

**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 THE TRACK 2 PROCESS, SCOPE, AND SCHEDULING PURSUANT TO
ADMINISTRATIVE LAW JUDGE'S E-MAIL RULING**

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August 8, 2018

**BEFORE THE PUBLIC UTILITIES COMMISSION
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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 Resource Adequacy (“RA”) proceeding (R.17-09-020) process, scope, and scheduling pursuant to the *Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge* (“Scoping Memo”), issued on January 18, 2018, and modified by an E-mail Ruling issued Administrative Law Judge (“ALJ”) Peter V. Allen on August 1, 2018.

¹ 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, AltaGas Services, Amber Kinetics, American Honda Motor Company, Inc., Axiom Exergy, Brenmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Centrica Business Solutions, Consolidated Edison Development, Inc., Customized Energy Solutions, Dimension Renewable Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, EDF Renewable Energy, ElectrIQ Power, eMotorWerks, Inc., Enel, Enerport, ENGIE, E.ON Climate & Renewables North America, esVolta, Fluence Energy, GAF, General Electric Company, Greensmith Energy, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Iteros, Johnson Controls, Lendlease Energy Development, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Magnum CAES, Mercedes-Benz Energy, NantEnergy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., NRG Energy, Inc., Parker Hannifin Corporation, Pintail Power, Primus Power, Range Energy Storage Systems, Recurrent Energy, Renewable Energy Systems (RES), Sempra Renewables, Sharp Electronics Corporation, SNC Lavalin, Southwest Generation, Sovereign Energy, Stem, STOREME, Inc., Sunrun, Swell Energy, True North Venture Partners, Viridity Energy, VRB Energy, 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>).

I. INTRODUCTION.

CESA continues to view the RA Program as a key component of the state's reliability and grid planning efforts and believes that the Commission's consideration of important RA reforms will support effective and needed resource development, participation, and competition. CESA thus submitted opening testimony on July 10, 2018 (see Attachment 1 as requested in the E-Mail Ruling) that recommended that the following high-priority critical path issues be resolved in Track 2 of this proceeding:

- An Effective Load Carrying Capability ("ELCC") methodology for energy storage resources paired with solar or wind resources must be established. CESA will endeavor to provide a methodology for consideration. Effective Flexible Capacity ("EFC") calculations for energy storage with gas plants also should reflect the full flexibility capability.
- Flexible RA should be unbundled from System or Local RA attributes so that flexibility-focused resources can be designed and interconnected without needing or planning for other RA duties and peak deliverability, benefiting ratepayers.
- Fast flexibility should be valued. The currently used three-hour 'standard' should be updated, or the CAISO's proposals in the Flexible RA Capacity Must-Offer Obligation ("FRACMOO") Initiative to productize flexibility as day-ahead, 15-minute, and 5-minute flexible capacity products should be adopted.

CESA echoes the importance of addressing these matters in Track 2. Currently, Track 2 is focused on developing and implementing major changes through the newly adopted Multi-Year Local RA Framework as well as central buyer concepts by the 2020 RA year. While the focus on these major reforms in Track 2 is appropriate to address some near-term reliability and cost-effectiveness concerns, CESA believes that there is similar type of urgency to address our proposed issues above in Track 2. On the one hand, the Multi-Year Local RA Framework and central buyer concepts are intended to ensure that load-serving entities ("LSEs") are procuring, maintaining, and allocated sufficient RA resources to avoid costly backstop procurement. However, just as important to any RA reform discussions is the evolution of the RA Program to

ensure that the ‘right’ type of resources are procured and maintained, not just to ensure sufficiency in the quantity of RA-qualifying resources to meet RA obligations in specific local areas and by LSE. Without parallel development of RA product definitions and planning tools, CESA believes that there is a risk that RA obligations may be met but without the RA-qualifying resources that have the operational and performance characteristics that are needed to meet the state’s evolving grid needs.

