

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

Order Instituting Rulemaking Pursuant to Assembly Bill
2514 to Consider the Adoption of Procurement Targets for
Viable and Cost-Effective Energy Storage Systems.

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

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
ON ASSIGNED COMMISSIONER'S RULING PROPOSING PROCUREMENT
TARGETS AND MECHANISMS AND NOTICING ALL-PARTY MEETING**

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The California Energy Storage Alliance (“CESA”)¹ hereby submits these comments pursuant to the schedule set forth in the *Assigned Commissioner Ruling Proposing Storage Procurement Targets and Mechanisms and Noticing All-Party Meeting*, issued on June 10, 2013 (“ACR”).

I. INTRODUCTION.

Appropriately sized and clear utility procurement goals are vital to realizing the benefits of energy storage in California’s electric power system. Energy storage will help reduce California’s dependence on fossil fuel energy resources and help the state achieve the greenhouse gas (“GHG”) emission reduction goals it has committed to under AB 32. In short,

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, East Penn Manufacturing Co., Energy Cache, EnerVault, FAFCO Thermal Storage Systems, FIAMM, Flextronics, Foresight Renewable Systems, GE Energy Storage, Greensmith Energy Management Systems, Growing Energy Labs, Gridtential Energy, Halotechnics, Hecate Energy LLC, Hydrogenics, Ice Energy, Innovation Core SEI, Invenergy, KYOCERA Solar, LightSail Energy, NextEra Energy Resources, Panasonic, Parker Hannifin, PDE Total Energy Solutions, Powertree Services, Primus Power, RedFlow Technologies, RES Americas, Saft America, Samsung SDI, S&C Electric, 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>

energy storage is a key enabler to a more efficient, clean, reliable, and affordable electric power system for California ratepayers. A significant number of energy storage companies, including CESA's member companies, have already invested in the state and will invest more with the right market signal.

The right market signal will result in a healthy, sustainable, orderly market development. To create the right market signal, CESA recommends developing procurement targets and mechanisms based on the following core principles essential to achieving healthy grid-connected energy storage market development:

- Encourage a diversity of applications and solutions to meet the diverse needs of California's electric power system. As such, any resulting procurement goal or target should be technology neutral and address the procurement targets in each of the three major use case buckets identified in the ACR.
- Encourage flexibility and adaptability to meet the changing needs of California's electric power system over time. As such, load serving entities ("LSE's") should be allowed flexibility to prioritize use cases within each "bucket," or category of applications, to maximize grid benefits and cost-effectiveness.
- Encourage healthy competition. As such any resulting procurement targets and contract solicitation mechanisms should allow multiple ownership models and enable creative new ways to deliver desired benefits.
- Encourage healthy market development. As such any resulting procurement targets and mechanisms should be clearly stated and undertaken in a manner that supports certainty in policy and market rules, which will accordingly generate market stability and related benefits for the grid.

Consistent with these principles, CESA recommends that eligibility proposed in the ACR be expanded to apply to *all* energy storage technologies, including pumped hydroelectric; and that the overall procurement target be expanded to 4,325 MW by 2020, with the additional 3000 MW added onto the transmission procurement bucket for the 2020 procurement cycle. Inclusion of pumped hydroelectric energy storage and expansion of the overall procurement target are integral to ensuring grid stability and reliability, especially with upcoming retirement of once-through cooling (“OTC”) and the permanent closure of the San Onofre Nuclear Generating Station (“SONGS”). CESA also recommends adding *installation* targets for each procurement cycle, set two years after their respective procurement target, to ensure the grid installation, interconnection, and operation of desired energy storage resources. These targets are critical as not all energy resource procurement will result in new installations. LSEs should be provided the flexibility to determine not only use case priorities *within* a particular bucket (*i.e.*, use case priorities within the transmission bucket) but also the amount of over-procurement that will be necessary to achieve the installation target.

