

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

Application of San Diego Gas & Electric Company (U902M) for Approval of its Energy Storage Procurement Framework and Program As Required by Decision 13-10-040.

Application 14-02-006
(Filed February 28, 2014)

Application of Pacific Gas and Electric Company (U39E) for Authorization to Procure Energy Storage Systems during the 2014 Biennial Procurement Period Pursuant to Decision 13-10-040.

Application 14-02-007
(Filed February 28, 2014)

Application of Southern California Edison Company (U338E) for Approval of Its 2014 Energy Storage Procurement Plan.

Application 14-02-009
(Filed February 28, 2014)

**RESPONSE OF CALIFORNIA ENERGY STORAGE ALLIANCE
TO CONSOLIDATED APPLICATIONS**

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In accordance with Rule 2.6 of the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), and the Administrative *Law Judge’s Ruling Consolidating Proceedings, Authorizing Extension of Time to File Comments on Applications, and Providing Notice of Prehearing Conference*, of Administrative Law Judge Colette Kersten, issued on March 26, 2014, the California Energy Storage Alliance (“CESA”)¹ hereby submits

¹ The California Energy Storage Alliance consists of 1 Energy Systems, A123 Energy Solutions, AES Energy Storage, American Vanadium, Aquion Energy, Beacon Power, Bosch Energy Storage Solutions, Bright Energy Storage, Brookfield Renewable Energy Group, CALMAC, ChargePoint, Clean Energy Systems Inc., CODA Energy, Customized Energy Solutions, DN Tanks, Duke Energy, Eagle Crest Energy, EaglePicher, East Penn Manufacturing Co., Ecoult, EDF Renewable Energy, EnerSys, EnerVault, EVGrid, FAFCO Thermal Storage Systems, FIAMM Group, FIAMM Energy Storage Solutions, Flextronics, Foresight Renewable Systems, GE Energy Storage, Green Charge Networks, Greensmith Energy Management Systems, Gridtential Energy, Halotechnics, Hitachi Chemical Co. America, Hydrogenics, Ice Energy, Imergy Power Systems, ImMODo Energy Services, Innovation Core SEI, Invenergy, K&L Gates LLP, KYOCERA Solar, LightSail Energy, LG Chem Ltd., NextEra Energy Resources, NRG Energy, OCI Company Ltd., OutBack Power Technologies, Panasonic, Parker Hannifin, PDE Total Energy Solutions, Powertree Services, Primus Power, RES Americas, Rosendin Electric, S&C Electric Co., Saft America, Samsung SDI, SeaWave Battery Inc., Sharp Labs of America, Silent Power, SolarCity, Sovereign Energy Storage LLC, Stem, Stoel Rives LLP, Sumitomo Corporation of America, TAS Energy, Tri-Technic, UniEnergy Technologies, Xtreme Power, and Wellhead Electric Co. 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>.

this response to the above-captioned consolidated Application Numbers A.14-02-006, A.14-02-007, and A.14-02-009 (collectively “Applications”).

I. INTRODUCTION.

CESA supports the Applications and commends Southern California Edison Company (SCE”), Pacific Gas and Electric Company (“PG&E”) and San Diego Gas & Electric Company (“SDG&E”) (collectively “Utilities”), as well the Commission’s Energy Division Staff for the diligent efforts and timely completion and filing of the Applications. CESA’s response to the Applications provides a few important comments on the Applications for consideration by the Commission described in the discussion below.

II. BACKGROUND.

On December 16, 2010, the Commission opened R.10-12-007² to implement the provisions of Assembly Bill 2514,³ which required the Commission to determine appropriate targets, if any, for each load-serving entity to procure viable and cost-effective energy storage systems by October of 2013. On October 21, 2013, the Commission issued D.13-10-040, which adopted procurement targets, and directed the Utilities to file procurement applications containing proposals for energy storage procurement, with specific requirements, explanations, descriptions, and methodologies for approval by the Commission (“Storage Framework Decision”).⁴ On February 28, 2014, the Utilities filed the Applications pursuant to the Commission’s direction provided in the Storage Framework Decision.

² Stats. 2010, Ch. 469, Pub. Util. Code Section 2836 *et seq.*

³ *Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement Targets for Viable and Cost-Effective Energy Storage Systems*, filed December 16, 2010.

⁴ *Decision Adopting Energy Storage Procurement Framework and Design Program*, issued October 17, 2013 (“Storage Framework Decision”).

On March 14, 2014, the Commission's Energy Division staff sponsored a Workshop to provide an opportunity for stakeholders to discuss the Applications with the Utilities and the staff. CESA's comments are informed by the discussion at the Workshop, including the presentation materials published on the Commission's web site, and are based on the criteria set forth in Appendix A to the Storage Framework Decision, Procurement Application Section 3(d), (pp. 6-9).