Therefore, pursuant to the E-mail Ruling, CESA offers its recommendations on the process, scope and scheduling for Track 2 of this proceeding. Responses to parties’ opening testimony are also included in these comments.

II. A TECHNICAL WORKING GROUP OR WORKSHOP SHOULD BE FORMED TO MODIFY THE EFFECTIVE LOAD CARRYING CAPABILITY METHODOLOGY FOR HYBRID ENERGY STORAGE RESOURCES.

CESA highlighted how the current ELCC methodology does not reflect the potential capacity value improvements that can be offered by hybrid energy storage resources (*e.g.*, solar-plus-storage, wind-plus-storage), which presents a barrier to incentivizing renewables developers to pair energy storage with Renewable Portfolio Standard (“RPS”) eligible resources. In our opening testimony, CESA recommended the following key gaps in RA rules to be addressed:

- RA rules should establish that solar-plus-storage ELCC values can exceed traditional ELCC values.
- Solar-plus-storage ELCC values should be established based on forecasted ‘Year 0’ operations, and historical performance should inform RA values for Year 1 and beyond.
- Solar thermal resources should be able to access these updated ELCCs where appropriate.

To discuss these issues, CESA recommends a technical working group be formed in this proceeding to discuss the key gaps in RA rules mentioned above. Considering a related Ruling

was issued in the RPS proceeding (R.15-02-020) seeking responses to questions around challenges and barriers to procurement of RPS-paired storage resources,² this technical working group may be well-suited as a ‘cross-disciplinary’ working group with stakeholders from the RPS proceeding. Key questions for this technical working group can be, but are not limited to, the following:

- What is the current status and statistics of solar-plus-storage and wind-plus-storage procurement?
- What are the historical trends and future projections in ELCC values of standalone variable renewable resources?
- What are the benefits, costs, and risks of procuring standalone variable renewable resources versus those paired with energy storage resources?
- Are there modeling and implementation complexities to consider in reforming the ELCC methodology to appropriately value resources with energy storage?
- What are the representative production profiles and configurations of solar-plus-storage and wind-plus-storage resources? If more simplified approaches are pursued, how do we determine what is ‘representative’?
- How will the ELCC values be affected by whether and by how much the paired energy storage resources charges from the grid versus the renewable resource? How will ELCC values be affected by the sizing of the energy storage relative to the nameplate capacity of the renewable resource? How will ELCC values be affected by the energy storage duration (*e.g.*, load following versus load shifting applications)?
- How can the ELCC methodology be refined for different types of paired energy storage technologies?
- Can the ELCC value be modified when retrofitting energy storage with existing variable renewable generation? What are the financial and competitive implications in allowing this?

² *Assigned Commissioner and Assigned Law Judge’s Ruling Identifying Issues and Schedule of Review for 2018 Renewables Portfolio Standard Procurement Plans*, filed on June 21, 2018, pp. 19-20.
<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M216/K732/216732767.PDF>

The urgency of forming this technical working group is evident in the opening testimony filed by multiple parties. Several parties commented on the need to reform the ELCC methodology.³ CESA agrees that reforms are needed, and that the development and authorization of a ‘plus storage’ ELCC is an essential duty of the RA proceeding. The ELCC methodology should be reformed to not only accommodate locational and technological differences, but also different configurations and combinations of technologies, such as pairing variable renewable generation with energy storage resources, which will likely have a material impact on the capacity contribution of the otherwise standalone resource. The lack of such rules creates a barrier for developers and for utilities to consider least-cost best-fit solutions, or beneficial resources retrofits, etc. Parties expressed concern about the potential over-estimation of the qualifying capacity (“QC”) contributions of marginal units of solar and wind resources to the grid, which CESA agrees should be examined to ensure grid reliability, but we recommend that any ELCC reform discussions must also consider how the QC value of solar and wind resources can be accurately enhanced or increased with the pairing with energy storage. In general, CESA believes that the ELCC methodology should evolve to account for the actual capacity value of solar and wind resources, which is not reflected in a broad average ELCC methodological approach that is in place today.