Furthermore, although it is clear in the proposal set forth in the ACR that the proposed procurement targets are for all “emerging uses of energy storage” and “commercially available, eligible storage technologies utilized in grid applications that may have been demonstrated but are not yet generally deployed on the grid in California,” (p. 6) the language in the ACR excluding pumped hydroelectric storage could unintentionally communicate to the market that the Commission’s intention for the eligibility of storage technologies other than pumped storage, such as Compressed Air Energy Storage (“CAES”), liquid air energy storage (“LAES”), hydrogen energy storage, large scale battery storage, or thermal energy storage projects could be in question. Clarifying that all energy storage solutions are eligible will remove all doubt.

CESA supports procurement target allocation based on the ACR's proposed use-case "buckets," which appropriately provide for energy storage portfolio diversity and related benefits. Maintaining separation of procurement targets through these category buckets will lead to energy storage portfolio diversity, ownership model diversity, and stability in both markets and resource procurement planning. Within "buckets," CESA supports allowing LSEs to have reasonable flexibility in determining the best applications and priorities for their customer bases. Similarly, Electric Service Providers ("ESPs") and Community Choice Aggregators ("CCAs") should be afforded the opportunity to develop their own procurement goals based on the unique needs of their customers. For these LSE's the ACRs' proposed buckets may not apply - for example, these entities do not own or operate distribution systems. Finally, CESA cautions the Commission against "open-ended off-ramps" with no firm date required for commercial operations. It is for this reason that CESA recommends that the Commission establish clear installation targets that would reflect commercial online dates for new energy storage capacity.

Regarding California's Loading Order, CESA recommends that this proceeding expressly determine that energy storage is *implicit in* the Loading Order categories at the same level as energy efficiency and demand response when performing grid services. The rationale for this is that energy storage is an effective resource to promote *overall system efficiency* in a similar manner to energy efficiency and demand response, with related benefits (*e.g.* GHG reductions). The Commission should also clarify that this categorization applies to *all* energy storage resources, regardless of whether they are standalone or co-located with conventional or renewable generation, because energy storage resources deployed throughout the grid provide system efficiency benefits. The Commission can't change the Loading Order by itself (since such modification was not considered at the time the Loading Order was formalized), but the

Commission can certainly state for the record in this proceeding how it intends to interpret the Loading Order as it relates to energy storage insofar as the exercise of its own jurisdiction is concerned.

II. COMMENTS ON THE SPECIFIC QUESTIONS POSED IN THE ACR.

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

CESA applauds explicit setting of energy storage procurement targets in the ACR. Procurement targets will lead to the widespread deployment of energy storage capacity necessary to meet statewide goals, including system reliability, cost-effectiveness, and GHG emission reductions. Additionally, procurement targets with related *installation targets* as described above will allow for predictable deployment of energy storage in a cost-effective manner so that utilities can plan grid development utilizing storage. This predictable expansion of deployment will also result in advancing performance, availability, and cost-effectiveness of energy storage systems.

CESA has major concerns regarding the exclusion of pumped hydroelectric energy storage from the proposed target scheme, because pumped hydroelectric energy storage provides valuable grid services in a cost-effective manner. Further, the Commission's statements as to excluding pumped hydroelectric energy storage could unintentionally cause the market to interpret that the Commission does not intend to include other bulk energy storage technologies beyond pumped hydroelectric energy storage such as compressed or liquid air energy storage, hydrogen, thermal storage used for chilling and enhancing generation, renewable-sited energy storage, and aggregated large scale distributed energy storage systems over 100 MW in total (*e.g.* an electrically integrated battery energy storage installation with more than 100 MW of total capacity). Therefore in addition to including pumped hydroelectric energy storage as eligible

through increasing the MW target, CESA also urges the Commission to remove ambiguous language discussing [technologies] “...that may have been demonstrated but are not yet *generally* (emphasis added) deployed,” which could lead to unintended interpretations of applicability to other energy storage technology eligibility and, instead, explicitly allow all energy storage technologies to be eligible, consistent with the technology neutral principle stated above.