III. COMMENTS ON ISSUES COMMON TO ALL OF THE APPLICATIONS.

A. Distribution Asset Ownership Preference Requires Clarity Regarding Utility 50% Ownership Limitations Across all Three Grid Domains.

Each of the Applications states that the intention of the utility is to own 100% of distribution system assets if they are to be used for system reliability purposes. CESA recommends that the procurement plans should be further clarified to explicitly allow for alternate ownership models to exist for distribution interconnected assets, providing other services, particularly in light of the Commission's requirement that Utility ownership of assets procured pursuant to the Storage Framework Decision in each grid domain may not be greater than 50%. The Storage Framework Decision provides:

“... [W]e find that the utility ownership of storage projects should not exceed 50 percent of all storage across all three grid domains at this time. In other words, utilities may own no more than half of all of the storage projects they propose to count toward the MW target, regardless of whether it is interconnected at the transmission or distribution level, or on the customer side of the meter.” (p. 45).⁵

⁵ The Storage Framework Decision's Conclusion of Law Number 30 also provides: “It is premature to allow 100% utility ownership in transmission and distribution-connected storage until it is determined what narrow applications are best suited for utility ownership versus third-party ownership.” (p. 75). If 100% Utility-owned energy storage assets are proposed to be procured outside of the Storage Framework or as authorized in other Commission proceedings, the Utilities should explain why such a procurement is justified on a case-by-case basis without re-litigating the Commission's express asset ownership preference in each instance.

B. Near Term Procurement Plans for Customer Side Projects are Needed.

There are many advantages to customer-sited energy storage systems, whether located behind the meter, or utilized as grid interactive resources capable of providing services both in front of and behind the meter.⁶ Located near or at load, these systems have the ability to provide a truly expansive set of services, the totality of which makes customer-sited storage systems uniquely versatile. These include behind the meter services for the customer and the utility, such as peak demand reduction and demand response. Additionally, a distributed portfolio of customer-sited energy storage devices has the capacity to provide a wide variety of grid reliability services such as voltage support, frequency regulation, peak shaving, and ramp rate control.

Given the vast potential of customer-sited energy storage, and ongoing and anticipated deployment of many customer side storage projects at commercial and residential locations, CESA recommends that the Utilities' applications be modified to include efforts to procure customer-sited energy storage projects smaller than 10 kW. The Utilities' consideration of customer-sited energy storage systems could include pilot projects that prove out the technical capability for customer-sited energy storage solutions to be effectively called-upon and/or dispatched by grid operators to provide grid reliability services. Utilities could explore these capabilities of customer-sited systems on both an individual and aggregate basis, as well as under various ownership or contractual arrangements, and at a scale commensurate with any California Independent System Operator ("CAISO") minimum capacity thresholds for market participation (*e.g.* 500 kW). Such efforts would provide an invaluable platform to both assess the technical capabilities of smaller customer-sited energy storage systems, as well as provide a way to begin building the institutional capabilities and infrastructure necessary to effectively deploy and

⁶ The Storage Framework Decision discusses only behind-the-meter projects, but "customer sited" need not be limited in concept by the exact location of the utility meter.

utilize customer-sited systems to provide grid reliability services on a large scale. Furthermore, these pilots could be used to help inform program design under the Self Generation Incentive Program (“SGIP”) as it applies to energy storage.

In addition to pursuing these procurement efforts, the Utilities should also work to identify key market and regulatory barriers that currently prevent customer-sited resources, on both sides of the meter, from being able to effectively participate in the wholesale market, as well as steps that can be undertaken to resolve those challenges. The specific use cases or wholesale market opportunities that this effort could include, at a minimum, qualification for “deliverability”, voltage support, frequency regulation, and resource adequacy (both for peaking needs as well to meet anticipated system ramping needs). While these barriers are likely to fall under the jurisdiction of a variety of different authorities, including the Commission, the CAISO and the Federal Energy Regulatory Commission, as well as different proceedings that they manage, this process could provide a useful roadmap insofar as it would yield a comprehensive view of where engagement needs to occur in order to effectively address the regulatory and technical barriers that currently prevent customer-sited energy storage solutions from being utilized to their full potential.

CESA submits that these activities will be absolutely essential in laying the groundwork for achieving the customer-sited energy storage goals established in the Storage Framework Decision, and unlocking the full potential of customer-sited energy storage systems in the medium and longer term. Given the long lead times required to make changes to regulatory regimes that impact wholesale market access, it is important that the Utilities initiate these efforts today and with an appropriate level of urgency.

Finally, CESA notes that while the Utilities seek to claim existing SGIP projects and plan on relying substantially on the SGIP to meet their customer side storage goals, interconnection

for SGIP-funded projects remains fraught, with substantial costs as well as metering requirements that for some projects are technically infeasible. Many of these issues are being addressed in R.12-11-005 pursuant to the NEM ACR, however, the fact that the Utilities are planning on relying substantially, if not exclusively, on the SGIP to achieve their customer domain storage targets underscores the critical need to resolve those issues in a timely fashion.