Southern California Edison Company (“SCE”) proposed several scenarios and proposals by which a paired energy storage resource could be measured and quantified for its QC value. Specifically, SCE makes a distinction between energy storage that is dispatchable versus non-

³ *Southern California Edison Company’s Track 2 Testimony in Rulemaking 17-09-020*, served on July 10, 2018, p. 20; *Pacific Gas and Electric Company Generation Resource Adequacy Program Prepared Testimony*, served on July 10, 2018, Chapter 3, p. 6; *Testimony of Matthew Barmack on Behalf of Calpine Corporation, Appendix B: Calpine’s ELCC Reform Proposal*, served on July 10, 2018; *California Independent System Operator Corporation Track 2 Testimony Chapter 5: Effective Load Carrying Capacity*, served on July 10, 2018, pp. 1-3.

dispatchable, which CESA reads to make a distinction in cases where energy storage is added to provide dispatchability of the combined resource as a non-generator resource (“NGR”) versus to firm the renewable generation as a variable energy resource (“VER”) and avoid any flexibility charges. In doing so, SCE proposes calculating the net qualifying capacity (“NQC”) value as the sum of the ELCC for the renewable resource and the Pmax of the energy storage resource under a four-hour discharge when energy storage is added as a dispatchable resource.⁴ SCE thus proposes to calculate the NQC value of the combined resource without considering the energy storage in the ELCC calculation in the dispatchability scenario. This may be an approach to calculate the NQC value of combined resources in this scenario, but the appropriateness of this approach may depend on specific configurations (*e.g.*, duration, sizing) and applications of the combined resource, so CESA hopes that this technical working group consider both SCE’s proposed approach as well as an ELCC approach.

CESA thus recommends that the Commission form this technical working group to address the range of ELCC reforms within Track 2 to ensure that the needed refinements are implemented in a timely manner for the 2020 RA year. Importantly, CESA has worked with several of our members to identify some production profiles of solar-plus-storage resources that can be used in this proceeding to demonstrate the value of paired resources and to inform ELCC methodological refinement.

Another form of urgency is that ELCC reforms are needed as well to appropriately value procurement of RPS-paired storage resources in the RPS proceeding. Today, procurement of renewable resources and energy storage resources are siloed even though there are often cost

⁴ *Southern California Edison Company’s Track 2 Testimony in Rulemaking 17-09-020*, served on July 10, 2018, p. 28.

advantages in procuring and co-locating these resources together (e.g., Federal tax credits, shared facility costs). Modeling and selection of renewable resources and energy storage resources in the Integrated Resources Plan (“IRP”) were also done separately despite these advantages, in part due to under-developed approaches for considering hybrid storage resources. At the same time, Federal tax credits are phasing down and renewables integration remains an ongoing grid challenge, raising the urgency of ensuring renewables can be deployed smartly while also addressing capacity planning and other grid needs. With reforms to ELCC, CESA believes that some of these barriers to procuring paired resources may be addressed by reflecting the actual, higher capacity contributions of these resources.

III. THE COMMISSION SHOULD MOVE FORWARD WITH UNBUNDLING FLEXIBLE RA FROM SYSTEM AND LOCAL RA.

CESA continues to support the unbundling of Flexible RA from System or Local RA. The testimonies of CESA and the Western Power Trading Forum (“WPTF”)⁵ highlighted how the California Independent System Operator (“CAISO”) has proposed to unbundle these RA products and to develop a separate flexible deliverability assessment. However, in its opening testimony and subsequent market notices, the CAISO indicated that it has suspended the FRACMOO Phase 2 Initiative to accommodate the scheduled delay in the Day-Ahead Market Enhancement (“DAME”) Initiative.⁶ As a result of this delay, there is a risk that no progress will be made in reforming the Flexible RA Program to ensure that the resources with the ‘right’ Flexible RA attributes are available and operated to meet increasingly steep early morning and evening ramping needs.