While CESA believes that pumped hydroelectric energy storage ought not to be excluded from the Commission’s energy storage procurement target policy, CESA also recognizes that pumped hydroelectric and other bulk energy storage projects (energy storage resources that deploy greater than 100 MW in the aggregate) have large capacities and thus could absorb a substantial percentage of procurement targets. Similarly, CESA recognizes that such bulk energy storage projects are generally sited at the transmission interconnection level, and would accordingly count towards procurement under the transmission-sited “bucket.” Bulk energy storage at the scale of typical pumped hydroelectric resources and underground compressed air also generally has associated longer permitting and installation time frames than do other energy storage resources. Those resources would thus likely not be fully installed and operational until later procurement cycles.

CESA accordingly recommends that the Commission maintain its existing proposed energy storage procurement targets for the utilities in each bucket through 2020, and add 3,000 MW to the transmission-sited bucket for the 2020 procurement cycle split between the utilities in the same ratio to other procurement target allocations proposed in the ACR. Taking into consideration existing projects in advanced licensing stages at the Federal Energy Regulatory Commission, CESA’s proposed 3,000 MW addition to the overall energy storage procurement

target should be a reasonable and achievable incremental energy storage procurement policy target.

CESA recommends that the Commission allow *all* energy storage resources to be considered eligible for procurement to meet targets, including, without limitation, pumped hydroelectric, thermal (such as chilled water, ice, and molten salt), hydrogen, liquid air and compresses air storage. By explicitly including all forms of energy storage, the Commission will encourage development of new, innovative, cost-effective energy storage solutions over time by eliminating uncertainty about such technologies being included or excluded from California's energy storage procurement targets.

Finally, CESA recommends that the Commission ensure the integration of operational energy storage resources by designating *installation* targets two years after each procurement cycle target, at which point utilities must demonstrate grid-connected and operational energy storage resources with cumulative capacities representing prior procurement targets. This combination of factors allows for a procurement methodology that fulfills the overall goals of AB 2514 (a technology-neutral procurement policy that fully realizes benefits from all energy storage technologies) and will encourage a healthy portfolio of energy storage resources consistent with the principles listed above. The table set forth below explains the essence of CESA's proposal:

Table 1 – Initial Proposed Energy Storage Procurement Targets (in MW). Installation Targets in MW would be two years following annual procurement target. First procurement can occur in 2014.

Use case category, by utility	2014	2016	2018	2020	Total
<u>Southern California Edison</u>					
Transmission	50	65	85	1414	1614
Distribution	30	40	50	65	185
Customer	10	15	25	35	85
Subtotal SCE	90	120	160	1514	1884
<u>Pacific Gas and Electric</u>					
Transmission	50	65	85	1414	1614
Distribution	30	40	50	65	185
Customer	10	15	25	35	85
Subtotal PG&E	90	120	160	1514	1884
<u>San Diego Gas & Electric</u>					
Transmission	10	15	22	425	472
Distribution	7	10	15	23	55
Customer	3	5	8	14	30
Subtotal SDG&E	20	30	45	462	557
Total - all 3 utilities	200	270	365	3490	4325

Inclusion of bulk energy storage will ensure penetration of multiple resource types and encourage realization of the benefits of large-scale energy time shifting and load following, as well as seasonal energy storage. Additionally, removing ambiguity regarding eligible technologies will allow for full integration of energy storage technologies that are not widely deployed in California due to market barriers, although they are commercial and deployed elsewhere (as recognized in the ACR). This expanded vision would clearly identify energy storage as a leading cost-effective solution for replacing the energy and capacity needed due to planned OTC generation resource retirements and the announced permanent shut down of SONGS.