C. Consistent Valuation of GHG Reduction Benefits is Needed.

None of the Applications adequately address greenhouse gas (“GHG”) reduction benefits. As one example, SCE asserts that the benefits of energy storage include resource adequacy (“RA”) value, day-ahead and real-time energy market value, ancillary services market value, and grid upgrade deferral value – but not GHG reduction (Testimony, p. 36). However, Appendix A of the Storage Framework Decision *requires* valuation of “GHG emissions-reducing attributes, such as permanent load shifting away from greenhouse gas emitting fossil generation or reduction of demand for peak electrical generation using fossil fuels;” (p. 8). CESA recommends that all of the Applications should be revised to include a much more robust treatment of the importance of GHG remission reduction benefits in the valuation process.⁷ This topic may be considered as a candidate for a workshop conducted by the Commission’s Energy Division in the near future.

D. Valuation of System Benefits Should be Consistently Applied by the Utilities and Include Benefits Associated With Reduced Water use and California Job Creation.

CESA applauds PG&E’s effort to include system level benefits of energy storage, and recommends that all Utility Applications consider the system-wide benefits of energy storage deployment in a consistent manner. For example, an NREL study using PLEXOS to evaluate the

⁷ More broadly, CESA also recommends that the valuation criteria discussed in the Applications should be carefully compared to those set forth in the Common Evaluation Methodology (“CEM”) to ensure completeness and internal consistency, and emphasize the primacy of the CEM.

operational benefits of energy storage in the Western United States found which found that, “[T]he net revenue of the storage plant in a market setting is only about 50% of the reduction in operational costs produced when adding storage to the base system.”⁸ The reason for this was due to the ability of “flexible energy storage to avoid unit starts.” Further, the study concluded that “[t]he ability of the unit commitment model to use storage to optimize unit starts is an important consideration not captured by a market-price-based approach.” The procurement evaluation methodology proposed by the Utilities follows the same model as traditional procurement valuation, so it would follow that the proposed approach would only capture the 50% of the total benefits from the market. It will not fully account for the full benefits of energy storage to California ratepayers because it is focused exclusively on individual resource-level market revenues. Only a system-level view can properly assess the full benefits of energy storage projects.

Furthermore, using fossil fuel powered generation consumes large quantities of water. Cooling for power plants represents approximately 40% of freshwater withdrawals (defined as the total amount of water removed from a source) and approximately 3% of total domestic water

⁸ *The Value of Energy Storage for Grid Applications*, National Renewable Energy Laboratory (NREL) Paul Denholm, Jennie Jorgenson, Marissa Hummon, Thomas Jenkin and David Palchak Technical report: NREL/TP-6A20-58465 May 2013. See, pp. 16-17 which noted: “storage output does not exactly match periods of high price. This is due to a variety of factors but mostly due to the fact that PLEXOS is not optimizing the operation of the storage plant in isolation. The model considers the interaction of the storage plant with the rest of the system and often uses storage to reduce the number of plant starts, both during off-peak periods, by increasing load and reducing the frequency of plant shut downs, and during on-peak periods, by reducing starts of peaking generators. During some periods, storage plant operation appears to coincide with periods where the price is not necessarily at its peak, but is increasing, indicating periods where additional thermal plants are being started. The analysis further showed that overall, the difference in production cost between these two cases represents an annual operational value of storage of about \$10.5 million. Of this value, about half of the total difference is in the fuel costs, with the other half derived from the ability of flexible energy storage to avoid unit starts. The ability of the unit commitment model to use storage to optimize unit starts is an important consideration not captured by a market-price-based approach.

consumption (portion of water that is not returned to source).⁹ As a result, “thermoelectric power plants are vulnerable to water shortages that can occur during drought.” Given California’s drought conditions, energy storage’s ability to reduce thermoelectric power plant water usage, the reduced water usage *and* associated energy and other costs of avoiding the movement of that volume of water should additionally be taken into consideration as a key system benefit.

The Storage Framework Decision intends to benefit California ratepayers by optimizing the grid, contributing to reliability needs, integrating renewable energy, and reducing greenhouse gas emissions.¹⁰ The Storage Framework Decision also anticipates regularly evaluating and adjusting the storage procurement targets it initially sets, with such re-evaluations and adjustments to be based on market experience. In further support of the goal of “optimizing the grid,” and to otherwise fully account for the benefits of energy storage to California ratepayers, one of the future policy goals of the Commission should include economic impact to California resulting from AB 2514 and energy storage procurement resulting from the Storage Framework Decision. The positive impact on California-based employment can be measured at each of the regularly planned evaluations. CESA strongly recommends that the Commission direct its Energy Division to conduct a workshop on this very important topic in the near future.