⁵ *Testimony of Gary Ackerman on Behalf of the Western Power Trading Forum*, served on July 10, 2018, pp. 10-11.

⁶ *California Independent System Operator Corporation Track 2 Testimony Chapter 2: Multi-Year Resource Adequacy Procurement Requirements*, served on July 10, 2018, pp. 4-5.

It is important to continue moving forward with and not delay critical improvements to the Flexible RA program in order to ensure that enough fast, flexible resources are available to meet ramping needs. The Commission should act to unbundle Flexible RA from System and Local RA as has been requested in the last several RA proceedings. Further, the Commission should allow resources only seeking Flexible RA status to *not* have to undergo the Full Capacity Deliverability Study (“FCDS”), which examines a resource’s ability to deliver at peak across the entire system. As has been pointed out many times before, the FCDS is a major and unnecessary hurdle to flexible resources such as energy storage that seek to provide energy-only services during non-peak times.

While the CAISO may delay their FRACMOO implementation, that should not hinder the Commission’s plan to unbundle Flexible from System RA values. The CAISO can continue to develop a flexibility-only qualifying capacity study, and such a component of the FRACMOO design has not been contested, as CESA understands it.

IV. THE FULL CHARGE TO DISCHARGE RANGE SHOULD BE CREDITED FOR STANDALONE AND HYBRID ENERGY STORAGE RESOURCES AND SHOULD BE AFFIRMED BY THE COMMISSION.

CESA supports the testimony by SCE and WPTF that energy storage services should be credited for the “full range of services” under all Flexible RA products.⁷ Additionally, SCE describes a scenario of an energy storage resource paired with a dispatchable generating resource where the full three-hour ramping range to quantify the Effective Flexible Capacity (“EFC”) value of the resource should account for the full charge to full discharge range of the combined resource, whereby the paired energy storage system enhances the EFC value of the otherwise

⁷ *Testimony of Gary Ackerman on Behalf of the Western Power Trading Forum*, served on July 10, 2018, p. 11.

standalone generating resource. CESA supports these positions and recommends that the Commission affirm this through a Commission Decision or Ruling. To the degree further development is needed in Flexible RA Program counting rules or to address other potential issues discussed herein, a workshop may be appropriate to address this matter in Track 2. CESA recommends that the Commission address this issue in Track 2 because it likely is a quickly resolvable issue that should not take too much time and resources from other Track 2 issues but offers significant benefits by incentivizing resources to pair dispatchable generating resources with energy storage resources.

V. THE CAISO'S PROPOSED HOURLY LOAD AND RA ANALYSIS IS REASONABLE BUT CAPS ON AVAILABILITY LIMITED RESOURCES SHOULD NOT BE IMPLEMENTED TO ADDRESS IDENTIFIED GRID NEEDS.

In its testimony, the CAISO recommends that the Commission recognize the impact of availability limited resources and adopt the CAISO's hourly load and RA analysis to determine availability needs in local capacity areas. CESA is unclear on what is meant by "availability limited" and seeks clarification on this proposal from the CAISO, but if it is meant to consider the impact of "energy limited" resources, there are some concerns. Given the way that the CAISO has contextualized this problem, CESA believes that the concern around availability limited resources may be referring to energy limited resources.

Pointing to the increase in availability limited resources serving local capacity areas and sub-areas, the CAISO recommended that the Commission identify and account for availability limitations within local capacity areas and sub-areas to ensure that sufficient resources are procured to meet reliability requirements for all hours and during contingency situations. Given these concerns and recommendations, the CAISO indicated that it plans to develop and perform detailed hourly load and resource analyses to determine whether there were binding availability

limits in the local capacity areas and sub-areas, and that it plans to incorporate these new inputs to its Local Capacity Technical Study. Depending on the load profile, the CAISO proposed to identify the deficiencies that can be met by availability limited resources (*i.e.*, providing minimal four hours of availability) versus those that must be met by non-limited resources (*i.e.*, providing greater than four hours of availability).

