

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

Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap.

Rulemaking 15-03-011
(Filed March 26, 2015)

**REPLY COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
ON THE ADMINISTRATIVE LAW JUDGE'S RULING NOTICING
WORKSHOP, JOINTLY LED BY THE CALIFORNIA PUBLIC UTILITIES
COMMISSION AND CALIFORNIA INDEPENDENT
SYSTEM OPERATOR AND SETTING A COMMENT SCHEDULE**

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In accordance with 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 *Administrative Law Judge’s Ruling Noticing Workshop, Jointly Led by the California Independent System Operator and the California Public Utilities Commission and Setting a Comment Schedule*, filed on April 22, 2016 (“Ruling”).

I. INTRODUCTION.

CESA appreciates the opportunity to submit reply comments on the topics of station power and multiple-use applications (“MUA”) of energy storage systems. CESA’s takeaway from reviewing opening comments by parties is that there is a common understanding of the distribution system services that energy storage systems can provide today and in the future but

¹ 1 Energy Systems Inc., Adara Power, Advanced Microgrid Solutions, AES Energy Storage, Amber Kinetics, Aquion Energy, Bright Energy Storage Technologies, Brookfield, California Environmental Associates, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, Electric Motor Werks, Inc., ElectriQ Power, ELSYS Inc., Enphase Energy, GE Energy Storage, Geli, Gordon & Rees, Green Charge Networks, Greensmith Energy, Gridscape Solutions, Gridtential Energy, Inc., Hitachi Chemical Co., Ice Energy, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Invenergy LLC, Johnson Controls, K&L Gates, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, NEC Energy Solutions, Inc., NextEra Energy Resources, NGK Insulators, Ltd., NRG Energy LLC, OutBack Power Technologies, Parker Hannifin Corporation, Powertree Services Inc., Qnovu, Recurrent Energy, RES Americas Inc., Saft America Inc., Samsung SDI, Sharp Electronics Corporation, Skylar Capital Management, SolarCity, Sovereign Energy, Stem, SunPower Corporation, Sunrun, Swell Energy, Trina Energy Storage, Tri-Technic, UniEnergy Technologies, Wellhead Electric, Younicos. 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>).

that several areas of difference may exist between the investor-owned utilities (“IOU”) and many other parties on the issue of double payments and dispatch priority concern for MUAs, as well as on station power load categorizations and rate treatment. CESA also finds that interconnection processes for energy storage resources in select applications or MUAs require Commission clarification and direction. CESA herein focuses on addressing these fundamental differences and areas for clarification.

II. DISPATCH PRIORITY CONCERNS FOR MULTIPLE-USE APPLICATIONS INVOLVING DISTRIBUTION RELIABILITY SERVICES CAN BE MITIGATED WITH THE PROPER INCENTIVES AND PENALTIES.

The IOUs expressed concerns over the provision of distribution reliability services by multiple-use energy storage resources when simultaneously providing wholesale market services or customer services. Southern California Edison Company (“SCE”) identified how there are no rules or guidance exists for such MUAs and how valuation of distribution grid services are needed,² while San Diego Gas and Electric Company (“SDG&E”) states that no rules exist on “how a resource might be ‘shared’ by these two historically separate entities.”³ SCE proposes that future interconnection agreements and contracts could set specific requirements to govern priority and control.⁴ Pacific Gas and Electric Company (“PG&E”), meanwhile, recommends the Commission place similar limitations on these multiple-use energy storage resources to ensure that distribution reliability obligations are met.⁵

CESA agrees that distribution reliability obligations cannot be compromised but disagrees with the proposed solutions of the IOUs. In particular, SDG&E’s point that “unlike wholesale market services, there is no deep or liquid pool of backup resources on the distribution system to cover a resource ignoring a dispatch instruction” appropriately frames the important roles associated with distribution system services.⁶ CESA agrees that distribution system services and system reliability are critical and should not be unreasonably compromised.

The challenge with MUAs in distribution system service roles, however, is about how to appropriately respond to these obligations. Utility Distribution System measures of System Average Interruption Duration Index (“SAIDI”) and System Average Interruption Frequency

² SCE Comments, pp. 6-7.