E. Greater Clarity on Intended Types of Storage Uses and Use Cases Would Enable Efficient and Useful RFO Bids.

CES applauds the acknowledgement by each of the Utilities that the Storage Framework Decision requires a portfolio of use cases to be procured to comply with AB 2514. However,

⁹ *Changing the Spatial Location of Electricity Generation to Increase Water Availability in areas with drought: a feasibility study and quantification of air quality impacts in Texas*, Environmental Research Letters, Volume 8, Number 3, February 5, 2013. This study found that “Power plant cooling represents a large portion of freshwater withdrawals in the United States, and shifting where electricity generation occurs can allow the grid to act as a virtual water pipeline, increasing water availability in regions with drought by reducing water consumption and withdrawals for power generation. The full article can be found at: <http://iopscience.iop.org/1748-9326/8/3/035029/>

¹⁰ Storage Framework Decision, pp. 9-10.

none of the Applications adequately address intended uses of energy storage nor specify the intended “use cases,” as required in Appendix A, Section 3(d) of the Storage Framework Decision. Under the Storage Framework Decision, each IOU is required to “file a procurement application containing proposals for energy storage procurement, as needed to *address specifics applicable* to different grid domains, *use cases*, or ownership scenario.” The procurement applications are required to include, at a minimum:

- Reference to 1) needs study by the California Independent System Operator for the IOU’s system, local, and flexible needs, if available, or 2) upgrade needs identified in the IOU’s transmission or distribution planning studies;

* * *

- An explanation of the type of storage resources and the associated MW quantities the IOU intends to procure, categorized by grid domains and use cases;

* * *

- Operational requirements, to be applied either to all projects or separately with respect to transmission, distribution, and customer-sited storage. The requirements shall include, at a minimum:
 - Grid optimization services specific to the operational needs of the load-serving entity, such as any service intended to *contribute to reliability needs, or defer transmission and distribution upgrade investments* [Emphasis added];
 - Attributes or services intended to integrate renewable energy.¹¹

Without inclusion of the use cases for which the Utilities intend to procure, sufficient detail on the operations requirements, intended effects on reliability, GHG-reducing attributes, and an explanation of how such procurement assures the goals of the renewables portfolio standard (“RPS”), and other intended positive benefits, it is difficult for CESA to comment on the adequacy of the Applications to comply completely with the Storage Framework Decision and meet the intent of AB 2514. The Commission should expressly require that each utility submit at least a “straw man” of use cases, which could be analyzed, tested and refined by

¹¹ Storage Framework Decision, Appendix A, Section 3(d), p.8 (emphasis added).

stakeholders, and should further require the Utilities to update this initial starting position a reasonable time (perhaps 60-90 days) prior to issuing the RFOs that will eventually be approved pursuant to the Applications. CESA understands that at this early stage in the process, precise use cases may not be fully known. However, even “educated guesses” based on existing modeling and demonstration projects to date would be very helpful to energy storage industry stakeholders, providing valuable guidance and input to inform potential bidders in advance of the December RFOs. Further, it should be noted that the Storage Framework Decision, as Commission-overseen procurement program, is expressly intended to be an iterative process, during which the program will be refined based upon knowledge gained during (and, indeed, outside) each required solicitation. The Applications represent the first step in that process and as utilities make progress toward developing their RFO, greater disclosure with respect to desired use cases will put the initial procurement in the best position to succeed (and to be built upon in later solicitations).

“Straw man” use case scenarios can be based on recent CAISO-authored reports, and other material in the public domain which includes forecasts for over-generation prior to 2020 requiring more flexible resources in the near and medium term, including energy storage. The CAISO is now reporting the net demand of its system daily in real-time on its website.¹² A review of the recent regulatory developments shows that the CAISO’s “duck curve” quite accurately predicts system performance over the last several weeks of 2014. Solar power generation increases in the spring, combining with wind, to offer hours of daily midday generation that could be stored to support the regular six to seven GW ramp over approximately

¹² What some might term “The Daily Duck” is now available as the third chart updated every 10 minutes at this link: <http://www.caiso.com/Pages/TodaysOutlook.aspx#Renewables>.

three to four hours between approximately 4:00 and 8:00 PM.¹³ Both the CAISO and NERC have recognized the value of energy storage, consistent with AB 2514 and the Storage Framework Decision, to address the full range of issues associated with the success of the changing complexion of the energy resource mix in California. Significant resources have been expended developing all of the recent reports, including work directed at profiling how energy storage would ameliorate these issues. This work can be leveraged in offering initial use cases. In any event, in order to determine whether or not the Utilities' 2014 RFOs will address all of these issues, their procurement plans should include use cases, including adequate initial details as to how they will diversify their procurements across use cases.