CESA supports the CAISO's intended study efforts and believes that it is useful insight to understand the duration of need. As done in the Moorpark Local Sub-Area Capacity Study, the CAISO highlighted how energy storage with eight- to nine-hour durations may be needed to address the deficiency in the Moorpark area due to the suspension of the Puente Power Plant. This study was informative in understanding the underlying grid need but CESA disagrees that such study results should place a cap on availability limited resources. The Commission should not place what is in effect a cap on availability limited resources to address certain grid needs, as a portfolio of availability limited resources may be able to address longer-duration grid needs. In many cases, longer-duration energy storage solutions may be needed, but the default procurement solution should not be to limit the quantity of availability limited resources that can be or should be procured.

VI. CONCLUSION.

CESA appreciates the opportunity to submit these comments on the E-mail Ruling and looks forward to continuing to be an active stakeholder in this proceeding.

Respectfully submitted,



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Date: August 8, 2018

Attachment 1

Docket No.: R.17-09-020

Exhibit No.: _____

Date: July 10, 2018

Witness: Alex Morris

**TESTIMONY OF ALEX MORRIS
ON BEHALF OF THE CALIFORNIA ENERGY STORAGE ALLIANCE
CONCERNING RESOURCE ADEQUACY TRACK 2 PROPOSALS**

1 **Q: Please state your name and business address.**

2 **A:** My name is Alex J. Morris. I am Vice President of Policy & Regulatory Affairs of the California Energy
3 Storage Alliance (“CESA”). My business address is David Brower Center, 2150 Allston Way, Suite 400, Berkeley,
4 CA 94704.

5 **Q: Please summarize your professional and educational background.**

6 **A:** In my capacity as Vice President of Policy and Regulatory Affairs, I direct CESA’s engagements at the
7 California Public Utilities Commission (“Commission”), California Independent System Operator (“CAISO”),
8 California Energy Commission (“CEC”), California Legislature, Federal Regulatory Commission (“FERC”), and
9 other agencies. I have more than 10 years of experience in policy and regulatory work at these Agencies while
10 working for electric utilities Pacific Gas and Electric Company (“PG&E”) and Southern California Edison Company
11 (“SCE”) prior to joining CESA in 2015. I hold a Bachelor of Arts in Cultural and Environmental Studies from the
12 University of California, Los Angeles, and a Master of Business Administration (MBA) from the University of
13 California, Davis’ Graduate School of Management.

14 **Q: Have you ever testified before this Commission?**

15 **A:** No.

16 **Q: On whose behalf are you testifying?**

17 **A:** I am testifying on behalf of CESA. Founded in 2009, CESA is a non-profit membership based advocacy group
18 committed to advancing the role of energy storage in the electric power sector through policy, education, outreach,
19 and research. CESA’s mission is to make energy storage a mainstream energy resource that accelerates the adoption
20 of renewable energy and promotes a more efficient, reliable, affordable, and secure electric power system. As a
21 technology-neutral group that supports all business models for deployment of energy storage resources, CESA’s
22 membership includes technology manufacturers, project developers, system integrators, consulting firms, and other
23 clean tech industry leaders.

24 **Q: What is the purpose of your testimony?**

25 **A:** The purpose of my testimony is to respond to the *Scoping Memo and Ruling of Assigned Commissioner and*
26 *Administrative Law Judge* (“Scoping Memo”) issued by Assigned Commissioner Liane M. Randolph and
27

1 Administrative Law Judge Peter V. Allen on January 18, 2018 and to the *E-Mail Ruling Modifying Schedule*
2 (“Ruling”) filed by Administrative Law Judge Peter V. Allen on May 2, 2018.

