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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local and Flexible Procurement Obligations for the 2019 and 2020 Compliance Years.	Rulemaking 17-09-020 (Filed September 28, 2017)

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON TRACK 3 PROPOSALS WORKSHOP AND ENERGY DIVISION PROPOSAL ON EFFECTIVE LOAD CARRYING CAPACITY IN RESPONSE TO THE AMENDED SCOPING MEMO AND RULING OF ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE'S RULING ON EFFECTIVE LOAD CARRYING CAPACITY

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In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the California Energy Storage Alliance ("CESA")[1] hereby submits these comments on the Track 3 proposals presented at the workshop in response to the *Amended Scoping Memo and Ruling of Assigned Commissioner* ("Scoping Memo"), issued on January 29,

[1] 174 Power Global, 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, Alligant Scientific, LLC, AltaGas Services, Amber Kinetics, Ameresco, American Honda Motor Company, Inc., Avangrid Renewables, Axiom Exergy, Better Energies, Boston Energy Trading & Marketing, Brenmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Clean Energy Associates, ConEd Battery Development, Customized Energy Solutions, Dimension Renewable Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, EDF Renewable Energy, ElectrIQ Power, eMotorWerks, Inc., Enel X North America, Energport, Engie Storage, E.ON Climate & Renewables North America, esVolta, Fluence, Form Energy, GAF, General Electric Company, Greensmith Energy, Gridwiz Inc., Hecate Grid LLC, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Johnson Controls, Lendlease Energy Development, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Energy Solutions, LS Power Development, LLC, Magnum CAES, Mercedes-Benz Energy, NantEnergy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., Nuvve, Pattern Energy, Pintail Power, Primus Power, Polyjoule, Quidnet Energy, Range Energy Storage Systems, Recurrent Energy, Renewable Energy Systems (RES), SNC-Lavalin, Southwest Generation, Sovereign Energy, Stem, STOREME, Inc., Sunrun, Swell Energy, Tenaska, Inc., Tesla, True North Venture Partners, Viridity Energy, VRB Energy, WattTime, Wellhead Electric, and Younicos. The views expressed in these comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (http://storagealliance.org).

2019. In addition, CESA submits its comments in response to the *Administrative Law Judge's Ruling on Effective Load Carrying Capacity* ("Ruling"), issued by Administrative Law Judge ("ALJ") Peter V. Allen on February 23, 2019, which directed parties to incorporate comments on the Energy Division ("ED") Proposal on Effective Load Carrying Capacity ("ELCC") with the Track 3 comments to be filed and served by March 22, 2019.

I. INTRODUCTION.

CESA appreciates the opportunity to comment on and participate in the Resource Adequacy ("RA") proceeding, which is a critically important proceeding with material effects on energy solution providers in California. Importantly, the RA Program must ensure that the fleet shown to the California Independent System Operator ("CAISO") by load-serving entities ("LSEs") is viable for operating the grid in the applicable time-periods while also being in line with Pubic Utilities Code Section 380 to "facilitate development of new generating capacity and retention of existing generating capacity that is economic and needed." This aspect of the RA Program highlights how the RA market should signal, value, and ultimately contract for services that support the grid's needs while managing costs and allowing for choice by LSEs and customers. To do this, multiple modifications to the RA program should be pursued or considered. CESA details key priority changes for the RA program below in its comments.

II. ABOUT CESA.

CESA is a 501(c)(6) non-profit industry advocacy association focused on grid-connected energy storage and representing over 80 member companies in the energy storage industry. CESA's mission is to make energy storage a mainstream resource that accelerates the adoption of renewable energy and promotes a cleaner, more efficient, reliable, affordable, and secure electric power system. One of CESA's core priorities is the CAISO's Energy Storage and Distributed

Energy Resources ("ESDER") Initiative that is specifically tasked with addressing market participation pathways for energy storage in select applications

III. FOR THE 2020 RA YEAR, THE COMMISSION SHOULD AUTHORIZE ELCC COUNTS FOR SOLAR-PLUS-STORAGE OR OTHER "PLUS STORAGE" RESOURCES.