³ SDG&E Comments, p. 11.

⁴ SCE Comments, p. 12.

⁵ PG&E Comments, p. 10.

⁶ SDG&E Comments, p. 15.

Index (“SAIFI”) indicate that distribution system services can be disrupted. Measures of SAIDI and SAIFI can inform the bonus pools for California’s IOUs, highlighting how IOUs are financially incentivized to achieve reliability-based goals. Accordingly, CESA sees strong merit to points made by SolarCity and Stem that financial incentives and penalties should guide dispatch prioritization rather than explicit operational restrictions. With penalties for not meeting the distribution reliability obligation, energy storage providers can optimize their dispatch to ensure sufficient capacity is available to meet distribution grid roles. Moreover, SAIDI and SAIFI reflect how utility-managed distribution systems are fallible and how assumptions of 100% perfect performance are unachievable in today’s grid.

To effectuate this financial incentive structure, CESA recommends that standard products, incentives, and performance requirements be systematically developed. Such market incentives would allow for innovative MUAs and optimize grid resource utilization while still promoting reliable distribution system operations. CESA views on this topic, however, remain flexible. Certain situations may exist where contractual guarantees for service delivery (*e.g.*, state of charge for battery energy storage) could be more effective. Importantly, while pursuing reliable and workable solutions, CESA recommends that distribution system approaches ensure fair valuations for MUAs through frameworks that drive innovation.

CESA also finds SCE’s characterization of two reliability services being in conflict to be somewhat off point. SCE cites an example of an energy storage resource providing distribution deferral to a distribution utility and also having a must-offer obligation (“MOO”) in the CAISO wholesale market as a Resource Adequacy (“RA”) resource. Although RA resources are procured to ensure sufficient capacity to supply the electricity grid, the possibility for RA resources to fail in their delivery at any given instance is embedded in RA performance rules and the RA Availability Incentive Mechanism (“RAAIM”). Such failures (*e.g.*, unplanned outages) are normal and, as SDG&E states, may “not materially affect the system grid reliability due to the liquid pool of backup resources”.⁷ The CAISO’s RAAIM can penalize resources that materially fail in meeting RA obligations. Further illustrating how daily reliability decisions work off of economic signals, the CAISO’s market optimization also uses ‘penalty parameters’ to indicate when select aspects of grid operations and reliability become costly enough to become deprioritized in market runs. While CAISO consistently prioritizes system reliability, their market design highlights how tiered market signals can inform grid operations.

⁷ SDG&E Comments, p. 15.

As energy storage, third party, and DER roles expand in distribution system services, the Commission can develop structures to match service priorities with markets. Outright limitations of multiple services, however, would merely perpetuate the current constructs that may lead to sub-optimal utilization of energy storage resources, especially if the conflicting signals occur infrequently.

Energy storage providers will be able to better manage these conflicts if greater transparency is provided on the typical dispatch windows for each different service. Such transparency would allow third-party providers to foresee dispatch conflicts and operate energy storage systems accordingly, or possibly avoid certain use cases altogether if the conflicting dispatch instructions occur frequently enough that the penalties for one or more services outweigh the compensation for the other ‘higher-priority’ services, or if the MUA is infeasible.

III. MARKET PRICES, AND NOT CONTRACTS OR RULES, SHOULD GUIDE RESOLUTION OF ANY DOUBLE PAYMENT ISSUES.

Many parties seem to agree on some of the key principles of what constitutes double payment for services versus what does not. SCE correctly identifies that “if two services represent distinct system needs, it would be appropriate to compensate for both services.”⁸ The Utility Reform Network (“TURN”) also rightly adds that payments for multiple services are allowable as long as the single action provides services to two different markets.⁹ CESA agrees with both SCE’s and SDG&E’s point that if retail service behavior is incorporated in prices or load forecasts (*e.g.*, by providing permanent load shifting), then it should be only paid for one service.¹⁰ By the same token, incremental dispatches not otherwise represented in load procurement, energy storage dispatches should be compensated fully for market services. Likewise, rules should allow for available resources to offer market services, *e.g.* if an energy storage device is not being used for demand charge avoidance due to a factory shut-down, the grid may still benefit from services from that device. This approach will improve system performance and supply.