CESA is also greatly concerned about the proposed use of a “Reverse Auction Mechanism” (“RAM”) for energy storage procurement. RAMs are best suited for procurement of specific commodity-type products - the exact other end of the spectrum from what is possible with grid-connected energy storage. Energy storage is a diverse resource class with a variety of capacities, grid service capabilities, and related service-specific and location-specific cost-effectiveness profiles. Energy storage solutions entail complex, customizable benefit streams – such that the resulting product would be very difficult to standardize under a RAM. Even if a limited subset of energy storage solutions were to be defined and procured under a RAM, there is still great danger that a number of otherwise-beneficial energy storage resources would be excluded from eligibility due to the inherent difficulty in precisely quantifying and comparing cost-benefit characteristics of those energy storage systems. A RAM does not have the necessary flexibility or relationship to system planning for procuring a diverse resource class such as energy storage, and thus is not a desirable mechanism to use at all for procurement of energy storage resources.

CESA recommends that the Commission instead direct utilities to utilize procurement mechanisms other than the RAM to better account for the many benefit streams possible with energy storage resources, including:

1. All-source requests for offers (“RFOs”) which can account for full resource characteristics and capabilities.
2. Bilateral contracting mechanisms where RFOs are infeasible.
3. Standard offers for specific benefit streams contracted from third parties or customer owned energy storage (*e.g.* resource adequacy capacity).
4. Expansion of all-source and renewables RFOs to incorporate and fairly evaluate energy storage resources, including through existing proceedings such as Long-Term Procurement Planning (“LTPP”) and the Renewables Portfolio Standard (“RPS”).

These procurement mechanisms will be better able to account for at least the following characteristics of energy storage resources proposed for procurement:

- Technology capabilities
- Ability to address grid services (energy, ancillary services, *etc.*)
- Pricing options offered for proposed resources
- Installation costs and timeframes (including interconnection)
- Total projected cost and benefits for the proposed resource over its system life
- System lifespan
- Environmental attributes of energy charging source (if paired with a generation resource)
- Net GHG emissions
- Flexibility of utilizing one resource for multiple purposes

The benefit side of the cost-benefit equation is especially critical, as it requires correctly accounting for all of the value that can be provided by proposed energy storage systems. CESA advocates that the Commission should standardize the benefits side of the cost effectiveness evaluation. For example, the Commission could specify near term a capacity value to use for energy storage while other resource procurement and planning proceedings underway. A standardized process will aid RFO reviewers – such as Independent Evaluators, Procurement Review Groups, and the Commission’s Energy Division staff – in consistently and transparently evaluating project proposals, and will allow grid-connected energy storage project proponents to clearly understand how benefits will be accounted for during the evaluation process. The standardized process should fully account for all benefits identified in this proceeding for each application, including, but not limited to, the following:

- Capacity value
- Energy market revenues, including ancillary services (regulation, spin, non-spin, *etc.*)
- Location-specific transmission and distribution upgrade deferral value
- Avoidance of future stranded cost
- Energy market participation

- Variable Energy Resource (“VER”) balancing and energy time of delivery shifting
- GHG emission reductions system-wide, including start-up emissions
- Resource mobility
- Resource flexibility

Additionally, any procurement evaluation must consider the benefit and cost of proposed systems over the full life of the energy storage project. CESA recommends that the Commission outline future cost and value scenarios to be used for at least the following:

- Fuel prices
- Fuel price/availability risk
- GHG market prices due to AB 32 implementation
- Energy and ancillary services market price projections, including allowance for increased renewable penetration over the resource life.

The Commission should approve probability distributions developed and submitted to the Commission by each LSE for each of the foregoing factors to be used in resource modeling projections and related scenarios. This standardized process should include modeling of proposed energy storage resources in operation in order to account for the full portfolio benefit and costs, and to best recognize system-wide benefits.

Procurement of energy storage resources can also take the form of tolling agreements similar to those used for traditional fossil fuel generation resources. Such tolling agreements could include fixed payments for operation of energy storage resources, along with potential variable revenues for provision of services above baseline contracted amounts and/or provision of service categories in addition to baseline services provided (*i.e.* frequency regulation when a resource generally provides capacity).

Energy storage should also be explicitly recognized and considered as a preferred alternative solution in the context of other ongoing procurement processes, such as LTPP or RPS procurement, consistent with CESA’s recommended interpretation of the state’s Loading Order.