There may be many configurations of energy storage being added to other generation resources, but, in line with CESA's proposal, Southern California Edison Company ("SCE") submitted Proposals 2 and 3 for ELCC and other hybrid counting proposals that highlight two basic configurations that may account for many solar-plus-storage resources.[2] Additionally, as CESA explained in comments in 2016,[3] reasonable RA counts for hybrid resources can be approximated through the use of representative configurations that simplify implementation. This seems to address a major issued shared by Commission staff according to their remarks at the March 13, 2019 workshop.[4]

The benefits of energy storage co-located with "non-dispatchable" generation resources (*e.g.*, solar) in hybridized configuration is that the solar resource can: (1) have reduced intermittency; (2) extend production modestly into more valuable production hours (*e.g.*, into the evening); and (3) ramp-in more smoothly and perhaps more usefully in the morning. The

[2] SCE lays out four broad ELCC and other hybrid RA qualifying capacity counting categories and recommends a specific counting convention for each. Their Proposals 2 and 3 focus on ELCC-related counts. See *Southern California Edison Company's (U 338-E) Track 3 Proposals*, filed on March 4, 2019 in R.17-09-020, pp. 5-7.

[3] *California Energy Storage Alliance's Preliminary Phase 3 Proposal*, filed on December 16, 2016 in R.14-10-010. http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M171/K158/171158533.PDF

[4] At the Track 3 Proposals Workshop on March 13, 2019, CESA's Alex Morris spoke of the importance and urgency to develop project-specific solar-plus-storage RA counts. Commission staff responded and indicated that this may result in many different RA counts, creating complexity and potential administrative burden, as CESA understood it. These comments inform CESA's suggestion to consider the two basic 'representative profiles' CESA suggested in 2016, if a project-specific ELCC calculator is problematically complex.

mathematics behind the ELCC calculation is that resources with limited abilities or generation output to replace 'perfect capacity' have lower value. In reality, solar intermittency (even in 15-minute intervals) and the inability of solar resources to generate into the evening leads to de-rates in the solar planning capacity value, yet even a modest amount of storage could have *outsized* value in terms of improvements to RA counts, based on the math of the ELCC formula. The ability to gain outsized RA benefits, in addition to the superior operating performance of a hybrid resource, makes the hybrid configuration compelling.

Therefore, there are good reasons to implement a solar-plus-storage ELCC value now. The Commission's proposal to update ELCC values for solar and wind resources shows that renewable integration *capacity* benefits materialize from having energy storage on the system. This finding logically applies to hybrid resources as well. Additionally, cost savings that may result from developers hybridizing resources will benefit ratepayers by only having to pay for a single interconnection and development effort (*e.g.*, site acquisition). There are additional cost savings from having the paired energy storage resource claiming the Federal investment tax credit ("ITC"),[5] and from having a higher RA count (which in turn leads to less need for additional RA resources).

There are multiple procurement paths where such a hybrid solar-plus-storage resource may be developed, so rules to authorize this RA count can be helpful in many procurements while also providing reasonable additional RA value to developers adding energy storage to variable energy resources ("VERs"). For example, the hybrid solar-plus-storage can come online through the Renewable Portfolio Standard ("RPS") Program, various All-Source Requests for Offers, and

[5] So long as the paired energy storage resources charges at least 75% from the ITC-eligible generating resource, energy storage is also eligible to claim the ITC.

other pathways. The solar-plus-storage count also provides developers with pathways to improve RA counts to existing solar if they so choose, which may be important to merchant developers facing major de-rates to their solar-only RA counts.