Several areas of disagreement, however, exist regarding what constitutes double payments and how best to resolve double payment situations. PG&E may oversimplify the

⁸ SCE Comments, p. 9.

⁹ TURN Comments, p. 3.

¹⁰ SCE Comments, p. 9, SDG&E Comments, p. 13.

matter in saying that multiple-use energy storage resources “should not receive additional compensation for actions they would have taken regardless of the additional compensation.”¹¹ CESA believes that this case only exists if the ‘action taken regardless of compensation’ is not already priced into market outcomes, system operations, etc. Presumably, PG&E is referring to customer-sided dispatches, in which an action is already reflected in the utilities’ procurement for expected load. CESA detailed treatments of this MUA subset in its Opening Comments.

If it can be demonstrated that the two services from the same single action are incremental and distinct, however, then they should both be separately compensated. SolarCity illuminates this point by stating that services that are independently priced constitute incremental and distinct services that do not represent a double payment situation,¹² unlike the permanent load shifting examples highlighted by SCE and SDG&E and mentioned above.

CESA disagrees with TURN in its suggestion to manage double payment concerns through contracts – *e.g.*, power purchase agreements that preclude sharing of services from a single energy storage asset with other markets and market participation for certain markets in exchange for fixed payments.¹³ CESA believes that such restrictions could reduce energy storage resources to single-use assets, and are not necessary to measure and settle double payment issues. Once each of the grid and customer services is specifically defined, the Commission can determine which MUAs represent two incremental services and create mechanisms to avoid inappropriate payments in double payment situations.

IV. A SUCCESSOR ENERGY STORAGE INTERCONNECTION PROCEEDING IS NEEDED GIVEN THE NUMEROUS UNCERTAINTIES AND OPEN QUESTIONS PRESENTED BY MULTIPLE-USE APPLICATIONS AT ALL LEVELS OF SCALE.

A number of parties raised questions regarding the interconnection processes for MUAs. Since the five MUAs considered thus far in this proceeding span traditional jurisdictional divides, confusion exists regarding when Commission-jurisdictional Rule 21 versus FERC-jurisdictional Wholesale Distribution Access Tariff (“WDAT”) interconnections are required. While understandable, CESA believes the triggers for WDAT should hinge on the physical export of electrons. For NEM-plus-energy storage installations, the WDAT would not be triggered unless operational plans indicate any applicable NEM export limit is exceeded.

¹¹ PG&E Comments, p. 12.

¹² SolarCity Comments, p. 9.

¹³ TURN Comments, pp. 4, 6.

The WDAT interconnection and related studies apply for many energy storage applications and may be necessary for adequate treatment of these applications with respect to system planning, export to and through the distribution system, RA deliverability, system upgrades, safety, and other factors. For other applications, however, these interconnection requirements can and should be addressed through the Rule 21 process or through a process less rigorous than the full WDAT process.

For behind the meter (“BTM”) resources providing wholesale grid services in particular, PG&E notes that “groups of devices reacting in unison to wholesale market signals create new system conditions, which may break the assumptions of prior studies for individual devices, potentially leading to new system impacts that may need mitigation.”¹⁴ SDG&E comments to the same effect in stating that the collective impacts of aggregated energy storage resources may be materially different from the individual impacts of each sub-resource within the aggregation.¹⁵ CESA agrees with PG&E and SDG&E that there are potentially new system impacts that must be addressed with the utilities or the CAISO, but cautions against a resolution that would require duplicative or onerous study processes, potentially restricting BTM energy storage projects.

BTM non-exporting, non-NEM-eligible resources or BTM NEM-eligible resources interconnect under Rule 21 where distribution system effects are already studied. To address planning or other concerns not addressed in those studies yet not requiring the full suite of reviews and assessments associated with the WDAT, the Commission should consider WDAT ‘lite’ or WDAT ‘fast track’ processes where appropriate. In practice, the Commission should also recognize that it is sometimes not possible to study interconnection impacts of aggregations all at once because different sites interconnect at different times and each site does not always plan to be part of an aggregation from the outset. To develop appropriate interconnection approaches, the IOUs should clarify the specific uses of each study or related process. Separating out the discrete aspects and outcomes for interconnection studies or processes will better inform the Commission and stakeholders as to the correct interconnection regime.