There should be no limit or MW cap to substitutions when energy storage bids into an all source RFO and is selected in lieu of a traditional fossil based alternative.

CESA supports the ACR's proposed use of energy storage for utility distribution planning, and in particular to allow utilities to propose up to fifty percent of their distribution use case category target to be utility-owned energy storage. This is a constructive approach to encourage competition and least-cost solutions delivered through innovative long-term contracting mechanisms for third parties, and even utility customers for energy storage services. The development of such contracts for energy storage services should undoubtedly be transformative for grid-connected energy storage, with related cost-effective system efficiency. This requirement could further recognize that distribution support can be provided from many locations in the electric power system from third party merchant sites, utility customers, utility-owned community energy storage, and third party-owned resources sited behind the customer's meter.

CESA is hopeful that third-party ownership in the distribution-level use case category will lead to optimal cost-effective outcomes for utility customers. For example, a third-party owned distributed peaker that provides capacity, energy and ancillary services could be committed under contract in certain hours or months to provide distribution investment deferral to a utility. The non-utility owner has the potential to offer distribution deferral as a service to the utility at lower cost than a comparable utility-owned storage asset, the ability of which to competitively provide capacity, energy and ancillary services might be limited. Because third-party contracting for distribution support represents a new business model for many local distribution electric utilities and thus potentially greater implementation risk to utility shareholders, CESA proposes that contract revenue to third parties for distribution support and

planning applications should be eligible for some form of enhanced utility shareholder returns, provided that such applications are still cost-effective to ratepayers with the returns included in the calculation.

While procurement targets are tremendously helpful in driving market transformation, CESA notes that there remain a number of significant barriers that prevent energy storage, particularly when deployed on the customer-sited, from effectively participating in the market for a variety of wholesale energy-related services. Addressing outstanding interconnection challenges as well establishing regulatory and market rules that provide customer-sited energy storage systems non-discriminatory access to wholesale markets should remain a key objective of this proceeding. A clearly defined procurement target to which utilities are accountable can help focus utility efforts, working in tandem with other stakeholders to address these barriers, and thereby ensure that the various services that customer-side energy storage is capable of providing are not stranded due to regulatory requirements that fail to provide a reasonable path to wholesale markets. To that end, any continuation or successor energy storage-related Commission proceeding should be dedicated to continuing identification of *all* market barriers to deployment of energy storage and working toward their elimination.

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

CESA does not believe that any of the projects listed in the ACR should be excluded from counting toward procurement targets, to the extent they are committed to meet service requirements comparable to those that would be required of third parties under proposed storage power/services purchase agreements contemplated in the ACR (*e.g.*, a minimum of ten year service life). CESA's perspective is that utilities should be recognized and rewarded for early action. Additionally, allowing energy storage projects procured or deployed under existing

Commission programs, like the RPS-related RFOs or the Self Generation Incentive Program, to count toward procurement targets should help align utility interests with those of customer-sited project developers by giving the utilities a vested interest in seeing projects through to completion.

As previously noted, CESA strongly advocates that new pumped hydroelectric energy storage resources should be eligible for contributing the higher procurement targets proposed by CESA, and that the Commission remove any unintended ambiguity as to the inclusion of compressed air and other bulk or commercially viable energy storage technologies. Bulk energy storage (energy storage systems providing greater than 100 MW to the grid) – including pumped hydroelectric resources – represents an important resource class that provides many grid services identified throughout this proceeding as both important and addressable by energy storage. Specifically, large scale energy storage resources can cost-effectively address use cases in the transmission category, including energy generation shifting, seasonal storage, GHG emission reductions, and renewables integration, among other services.