The role of hybridization is different from ELCC Staff Proposal to allocate the diversity-based ELCC benefits of *existing* 'on-the-system' standalone energy storage as a credit to the solar fleet for purposes of revising the ELCC for solar. CESA does not oppose this single one-time allocation of the ELCC benefits of existing energy storage because we understand it to be a one-time, non-precedential action. CESA sees this one-time allocation as only viable due to the recency of the ELCC calculation and the Commission's willingness to maintain the full RA value for existing energy storage.

However, CESA strongly recommends that the Commission affirm that this is a one-time ELCC adjustment, and that in the future the Commission does not intend to allocate the diversity benefits that energy storage resources provide to solar and wind resources that are not directly paired with a minimum amount of energy storage. Such future ELCC allocations could inappropriately provide windfalls to standalone solar and standalone wind facilities by crediting them with benefits that they are not responsible for providing. Furthermore, such allocations would discourage, rather than encourage, solar and wind resources from pairing with energy storage resources. The RA program should reward project developers for building the kinds of resources that the grid needs to maintain reliability – *i.e.*, energy storage resources paired with solar, wind and thermal generators to reduce renewable intermittency and grid congestion.

Going forward, the Commission should do the following, which include both a short-term and a long-term plan:

A. Short-term actions

- The Commission should revise its solar and wind ELCC calculations based on 15-minute interval performance.

- The Commission should incorporate two modified solar profiles which both reflect the additions of energy storage to solar resources being used optimally, based on CESA's two recommended 'representative profiles' shared in 2016. These include:

  - Representative Profile 1 ("Storage Package A"): This package involves an energy storage addition of 2.5 MW with 30 minutes of duration for every 10 MW of solar. CESA recommends additional stakeholder review of this profile configuration.

  - Representative Profile 2 ("Storage Package B"): This package involves an energy storage addition of 5 MW with 1.5 hours of duration for every 10 MW of solar. CESA recommends additional stakeholder review of this profile configuration.

- The Commission should host a workshop to review the findings and receive input from stakeholders.

- The Commission should adopt these representative solar-plus-storage ELCC counts for any resource that reasonably meets and operates similarly to the representative profiles.

- The Commission should also otherwise adopt SCE's recommended Proposals 1, 2, and 4 for ELCC and other hybrid counts.

- The Commission should ensure that LSEs account for the diversity benefit of energy storage resources when they assess the value of storage resources in procurement processes.[6]

- The Commission should affirm that, despite the one-time allocation of planning capacity benefits from existing energy storage to existing solar resources (as Commission Staff has proposed), the planning capacity and integration benefit of all *new* energy storage should be allocated to the specific resource or hybrid resource to provide proper incentives for hybridization where appropriate.

[6] At present, this value accrues to individual solar and wind resources, as well as to LSEs in terms of increased RA value for existing resources. Until energy storage resources can directly access this benefit, LSEs should account for it when comparing the value of energy storage resources to other resources

B. Long-term actions

- The Commission should develop, maintain, host, and publish a public calculator for calculating ELCC values for solar and wind resources, including hybrid resources, with the following features:
  - The calculator should allow for 15-minute or 5-minute solar or wind profiles, rather than hourly.
  - The calculator should allow for modified profiles to reflect the additions of energy storage in 'non-dispatchable' use cases.
  - Resources using project-specific RA Counts should document their results from the calculator.
- The Commission should explore if 'storage plus solar' and 'storage plus wind' resources are different enough, operationally, from standalone solar or standalone wind resources such that ELCC statutory requirements (as applicable to solar and wind) may reasonably not apply, in which case an alternative to ELCC could be evaluated and calculated.
- The Commission should establish ELCC update rules, cadences, and other topics so that financial, reliability, and regulatory risks associated with changing ELCC values are known and manageable.
  - Consideration of 'vintaging' should be discussed
  - The Commission and stakeholders should host discussions regarding if ELCC continues to be a workable methodology for determining RA counts, or if alternative methodologies should be explored through legislative recommendations (*e.g.*, through a joint legislative proposal).