Importantly, NRG, Stem, and SCE raise outstanding interconnection questions related to energy storage resources that should be addressed. NRG seeks further guidance on the interconnection process for energy storage resources added to a renewable generator,¹⁶ while

¹⁴ PG&E Comments, pp. 14-15.

¹⁵ SDG&E Comments, p. 14.

¹⁶ NRG Comments, pp. 5-6.

Stem is concerned that energy storage charging in response to a CAISO signal could trigger potential upgrade costs under Rule 21 due to local load impacts of the response.¹⁷ Related to Stem's questions, SCE states that Rule 15 and 16 retail allowances for MUAs are not appropriate for load impacts related to charging behavior in response to wholesale market participation.¹⁸ CESA agrees that it would not be appropriate for retail customers to bear the cost of distribution upgrades for energy storage charging in response to wholesale market signals that does not directly serve the retail customers, although CESA the degree to which these Rule 15 and 16 retail allowances would be appropriate since retail customers do receive some benefits in MUAs. CESA assumes most PDR charging would be addressed through retail billing mechanisms and not require duplicative or new cost-allocations. Commission assessments or resolution plans for these topics should be part of this proceeding.

CESA therefore agrees with the Green Power Institute ("GPI") that the Rule 21 reform proceeding (R.11-09-011) be the subject of a successor proceeding with an updated scope to address numerous open interconnection issues, including those related to MUAs.¹⁹ Unduly high interconnection costs and un-needed lengthy interconnection processes present unreasonable barriers to enabling MUAs using energy storage resources. Eliminating duplicative study processes, creating transitions between Rule 21 and WDAT processes, and streamlining interconnection review through standardized configurations are all outcomes that should be pursued in a successor retail-level interconnection proceeding.

V. ENERGY STORAGE SHOULD NOT BE SUBJECT TO DISCRIMINATORY TREATMENT OF ITS STATION LOADS.

In its Opening Comments, CESA recommended that issues related to station power for energy storage resources to be resolved at minimum without discrimination as compared to conventional generation by applying netting rules for load against generation outputs. Similarly, Calpine Corporation ("Calpine") and the Independent Energy Producers Association ("IEP") commented on the need to ensure consistent application of wholesale versus retail rate treatment for different loads. SDG&E agrees with Calpine and IEP in opposing "resource-specific approaches to station power or end-use consumption."²⁰

¹⁷ Stem Comments, p. 14.

¹⁸ SCE Comments, p. 8.

¹⁹ Green Power Institute Comments, p. 12.

²⁰ SDG&E Comments, p. 5.

If energy storage resources are not able to receive wholesale treatment for directly-related or auxiliary loads, these resources will continue to be unable to play on the same level as conventional generation resources. CESA finds PG&E's and SCE's categorization of energy storage loads to be an incorrect description of the function and role of these loads in ensuring safe and optimal operation of energy storage systems. Currently, the IOUs' *pro forma* energy storage contracts direct this disadvantageous treatment. SCE, for example, essentially mirrors language and terms from its *pro forma* contracts in defining 'delivered end use load "as the final delivery of electrical power that is to be used onsite and is not to be resold," which includes pumping, heating, cooling and inverter idle losses.²¹ SCE also adds that these station loads (which in CESA's views are *not* station loads) should be separately metered, adding equipment costs to an already unfair rate treatment for auxiliary loads.²² PG&E categorizes loads associated with energy storage operations in a similar way.²³