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

CESA agrees with the ACR that an energy storage project should only count toward an LSE's procurement target if: (a) the project becomes commercially operational, (b) the LSE is a partner or equity participant in the project, and (c) the project has an expected service life of ten years or more - all of which are commensurate with what should be required of any new energy storage system. "Commercially operational" should be defined as providing regular quantifiable services to the electric grid and LSE customers, and appropriately participating in system energy markets. If PIER and EPIC-funded projects provide such services, then they should be also considered commercially operational and accordingly count towards an LSE's target. If PIER or

EPIC-funded projects are for use in the laboratory alone, or are not grid interconnected or required to be in service for 10 years or more, then they should not count toward an LSE's procurement target.

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

CESA advocates that procurement targets are important, but what is more critical for the Commission to track is actual energy storage project implementation or commercial online dates ("CODs"). The simple reason for this is that not all contracts result in actual projects. Thus, CESA recommends that the Commission establish clear *installation* targets for set years after each already-established procurement target milestone. These installation targets would ensure that a desired amount of energy storage resources ultimately come online for each procurement target, and that those resources are installed within reasonable time frames. CESA further recommends that the lag between procurement targets and installation targets be set at two years - so if a utility's target for 90 MW in 2014 and 120 MW in 2016, that utility would have a target of having 90 MW of operational energy storage installed by 2016, and a further 120 MW installed by 2018. Establishing clear installation targets two years after the procurement targets can be supported by the following additional requirements:

1. RFOs or other competitive contracting methods must be established so that contracting can occur during the designated compliance year (*i.e.* if a compliance year procurement target is 2015 then the relate RFO must be issued and bids received no later than by June 30, 2015).
2. All contracting must be completed within six months of RFO issuance.
3. COD must be within 24 months from Commission approval of resulting contract.
4. Procurement driven by Commission-identified long-term system need (*i.e.* beyond 24 months) must be commercially on-line within 24 months of the date of the identified long-term need.

If a utility were to proactively procure a certain portion of future targets' capacity ahead of time, CESA would certainly applaud such proactive effort. CESA also recognizes that certain energy storage installations may be sufficiently large as to extend a utility's procurement beyond the utility's target for a given year, and CESA will not support any policy that would discourage utilities from pursuing such beneficial energy storage installations. However, ongoing procurement targets should maintain focus on continued expansion of energy storage resources, with related benefits. So, at the very least utilities should maintain cumulative procurement targets for specified target years.

For example, in the Proposed ACR, Southern California Edison Company ("SCE") and Pacific Gas and Electric Company ("PG&E") have specified procurement targets of 90 MW in 2014, 120 MW in 2016, 160 MW in 2018, and 210 MW in 2020. Total procured capacity in each period would thus be 90, 210, 370, and 580 MW for each utility. If SCE procured 90 MW in 2014 and 150 MW in 2016, it would accordingly maintain the target of 370 MW cumulative capacity in 2018 - and would thus have a target of 130 MW for 2018, instead of its original 160 MW. As stated above, it is important that the Commission enforce CODs within 24 months of CPUC contract approval, unless specifically permitted otherwise.

CESA recognizes that utilities procuring energy storage resources in this manner could lead to market uncertainties and related difficulty in forecasting needed resources for production and installation. This could likewise lead to undesired market variation in availability and costs of installed energy storage resources. As previously discussed, the Commission should consider offering utilities a shareholder return for any energy storage capacity procured beyond a specified cumulative target, so long as that energy storage capacity is cost-effective after factoring in the incentive return. This will provide a "win-win" incentive for utilities to expand

cost-effective energy storage and benefit ratepayers accordingly. Other financial and regulatory avenues should also be explored to accommodate and encourage cost-effective energy storage procurement beyond specified minimum targets while maintaining market stability for future procurement.

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

CESA supports requiring utilities to meet procurement requirements as established in the ACRs use-case buckets and over time, including the limitation of 50% utility ownership for the distributed use case “bucket.” The reason for this is to ensure that a diverse portfolio of energy storage solutions and applications are broadly deployed across the grid and in an orderly manner over time. However, a balance should be struck between flexibility and providing the kind of regulatory certainty that is required to stimulate and ultimately transform a market. It is notable that the ACR points to the California Solar Initiative program (“CSI”) as a model for what the proposed procurement target seeks to achieve for energy storage. The success of the CSI can be attributed in no small part to the fact that the program established clear rules, including clear eligibility requirements and interconnection standards, and a transparent and long-term schedule of incentives upon which industry could plan and build a value proposition.