IV. SCE'S PROPOSALS FOR QUALIFYING CAPACITY, EFFECTIVE FLEXIBLE CAPACITY, AND NON-DISPATCHABLE GENERATING RESOURCE PLUS STORAGE ARE REASONABLE AND SHOULD BE AUTHORIZED IMMEDIATELY.

SCE lists four broad types of RA counts that are needed, including for: (1) gas plus storage; (2) solar plus dispatchable storage; (3) solar with integrated 'non-dispatchable' storage; and (4) storage enabled demand response ("DR"). SCE's thought leadership on this matter is appreciated. Notwithstanding CESA's recommendations about the need for nuances and options regarding their

Proposal 3 (*i.e.*, for solar with integrated non-dispatchable storage), SCE's proposals should be adopted. Every resource should be reasonably valued and counted. The lack of any realistic RA count for some resources is seriously unreasonable and must be remedied. This proceeding should accomplish this.

V. THE COMMISSION STAFF PROPOSAL TO UPDATE SOLAR AND WIND ELCC VALUES SHOULD BE A ONE-TIME ALLOCATION BUT IT SHOULD NOT BE PRECEDENTIAL TO SOCIALIZE THE ELCC BENEFITS FROM NEW STORAGE ADDED TO SOLAR, WIND, OR OTHER PLANTS TO A CATEGORY OF RESOURCES.

CESA understands the Commission's proposal is a one-time update to the ELCC values for solar and wind, which will include behind-the-meter ("BTM") solar in the calculation. The calculation will also allocate the ELCC benefits of *existing* storage to one class of VERs, improving the ELCC of this class of resources under the current measurement.

CESA's does not oppose the Commission's one-time proposal for updating ELCC values. However, CESA does seek strong assurances that the methodology being used is not precedential and will not create perverse incentives that de-value solar-plus-storage resources. As mentioned above, CESA strongly recommends that the Commission affirm that this is a one-time ELCC adjustment, and that in the future the Commission does not intend to allocate the diversity benefits that energy storage resources provide to solar and wind resources that are not paired with a minimum amount of storage. Such future ELCC allocations could inappropriately provide windfalls to standalone solar and wind facilities by crediting them with benefits that they are not responsible for providing. Furthermore, such allocations would discourage, rather than encourage, solar and wind resources from pairing with storage resources. The RA program should reward project developers for building the kinds of resources the grid needs to maintain reliability – storage resources paired with solar, wind and thermal generators to reduce renewable intermittency

and grid congestion. Finally, CESA does not support any change to the System RA counting approaches for standalone storage at this time – *i.e.*, we do not seek an ELCC calculation-based approach for *existing standalone* storage at this time.

VI. FOR THE 2020 RA YEAR, THE COMMISSION SHOULD IMMEDIATELY RECOUNT EFFECTIVE FLEXIBLE CAPACITY BASED ON THE RAMP RANGE THAT CAN BE ACHIEVED IN 15 MINUTES, RATHER THAN 3 HOURS.

Many proposals have focused on how fast flexibility is more operationally useful to the CAISO. The role and benefits of fast flexibility does not diminish the nature of block-loaded resources, slow-ramping resource, or imports to 'fill the area under the curve' but fast flexibility remains a core capability of the fleet to help integrate solar, manage intra-hour intermittency, provide rampability for frequency needs, regulation, or contingency conditions, etc. One of the easiest changes the Commission could make is to immediately redefine how the Effective Flexible Capacity ("EFC") is calculated by 'counting' flexibility of a resource for its peak-to-trough ramping ability across 15 minutes. This would likely result in a lessened EFC for slow-ramping resources, but no de-rating of the EFC for many fast-ramping resources.

Current Flex RA discussions indicate this product is not expensive at this time. This means that changes to the Flex RA methodology can occur with minimal disruption to existing contracts. Now is thus an excellent time to make this simple change. Meanwhile, the Commission can also establish Flex RA products that truly meet the CAISO's flexibility needs, differentiating Flex RA from the goals of System RA. The Commission's actions in this regard will also signal that resources and developers should endeavor to provide fast flexibility to the extent possible and monetizable.