SCE argues that its proposed station load treatment should be extended to when energy storage systems are idling and in standby mode. SCE points to pumped hydro units that according to the CAISO tariff are "associated with motoring a hydroelectric generating unit to keep the unit synchronized at zero real power output is station load."²⁴ However, this is inconsistent with how conventional generation is treated when it is idle – *i.e.*, netting of loads is permitted during this state because conventional generators usually have a Pmin greater than zero to be ready to deliver energy as needed. In the interest of consistency, energy storage resources should be given the same auxiliary load treatment as conventional generation. The utility reference to pumped hydro should also be informed by the role of utility-ownership in many pump hydro units. As discussed, utility bidding and treatments of UOG needs clarification and interpretation in case utilities are leveraging their unique role to pass through costs by means of balancing account mechanisms. . At minimum, energy storage resources that secure an award for spinning reserve, which has a 10-minute response time requirement, should be netted when idle should receive equivalent treatment. SCE's use of pumped hydro as an example only highlights how pumped hydro in its idle state should be treated in a manner comparable to conventional generation, rather than to justify why energy storage should not be subject to discrimination.

²¹ SCE Comments, pp. 14-16.

²² *Ibid.*, p. 16.

²³ PG&E Comments, pp. 17-18.

²⁴ SCE Comments, p. 16.

CESA supports wholesale rate treatment of net energy storage loads during charging, discharging, and idling as proposed by LS Power and NRG.²⁵ Notably, CESA is pleased to see that at least one of the IOUs (SDG&E) is aligned with CESA, LS Power, and NRG in properly accounting for station loads for energy storage systems.²⁶ SCE's example of the station power treatment of pumped hydro supports CESA's categorization of station loads when energy storage is charging. The energy consumed from pumps in these pumped hydro plants are explicitly not defined as 'station power' and are treated at wholesale rates. These pump loads cannot be separately metered and are therefore netted during charge. By comparison, more efficient energy storage devices are at risk of having these auxiliary loads metered at retail rates. Such discriminatory rate treatment may distort the market in favor of less efficient technologies.

Finally, charging of energy storage at retail rates for station load while the resource is active in the wholesale market (whether charging, discharging, or providing reserves to the CAISO) only serves to increase the price that the energy storage resource would need to receive in order to be in the market. The net result would be higher prices paid to all resources that clear the market when energy storage is the marginal resource. Such higher prices are not in the interest of ratepayers as California moves to achieve its statewide energy storage procurement goals.

VI. ENERGY STORAGE IS A NEW ASSET CLASS THAT IS NOT EXACTLY COMPARABLE TO CONVENTIONAL GENERATION.

In its Opening Comments, CESA proposed an alternative path recognizes energy storage as a separate asset class that may warrant differentiated station power treatment for its various loads. This would allow energy storage providers to voluntarily meter their auxiliary loads rather than using netting to account for station power. Powertree Services provides a comprehensive argument for why energy storage is different from conventional generation²⁷ and how it is not "comparable" to conventional generation as IEP and Calpine suggest in their comments.²⁸ CESA supports Powertree's proposal to measure energy storage in isolation so that all flows into and out of the energy storage device are independently measured from other site activities.

²⁵ LS Power Comments, p. 4; NRG Comments, pp. 11-12.

²⁶ SDG&E Comments, p. 3.

²⁷ Powertree Services Comments, p. 2.

²⁸ Calpine Comments, p. 3; IEP Comments, p. 3.

Understandably, IEP, Calpine, and SDG&E believe it will be difficult to categorize and meter different energy storage loads given the diversity of storage technologies and cautions against this approach because it may favor energy storage technologies over generation resources.²⁹ However, CESA believes that this option should be preserved for energy storage providers, given the unique directives of R.10-12-007. Importantly, the Commission has jurisdiction over rate design and can direct the treatment of such rates. Ample precedent exists for where and how rate designs can be used to achieve or support Commission or State policy preferences. Directing rate treatments for storage in R.15-03-011 is well within its scope and Commission jurisdiction.

VII. CONCLUSION.

CESA appreciates the opportunity to submit these reply comments on the May 2 and May 3, 2016 Workshops and the Issue Paper. CESA looks forward to working with the Commission and the CAISO in resolving these important station power and multiple-use application issues.

Respectfully submitted,



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²⁹ IEP Comments, p. 4 ; Calpine Comments, p. 5 ; SDG&E Comments, p. 4.