While some flexibility may be warranted, CESA cautions the Commission against providing too much latitude in shifting procurement goals across major use case category buckets. Doing so would create substantial risk from the perspective of industry and undermine the willingness of entities to invest substantially in the market given that the actual opportunity they have may prove illusory if the utilities subsume a substantial percentage of procurement that had been allocated to a given bucket into another “bucket.” Given the emerging status of many

energy storage technologies and multitude of market barriers identified in the ACR, only through mandatory procurement buckets with minimum procurement requirements will stakeholders truly know which applications or use cases can truly deliver the multiplicity of benefits that energy storage represents. As explained in the ACR, “learning” about market barriers and operational aspects of energy storage resources may not occur in all buckets if utilities are not held to the MW targets for each “bucket.” Therefore, to the degree that flexibility is desirable, it would be best achieved by establishing clear minimum procurement targets for each bucket and allowing LSEs to prioritize specific use cases within that bucket to meet their annual procurement goal over time.

It would be reasonable for the Commission to revisit the allocations across service categories in 2017 to evaluate whether some reallocation of unsubscribed MW between buckets is desirable given the evolving needs of the grid and state of the market. For example, if, at a certain point, it appears that distribution upgrade deferral use case is a higher-priority service, then some unsubscribed capacity originally set aside for the transmission bucket could be shifted towards distribution or demand-side buckets. This would provide clarity as to desired minimum procurement levels, but also would provide utilities flexibility to meet what is deemed highest-priority resource deployment for California overall.

Caution should be taken so as to not create procurement imbalances that lead to over- or under-investment in certain bucket-specific energy storage technologies, which could potentially create market imbalances with related impacts on system wide cost-effectiveness. Any requirements concerning flexibility should be developed in a transparent process that fully accounts for system needs in both the short- and long-term and recognizes the impacts of procurement policy on both wholesale energy markets and energy technology supply markets.

It should be noted that the difficulty as to establishing flexibility between buckets is a perfect example of the complexity involved in procuring energy storage, especially with unduly rigid procurement methodologies. This difficulty can easily be translated to, and would likely become readily apparent with, a RAM form of procurement. Conversely, this complexity demonstrates the value of flexibility insofar that resource mixes may be procured that have higher cost-benefit profiles than those laid out in original bucket capacity allocations. This type of flexibility is likely to occur through other procurement approaches, notably those such as RFOs that take full account of offered resource characteristics.

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

In general, the Commission should emphasize the importance of maintaining focus and momentum toward pre-set energy storage procurement targets and ensuring their subsequent commercial online dates. Targets are important because they allow for stable and consistent grid development and planning. Targets also send useful demand signals to energy storage manufacturers, which would allow for appropriate business expansion to meet system needs and reduce costs, yet minimize market disruptions. Allowing excessive flexibility in undercutting targets could both compromise meeting system needs and lead to potentially higher costs for energy storage systems. This would also raise ratepayer costs and create unintended consequences of higher prices and more “off ramping” that further reduce deployment of energy storage installation and related attainment of system goals.

The ACR states that “[e]ach utility may be relieved from a declining percentage of its procurement targets with an affirmative showing of unreasonableness of cost, such as offers that are evaluated as cost-ineffective based on the utilities’ proposed methodology, the lack of a competitive number of bids in the energy storage auction, or other showing.” (p. 19). However,

there is no stated recommendation for establishing caps on procurement target relief percentages for any of the biennial milestones. Thus, in theory, a utility could be permitted relief from its entire procurement target for 2014, and continued high percentages through 2020. To address this, the Commission should establish both a standard of proof and reasonable limits on procurement target relief. If the Commission decides to allow relief from specified targets, a strong method must be established that ensures continued integration of grid-improving energy storage resources and requires proof of need for procurement target relief. This would allow for continued integration of energy storage resources with related benefits, which will ultimately fulfill the intent of this proceeding.