F. Greater clarity on Defining “Commercial Viability” is Needed to Encourage Market Transformation.

CESA applauds the Storage Framework Decision and the Utilities' stated goal of using the Applications for market transformation purposes. Public Utilities Code §2836(a) provides that the Commission is permitted to “consider a variety of possible policies to encourage the cost-effective deployment of storage systems.” The Storage Framework Decision appropriately emphasized the importance of “fulfillment of market transformation goals.”¹⁴ Consistent with this market transformation goal, the Storage Framework Decision did not permit pumped hydro projects greater than 50 MW to count towards the procurement targets it set because such projects “would dwarf other smaller, emerging technologies and could inhibit the fulfillment of market transformation goals.”¹⁵ The Storage Framework Decision identifies barriers it wishes to overcome in the adoption of emerging storage technologies, including “[l]ack of commercial

¹³ The history of The Daily Duck is available in the Daily Renewables Watch on the bottom of the second page, as “Hourly Average Net Load” at this link: <http://www.caiso.com/green/renewableswatch.html>

¹⁴ Storage Framework Decision, p. 34.

¹⁵ *Id.*, p. 72 (Ordering Paragraph 15).

operating experience,” which the first procurement could address. Further, the Decision states the intent to regularly evaluate and adjust targets based on market experience.

The Commission has also recognized, and the Utilities should be required to recognize, the variation in commercial experience between technologies reflecting both technology maturity and scale. The market transformation goal of this program is evidenced in the sequence of procurements which can serve as a set of stepping stones for drawing new and emerging technologies into commercial delivery.

To further define eligibility to participate, and to encourage diversity of potential solutions procured, CESA respectfully suggests that criteria for commercial viability be clarified to include any energy storage technology with reasonable grid connected demonstration/field performance data. This will broaden the set of eligible technologies to include many innovative new energy storage technologies that have proven performance, yet may not have direct experience in the specific application being procured. For example, the Applications could identify mechanisms to procure technologies that have demonstrated technical readiness through demonstrations such as EPIC or DOE ARRA and can reasonably foresee technical success at utility scale, but that may not yet have demonstrated “bankability.” The market has a broad set of technologies at various states of commercial readiness that could meaningfully be advanced through the upcoming energy storage solicitation. Performance related to the specific application included in the bid will of course be subject to Utility procurement performance warranties, subject to CESA’s recommendations in Section G, Pro forma Energy Storage Agreements, thus protecting ratepayers against non-performance

G. Pro Forma Energy Storage Agreements.

Each of the utilities has proposed a thoughtful and detailed pro forma energy storage agreement (“ESA”), and their efforts and flexibility are to be commended. PG&E recognizes

that “[d]epending on counterparty responses to the RFO, the final versions of PG&E’s energy storage pro-forma documents may differ, perhaps substantially, from the form agreements submitted with this Application” (PG&E Application, p.13). And SDG&E has noted that it “intends to structure its solicitation in a flexible enough manner to accommodate all technology types that qualify as energy storage systems under Public Utilities code, section 2835, including thermal storage or any other type of qualifying energy storage system” (Direct Testimony of Patrick K. Charles on Behalf of SDG&E, page PKC 9-10). For its part, SCE is developing valuable hands on experience in the course of negotiating its forms of ESA and Demand Response Energy Storage Agreement pursuant to its ongoing LCR RFO process. The Utilities and the energy storage providers are in a learning mode about contract terms and conditions that are appropriate to energy storage in general and to certain technologies in particular. Specific suggestions are offered to the pro forma ESAs in the spirit of collaborative improvement are attached as Appendix A.

IV. COMMENTS ON ISSUES SPECIFIC TO THE INDIVIDUAL APPLICATIONS.

A. Southern California Edison.

1. LCR Procurement. SCE asserts that the CPUC should allow 50 MW energy storage projects contracted through its LCR RFO to count toward SCE’s 2014 target, although the expected contracts will not yet be approved, as a reward to SCE for starting procurement before PG&E. and SDG&E (SCE Testimony, p. 28). CESA has no objection to such a determination by the Commission, provided that the LCR contracts are entered into and performed in accordance with all of the requirements of the Storage Framework Decision.

2. Operational Requirements. SCE asserts that energy storage projects with a contract capacity of 500 kW or greater and distribution- and transmission-connected projects with a contract capacity of one megawatt or greater are eligible to participate in this 2014 RFO.

CESA's recommendation is that a 500kW minimum size requirement for customer-sited energy storage may be sufficient for RFOs issued this year, but this minimum threshold should allow for aggregation of many smaller projects each less than 500kW.

3. Interconnection Requirements. SCE's proposed procurement plan requires bidders to have interconnection study requests filed within the April 2014 window in order to participate as part of Cluster 7 through the CAISO's interconnection process. Anything later than that would make it impossible for projects to meet the requirements of the RFO because SCE's proposed final offer deadline is September 1, 2015 and the Phase 1 study process begins on July 1 each year and takes an estimated 170 calendar days to complete. The requirement to enter the interconnection queue in April in order to submit an initial proposal to the energy storage RFO in December will significantly limit the number of energy storage projects bidding into the solicitation.