CESA is not suggesting modifications to the Flexibility Needs Assessment study conducted by the CAISO at this time. The ongoing use of the three-hour need determination can

continue to be used, especially if flexibility needs are relatively 'non-binding' under current market conditions. Ultimately, however, the Commission may wish to consider ideas from the CAISO's Flexible Resource Adequacy Capacity and Must Offer Obligations ("FRACMOO") Initiative regarding potential modifications to the CAISO's flexible capacity need determinations.

VII. THE COMMISSION SHOULD UNBUNDLE FLEX AND SYSTEM ATTRIBUTES FOR THE 2020 RA YEAR AND SHOULD SUPPORT THE CAISO'S 'FLEX ONLY' DELIVERABILITY STUDIES.

The Commission has evolved RA rules, studies, and practices over time. One additional modification the Commission should now make is to unbundle the flexibility attributes of RA from the system attributes. The unbundled attributes can allow for more efficient RA market outcomes and may support the development of flex-only resources, which may seek full flexibility deliverability but not full 'peak' deliverability. This could create cost-savings and options for developers to pursue and design solutions that are the most economically rationale. The CAISO has signaled it can or will undertake Flex-Only deliverability studies.[7]

CESA understands there is support from various stakeholders but no defined opposition to this change at this time.[8] Of note, SCE, a major utility, is supportive. At the workshop, a question of cost allocation for unbundled capacity came up, so CESA recommends the CAISO address the cost allocation issues that could arise in unbundling. CESA believes the cost allocation treatment will remain the same as under today's bundled structure to ensure fairness.

[7] See CAISO's Revised Straw Proposal in FRACMOO Phase 2.

[8] See Comments of CESA, Joint Demand Response Parties ("JDRP"), SCE, and Western Power Trading Forum ("WPTF").

VIII. THE COMMISSION SHOULD HAVE A TWO-DAY FORUM ON THE OVERALL CONCEPTS AND GOALS OF RESOURCE ADEQUACY AS A TOOL IN THE FUTURE GRID MIX.

The basic RA framework is designed to establish fungible RA 'products' which can be used interchangeably and procured by LSEs to show a reliable portfolio of resources for an operating period (*e.g.*, a month or year). In pursuit of a fungible product design and to mitigate market power, local areas were aggregated. Meanwhile, limitations on the fungibility of some products, or on their performance for meeting system or local needs, were addressed through maximum cumulative capacity ("MCC") 'buckets' and collective deficiency backstops. These latter aspects of the RA program sought to address the gap between real-world conditions and physical reliability realities and the esoteric market we had created.

The RA market now faces additional changes and challenges such that it may be poorly suited to line up a realistic, reasonable, and preferred fleet to meet reliability needs for an applicable period. These additional changes include load migration, more smaller LSEs, more customer choice regarding the resources that customers rely on, the availability of distributed energy resources ("DERs", more use of renewables and storage, among other things. Given this wave of change, it is appropriate to consider how the RA market serves needs, and if comprehensive modifications are appropriate. One such comprehensive change is a central buyer structure. Another is the idea is to move away from fungible products and to instead move towards a 'portfolio showing' in which the collective portfolio is deemed sufficient, even though resources inside the portfolio have different performance capabilities. This idea was raised with respect to meeting local needs through the remarks of Jim Caldwell of the Center for Energy Efficiency & Renewable Technologies ("CEERT"). CESA supports consideration of this type of portfolio

concept and recommends a larger discussion regarding the state of the RA Program, the role and limitations of capacity showings, and other high-level strategic assessments of the RA Program.