Furthermore, CESA urges the Commission to remove the concept of allowing utilities to not fulfill their stated procurement targets due to “the lack of a competitive number of bids in the energy storage auction, or other showing.” (p. 19). One of the purposes of the procurement targets themselves is to further develop the energy storage market such that costs lower and technologies become increasingly more cost-effective for California ratepayers. Preventing procurement of one energy storage technology that is cost-effective and meets the need identified by an RFO simply because another technology has not yet reached the same cost-effectiveness level, so as to ensure “a competitive number of bids” would severely discourage developers of currently cost-effective energy storage technologies from investing in the deployment of their technology in the California market. These companies will have no interest in investing development efforts into a process whereby upon finding there are no other “competitive bids,” the cost-effective technology is not chosen, and the procurement target not required to be met. The Commission should require the utilities to procure *any* cost-effective storage technology that meets a stated need, regardless of the other number of competitive bids offered.

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

The proposal in the ACR should fully and accurately address system needs by comprehensively taking into account all characteristics of proposed energy storage resources and aligning them with system needs, as they are determined. Achieving the goals set out under the RPS and P.U. Code Section 2837 requires dynamic and concerted procurement of resources that facilitate integration of renewables. This provides yet another opportunity to point out how inappropriate it would be to use a RAM. Such a rigid procurement mechanism would inadequately address system needs as to renewables integration and GHG emission reductions. As previously discussed, methodologies other than RAM are far more likely to lead to both best-fit procurement and alignment between energy storage integration and renewables expansion. For instance, if a utility procures energy storage capacity paired with a renewable resource through an RPS RFO or through an RFO initiated to meet a defined LTPP need, the procurement should also count toward energy storage procurement targets. Again, CESA strongly advocates that the Commission explore the benefits that a variety of procurement methodologies provide to meeting multiple system goals when analyzing alternatives to RAMs.

H. Comment on the options presented for ESPs and CCAs to either

- 1. be required to procure an equivalent amount of storage projects commensurate with the load they serve or**

CESA advocates that electricity service providers (“ESPs”) and community choice aggregators (“CCAs”) should be provided flexibility to proactively develop their own procurement goals based on the unique needs of their customers.

- 2. have their customers assessed the costs of the IOU procurement of energy storage projects through a cost allocation mechanism.**

CESA expresses no opinion on utility cost allocation principles.

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

The current methodology has provided a good initial use of cost-effectiveness models towards developing procurement targets, albeit not necessarily inclusive of all potential technologies. Models and related evaluation methodologies established in this proceeding should be used in goal development at this time, and should be used into the future unless they prove ineffective or inaccurate. Targets may, however, be revisited based on lessons learned and market or technology developments. Such reconsideration can also be undertaken on a pre-set re-evaluation schedule, but not so frequently so as to introduce unnecessary market instability.

Flexibility based on reconsideration of models should be undertaken with caution, so as not to lead to market disruptions that may jeopardize ongoing provision of cost-effective energy storage technologies. Given this, it is reasonable for the Commission to establish limits to such flexibility in procurement targets based on reconsideration of models. This will ensure reasonable alignment between least-cost best-fit resource procurement and the achievement of long-term procurement objectives.

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

Cost caps are not informative in establishing the resource mix that meets least-cost best-fit criteria. What is far more important than cost caps for any one resource or category of resources is the net benefits that those resources provide. So if an energy storage resource can capture positive net benefits that are superior to *status quo* or alternative solutions, then absolute installed cost should not be a primary consideration. RFOs that include energy storage would be able to fully account for all proposed resource characteristics including project cost and net benefits, which should lead to optimum resource mixes across the grid.

III. CONCLUSION.

CESA appreciates this opportunity to provide these comments, and looks forward to continuing to work with the Commission and parties to achieve the goals of this proceeding.

Respectfully submitted,



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