By comparison, LCR RFO bids were not held to the same requirement for interconnection, nor will bids enter into the energy storage RFOs for PG&E and SDG&E.

SCE's interconnection requirement proposal is overly restrictive and will limit competition and participation in its Energy Storage RFO. CESA recommends that the Commission direct the Utilities to use the interconnection study requirement process proposed by PG&E, in which the interconnection application is required by the date of contract execution.

B. Pacific Gas and Electric.

1. Changes to Approved Procurement Documents.

PG&E asserts that it may publish revisions to its RFO Protocol at any time in order to seek out the highest value storage possible (PG&E Application, p. 12). PG&E further asserts, without reference to any time frame, that changes to the final versions of PG&E's energy storage *pro forma* documents may differ, perhaps substantially, from the form agreements submitted

with its Application (PG&E Application, p. 13). CESA has no objection to either of these proposals, provided they are subject to public comment and Commission approval before implementation.

2. Timing of Deferral Requests. The Storage Framework Decision requires each utility to submit any request for deferral of the biennial procurement target within three months after the utilities' receipt of RFO offers relating to that procurement target. PG&E asserts that the Commission should instead authorize the Utilities to include any deferral request as part of their submission of RFO contracts for approval, which PG&E proposes should occur 12 months after the RFO offers have been shortlisted (PG&E Application, p. 18). CESA has no objection to this proposal.

3. Timing of Contract Approvals. The Utilities are required under the Storage Framework Decision to execute and submit contracts from the 2014 Storage RFO for Commission approval, and to report on RFO results, no later than one year after the 2014 Storage RFO is issued. PG&E requests the Commission to require each utility to submit its executed storage contracts within one year of creating its shortlist of RFO offers (PG&E Application, p. 19). CESA has no objection to this proposal.

4. Timing of Compliance Filings. PG&E asks that no intermediate compliance filing be required between the Commission's decision on its Application and PG&E's issuance of its 2014 Storage RFO (PG&E Application p. 20). CESA has no objection to this proposal.

5. Approval of Contracts. PG&E asks that the Commission adopt the Tier 3 advice letter process for review and approval of contracts resulting from its first the 2014 Storage RFO (PG&E Application, p. 21). CESA has no objection to this proposal.

6. Biogas Resources. PG&E asks the Commission to determine that electric generation using biogas technology constitutes eligible energy storage, although PG&E would

not procure such resources through the 2014 Storage RFO, and would instead continue its efforts to procure them through other unspecified existing mechanisms (PG&E Application, p. 21).¹⁶ CESA urges the Commission to reject PG&E's proposal. CESA disagrees with PG&E's request because electric generation using biogas technology does not constitute eligible energy storage as defined in AB 2514 and the request is clearly outside of the scope of the Applications.

The Commission's Resolution that approved the advice letter PG&E refers to says: "The project proponent] proposes to develop the two facilities in Bakersfield, CA which will use biomethane from dairy-waste to generate electricity." (p. 2). "According to PG&E, the developer is expected to employ commercially-proven technologies including: anaerobic digesters of animal waste and biogas-fueled internal combustion engines for electricity generation." (p. 15).

Asking for this approval is clearly beyond the scope of the Applications. PG&E uses the concepts of fuel and energy as synonymous when they are not. Anaerobic digestion occurs naturally and the only process involved here is capturing and scrubbing impurities from methane gas before it is burned. Would PG&E's logic apply to wood chips, or fluid fossil fuels?

The Resolution also says: "[The Independent Evaluator] opined that the contracts rank low in value and high in price when compared to relevant peer groups of proposals. [It] also ranked the projects as moderate in viability and portfolio fit. Based on these findings, the IE concluded that the contracts do not particularly merit Commission approval, but acknowledged that the Commission may find value in the societal benefit of encouraging wider deployment of dairy-waste-based biogas-fueled generation in California." (pp. 11-12).

¹⁶ PG&E identifies three existing projects it wishes to add to its existing project list (PG&E Testimony, p. 2-3, 2-8, 2-9 and 3-2).

In other words, the projects are not cost-effective, but the Commission should approve them anyway. That may be fine for these particular pilots, but it is not the way the Commission should approve cost-effectiveness of eligible energy storage projects in addition to those identified in the Storage Framework Decision that must be demonstrated to be costs-effective in an Application following a procurement. To accept PG&E's proposal would be to prejudge a point that must first be demonstrated in an application for approval of an energy storage project, *not* a procurement plan.

