit and that this should apply whenever such storage meets any RA/generation need) then the same rules applying to generation procurement, including third-party bidding and independent evaluation, should apply. If SCE can reasonably calculate estimates of other costs and/or benefits that are directly attributable to an offer, then these estimates will be included in the quantitative valuation, and ultimately, in the offer's NPV. For example, LCR procurement is required to ensure that there are sufficient resources in certain sub-areas of the Big Creek/Ventura and LA Basin local reliability areas. Also, within these specific areas there are locations where additional generation would not only satisfy the LCR needs, but also enhance the reliability of the distribution system. In these instances, the benefits of new generation are twofold: 1) LCR procurement, and 2) distribution system benefits that reduce, eliminate or defer the need for other reliability upgrades. When offers provide this additional benefit of eliminating, reducing or deferring costs that would otherwise be incurred, SCE should estimate and ascribe the resulting avoided cost as a benefit to the offer.

⁷ VxG projects are a potentially very cost effective energy storage resource because it leverages private investment in electric vehicles

appropriate Commission proceedings, so that the subject will be given sufficient consideration to enable its very cost-effective and valuable energy storage services to enter the market in a meaningful way. This study should analyze how pumped hydro can be an instrumental component of a low carbon energy low cost procurement process, particularly for LTPP. Neither the study nor the workshop should be permitted to delay the opportunity for pumped hydro storage to compete immediately in any procurement processes other than those subject to the final decision in this proceeding, and may not be conducted in any way that could delay a final decision or hamper timely implementation of energy storage procurement targets contemplated in the energy storage proceeding. CESA continues to support inclusion of pumped storage procurement goal, provide that the total procurement target is expanded. For the purposes of meeting LTPP requirements, CEERT's opening comments in the Storage OIR are very reasonable: to require each IOU to enter into a Pumped Hydro Storage Bilateral agreement by 2020, and raise the procurement target for each IOU by 400-500MW for 2020.

IX. CUSTOMER SITED ENERGY STORAGE RESOURCES SHOULD NOT BE OVERLOOKED FOR THE PURPOSES OF MEETING LTPP REQUIREMENTS RELATED TO OTC OR SONGS RETIREMENT.

Additionally, consistent with CESA's Comments on the Assigned Commissioner's Ruling issued in this proceeding on June 10, 2013, CESA recommends that the Commission require the utilities to implement a statewide market test to pursue creative contracting mechanisms and new ownership models for energy storage products and services with third parties and retail customers behind the meter. Because non-utility owned projects sited behind the meter, including vehicle to grid applications, are likely to be cost-shared with private sector customers, the services provided from those assets maybe a very cost-effective solution for fulfilling a range of services that maybe a priority in other grid domains. Near term, any behind the meter energy storage contract would certainly count toward meeting the behind the meter

sited grid domain goal. However, encouraging new contracting mechanisms and business models in partnership with investor owned utilities and their customers via a statewide wide market test will generate much more information for future policy development and future shaping of the overall energy storage procurement goals and framework.

X. SIMILAR TO PREFERRED RESOURCES, THE COMMISSION SHOULD REQUIRE THAT ENERGY STORAGE IS CONSIDERED PRIOR TO APPROVING ANY NEW GAS PEAKER CONTRACTS.

Currently, every utility application for new generation is subject to a requirement that it must be reasonable and cost effective. This analysis requires evaluation of other alternatives such as demand response and distributed generation. Energy storage should routinely be added to that list going forward. CESA recommends that the final decision in this proceeding clarify and enforce routine consideration of energy storage in all utility procurement plans going forward.

XI. CONCLUSION.

CESA appreciates the opportunity to provide these comments for the Commission's consideration.

Respectfully submitted,



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