Another consideration should be the role of capacity payments in a future grid where the energy markets may show very different pricing. Consider a 2045 future with very high penetrations of renewables, little to no fossil generation for energy, and high deployments of energy storage. CESA remains unclear on what pricing such a market would yield, and if such pricing would adequately support shifting and the pursuit of market services, etc. While these concerns may be of low risk in the short-term and the CAISO will responsibly endeavor to have well-functioning markets, CESA believes this angle of thought highlights the importance of capacity contracts as a tool for lining up a proper fleet, and so recommends we continue to explore and consider smart structures for capacity contracts for the future decades.

IX. THE COMMISSION SHOULD HAVE A ONE-DAY WORKSHOP TO CONSIDER THE ROLES, RULES, AND POTENTIAL ISSUES FOR DISTRIBUTED ENERGY RESOURCES TO SUPPORT CAPACITY NEEDS, AND TO BE CONTRACTED FOR SUCH NEEDS WHERE APPROPRIATE

CESA and others have raised questions about how we can further unlock, value, and use the capacity from DERs for planning capacity. Considerations of this matter are timely and should be approached through a one-day workshop. CESA observes that some DERs use the Net Energy Metering ("NEM") tariff, which provides energy compensation. Additionally, the use and incorporation of DER production factors into the need determinations for Local RA. Some DERs are dispatchable and some are less price-responsive. The various assumptions and practices by which we consider and incorporate DERs into the RA need calculation and paradigm, as well as where and how we authorize DERs to provide RA should be discussed with interested stakeholders. This discussion should also allow for consideration of enhancements so that DERs

can be more fully or meaningfully utilized in our planning efforts. The role of the DRAM should also factor in.

CESA notes that some BTM solar can be augmented with energy storage potentially shifting output and modifying customer loads. The roles of energy storage and solar, along with if and how they deserve and effect ELCC counts for solar, should also be part of the discussion. Recently, Sunrun and Stem issued a study highlighting there may be significant untapped potential from DERs to provide capacity in constrained local areas. RA rules should reasonably unleash and allow for competition from this asset group. The CAISO's RA Deliverability for Distributed Generation provisions allow LSEs to identify and count DERs for RA where deliverable, so some of the groundwork for these enhancements has already been completed.

CESA appreciates the Commission's consideration of a one-day workshop and subsequent RA enhancements on this important topic.

X. A DISCUSSION SHOULD OCCUR AROUND THE PLANNING RESERVE MARGIN FOR FLEXIBILITY AND THE CONSERVATIVE 1-IN-2 PLANNING SCENARIOS.

Independent Energy Producers Association ("IEP") recommends that the Commission establish a Flexible Capacity Planning Reserve Margin ("PRM"). CESA supports this consideration but deems it less urgent than the above topics. A Flex PRM would ensure the overall portfolio properly plans for contingencies and outages that could limit production and services from Flex Capacity facilities. Since insufficient flexibility in the system can lead to control performance violations or other reliability risks, the development of a PRM is appropriate. CESA feels this matter is less urgent since the development of a Flex PRM could be undertaken later with limited opposition, whereas other items, such as fast-flexibility enhancement, is been done now

when prices for flexibility are relatively low, eliminating the economic consequences of evolving RA rules.

CESA also observes that grid conditions are changing and more variable, based on various or miscellaneous data-points shared by the CAISO and others. CESA's own analysis, presented in the March 13, 2019 workshop highlights how solar penetrations based on scenarios from the Integrated Resources Plan ("IRP") proceeding may lead to very different operating challenges – *e.g.*, more overgeneration and less room for baseload resources.[9] As such, CESA recommends this RA proceeding also allow for discussion regarding the level of conservatism in planning. CESA observes that the 1-in-2 planning value may understand the variability in future system conditions and that more conservative planning – *e.g.*, 1-in-10 should be considered in Track 3 of the RA proceeding.

XI. CONCLUSION.

CESA appreciates the opportunity to submit these comments on the Track 3 proposals and looks forward to continuing to be an active stakeholder in this proceeding.

Respectfully submitted,

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[9] "Flexible RA Reforms", CESA presentation on March 13, 2019, slide 10.