7. Contract Term. PG&E proposes a 20-year contract term for RPS-related storage yet sets a 10--year contract limit for both the Energy Storage Agreement and the Resource Adequacy Confirm in its Application. This proposal by PG&E is also different than the other two Utilities, which are not proposing any limit on contract term length. This proposal would create a strong bias against stand--alone storage projects with longer useful lives that aim to compete in the storage procurement RFOs or storage collocated with natural gas-fired power plants as it could significantly limit the ability to finance such projects as well as distort those projects' economics and ultimate pricing (by not being able to amortize their costs over their entire useful lives) relative to energy storage technologies with shorter useful life spans. In short, the 10-year limit would result in procurement that is not "least-cost-best fit" and would result in higher process for ratepayers. The 10-year contract term requirement is also inconsistent with the intent of the Storage Framework Decision, which supports a technology-neutral procurement process.

CESA recommends that the Commission direct PG&E to remove the 10 year contract term limit so that offers can be fully and effectively compared on a lifecycle basis. CESA further recommends that the contract limits in all of the Applications use the approach proposed by SCE that allows for the option to bid for the term that makes the most sense for specific technologies

or projects. This would create a more technology-neutral approach consistent with the Storage Framework Decision.

8. Project Size. PG&E's Application proposes that Transmission-interconnected projects have a minimum size of 10 MW. Neither of the other utilities has proposed such a limitation, with SDG&E suggesting no limitations and SCE proposing a threshold of 1 MW. Furthermore, no such restriction has ever been imposed in RPS RFOs. Indeed the minimum size for the RPS RFOs is closer to the 1 MW proposed by SCE. Given that (i) one of the objectives of the Storage Framework Decision is help integrate intermittent renewable resources into the grid, (ii) the Utilities can meet their energy storage targets through their RPS RFOs, and (iii) one of the procurement options in the energy storage RFOs is co-locating storage with RPS-eligible projects, CESA recommends that the Commission direct PG&E to reduce the minimum size of Transmission-interconnected projects to 1 MW as SCE has proposed (or at least to 1.5 MW, which is the current minimum size for projects being bid into PG&E's RPS RFO).

C. San Diego Gas & Electric.

CESA appreciates and applauds SDG&E's activities to pursue alternate business models for utility-owned energy storage sited on customers' premises. Alternative business models should include exploration of not only behind-the-meter utility-owned storage, but also procurement of long-term contracts for services from third-party and customer-owned behind-the-meter energy storage. Such energy storage could include stationary stand-alone energy storage, energy storage coupled with on-site distributed generation, and energy storage used in concert with electric vehicle ("EV") charging, including storage on board the EV itself. Encouraging multiple ownership and contracting mechanisms will significantly assist with market transformation and a healthy, competitive market for energy storage in California.

V. COMMENTS ON APPLICATION PROCEDURE.

CESA generally agrees with the Applicants' statements regarding the proposed category, the present apparent lack of any need for hearings, the issues to be considered, and the proposed schedule.

VI. CONCLUSION.

CESA thanks the Commission for its consideration of its comments and recommendations set forth in this response.

Respectfully submitted,



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APPENDIX A

Comments Applicable To All Three Utilities:

CESA supports the flexible approach to the negotiation of the ESAs taken by the Utilities, since the variety of technology types, the different domains in which each technology can be deployed and other variables may require different provisions in different ESAs. This is especially true of testing, operation, repair and maintenance provisions, each of which will depend to some degree on the technology involved. A flexible approach to ESA negotiation will facilitate the development of effective and appropriate terms and conditions for use in subsequent procurements implementing AB 2514. The ESAs are structured as tolling agreements. The provisions and formulae governing capacity payments, capacity payment reductions, energy efficiency adjustments and similar concepts are fairly complex and could be usefully illustrated by examples, along the lines of what PG&E has attempted to do in Appendices XV-XXI of its pro forma. As noted in Paragraph [IV.B.7] of its comments, CESA recommends that the contract limits for all three Applications be set, as SCE has done, with an option to bid for 20 years and also longer terms.

Each ESA should clearly define and limit the provider's exposure to additional costs during the term. It is understandable, for example, that the form ESAs require the developer to cooperate in securing RA benefits for the purchasing utility. However, obligations of this nature should not be open-ended, and the ESAs should generally define limits on the costs that providers are required to incur as a result of changes in law or policy outside the provider's control. The pro formas vary somewhat in their approach to damages caps if a project does not achieve commercial operation. SCE's pro forma caps such damages at delivery date security coupled with a right of first offer in favor of SCE, while SDG&E's form leaves such damages uncapped after certain conditions precedent have been satisfied. Given the risks generally associated with the development of energy projects, providers and their lenders will typically need a cap on damages if a project does not achieve commercial operation.

Provisions that give the utility latitude to terminate the ESA easily are problematic. For example, SDG&E's form of ESA allows SDG&E to terminate the ESA if it does not approve in its sole discretion matters such as transmission upgrade costs. The corresponding provision in the SCE pro forma allows parties to agree on the transmission upgrade costs that SCE will pay (which is factored into the bid evaluation) and gives the energy storage provider an ability to pay for costs in excess of that amount, which offers a degree of certainty and flexibility for the developer and its lender. The ESAs should also avoid imposing burdensome transaction costs that will discourage the development of energy storage. Provisions calling for a subordinated lien of the storage project in favor of the utility, unusually high insurance coverage, and burdensome compliance provisions will drive up project risk and cost and make it more difficult to achieve the goals of AB 2514.

Each of the three ESAs provide for a monthly capacity payment and separate operations payment(s). The monthly capacity payment based on the capacity of the facility, as determined by testing from time to time. Each document also, however, adjusts this payment downward based on facility availability (and other performance factors). This is problematic:

- a. In each case the availability adjustment of the capacity payment is linear, which amounts to a double dip penalty. The utility receives the full benefit of regulatory capacity in the amount determined by capacity testing, and the project should get paid for this regardless of performance issues that have not triggered a capacity derate. Performance should be decoupled from capacity.
- b. There are currently no meaningful limits on the reduction of the capacity payment—which there should be. The resulting penalty for underperformance (both incrementally and overall) is severe, and could pose a significant hurdle to financing. This is particularly true in the case of PGE, where there is a 2x factor—the capacity payment reduces at twice the proportional rate of unavailability, and low efficiency could force a monthly payment of zero.
- c. Financing parties will be looking primarily/exclusively to this monthly payment for project evaluation, and it is essential that there be a “safe” and protected monthly payment made to the project in all but the most extreme circumstances. These provisions should be similar to those found in PPAs for gas power plants, which provide great certainty of a known monthly payment.

Each of the three ESAs take a similar approach to performance and payment. This approach generally attempts to value the facility and its performance on the same detail metrics as if the facility was owned by the utility. The result is a complex set of provisions with inherently vague language that ultimately place too much risk on the project. CESA would propose instead that a simpler set of metrics be developed with associated liquidated damages for underperformance. This approach would admittedly be less exact than what is currently proposed, but it would provide far greater certainty for the project owners and capital markets—and as a result would make the projects more financeable, which would increase participation and reduce financing costs and transaction costs.

Comments Applicable to SCE:

Articles 9 and 10 contain the bulk of the storage-specific language, and as a result the language is mostly new. While these articles represent a substantial effort on the part of SCE, they also unfortunately need another round of review and revision. The calculations contain several instances of redundancies, partly inconsistent or confusing drafting, extraneous arithmetic, and these provisions in general read like a work sheet rather than a contract. This is not surprising given the technical nature of the subject, but a more thorough contract/legal review is nonetheless in order. As written there is significant opportunity for interpretation ambiguity or outright confusion. This is particularly true with regard to the definition and usage of many of the defined terms related to capacity (A/S Capacity, A/S Availability, Available Charging Capacity, Capacity, Charging Capacity, Contract Capacity Energy, and more). As written, these definitions are confusing at best. A much more rigorous drafting approach is required for these important articles and associated terms.

A side-by-side comparison of the form ESA to SCE's form of power purchase agreement shows that numerous changes were made throughout the document in sections that are not specific to either energy generation or energy storage. Almost universally these changes are harshly unfavorable to Seller, and usually unnecessarily so. Examples include shortened cure periods (and exclusion of standard cure extension language), changing bilateral requirements to unilateral requirements, removing expense reimbursements, inserting SCE discretionary approvals at various stages of project development, shortening the delivery timeframe for letters of credit, and reducing the permissible timing window for project completion to exactly one day. These changes are frequently to language that is fairly standard, not just within SCE power purchase agreements, but within industry practice or contracting as a whole. The combined effect of these non-storage-related changes is significant, and could present a hurdle to financing. SCE should be encouraged to more closely track standard contracting, or at least their own PPA.

Comments Applicable To PGE:

The new language dealing specifically with storage appears somewhat unfinished. As with the SCE document, these provisions, including Article 4 in particular, feel more like an engineering worksheet than a legal document. Defined terms are used inconsistently, there is redundant language, and generally soft drafting that significantly increases the possibility of ambiguity and interpretation disputes. There are several explanations and examples attached as exhibits—further demonstrating (and exacerbating) the potential for confusion. These explanations and examples should not be required with tighter drafting—and in any event should be separated from the contract as non-binding manuals. In general, these provisions could benefit from an additional round of careful legal drafting review.

Comments Applicable To SDGE:

The new language dealing specifically with storage has significant blanks. In particular, Appendix 7.6, which is to define and explain several key terms and concepts, is largely blank. As a result, it is difficult to fully evaluate specifics at this time. What language is present, however, suffers from the same loose drafting as the PGE and SCE documents, although less so.