3 **I. Introduction**

4 The Resource Adequacy (“RA”) Program continues to be a key component of the state’s reliability
5 and grid planning efforts. While many RA reforms are underway, multiple gaps in the RA construct need
6 immediate resolution in order to fairly support resource developments, participation, and competition.
7 Some of these items must be addressed in Track 2.

8 CESA appreciates the Commission's and Energy Division's focus on important RA reforms,
9 including reforms that support fair and robust competition and valuation from energy storage resources
10 (either in stand-alone or 'paired' configurations).

11 CESA does not make this strong recommendation lightly. CESA understands that many high-
12 priority items will likely be discussed and resolved in Track 2. CESA's recommended items are very high
13 priority matters that can be doable. To support the resolution of these issues, CESA will work to develop
14 analytical models, proposals, or methodologies for effectuating these changes.

15 The following high-priority critical path matters should be resolved in Track 2:

- 16 • An Effective Load Carrying Capability (“ELCC”) methodology for energy storage
17 resources paired with solar or wind resources must be established. CESA will endeavor
18 to provide a methodology for consideration.
- 19 • Flexible RA should be unbundled from System or Local RA attributes so that flexibility-
20 focused resources can be designed and interconnected without needing or planning for
21 other RA duties and peak deliverability, benefiting ratepayers.
- 22 • Fast flexibility should be valued. The long-standing three-hour 'standard' should be
23 updated, or the CAISO's proposals in the Flexible RA Capacity Must-Offer Obligation
24 (“FRACMOO”) Initiative to productize flexibility as day-ahead, 15-minute, and 5-minute
25 flexible capacity products should be adopted.

1 CESA also believes that 'downward flexibility' capacity planning is warranted, but this issue could
2 be addressed in Track 3, given the other priorities. Recall that fleet planning should ensure that a viable
3 fleet with appropriate market participation structures. A fleet that cannot reliably address overgeneration
4 and downward flexibility concerns is likely inadequate and will prompt excessive out-of-market dispatches
5 or capacity procurement. Such actions represent inefficiencies in the RA solution and can raise costs for
6 ratepayers. This can be avoided through smart fleet planning that ensures overgeneration challenges and
7 downward ramping needs are addressed in all grid conditions.

8 CESA represents approximately 70 member companies focused in the energy storage industry in
9 various ways. CESA promotes competitive outcomes and technology-neutral approaches to ensure good
10 outcomes for ratepayers.

11 **II. Proposals**

12 **A. An ELCC for storage plus solar or wind resources must be established**

13 A critical priority for reforms to the RA market is to establish and codify RA counting
14 methodologies and values for solar-plus-storage, and other 'plus storage' resources. The Commission
15 has implemented its ELCC counting convention but has not authorized any solar-plus-storage ELCC
16 values. CESA requests that the Commission definitively authorize an RA value for this important
17 resource combination so that solar resources can improve their RA value with some amount of energy
18 storage that is not designed to provide standalone RA.

19 Several aspects of solar-plus-storage rules are needed. CESA recommends the following key
20 gaps in RA rules be addressed:

- 21 • RA rules should establish that solar-plus-storage ELCC values can exceed traditional
22 ELCC values.
- 23 • Solar-plus-storage ELCC values should be established based on forecasted 'Year 0'
24 operations, and historical performance should inform RA values for Year 1 and
25 beyond.

- Solar thermal resources should be able to access these updated ELCCs where appropriate.

CESA looks forward to conducting analyses and developing methodologies for establishing plus-storage ELCC values. In theory, the dispatch of co-located energy storage can change the generation profile of a solar plant such that its generation better matches load needs. Such an updated generation profile will lead to a better ELCC. In cases where an ELCC is lower due to mismatches between solar generation and load needs, even a short-duration of output from a co-located energy storage unit could dramatically improve the ELCC.

CESA believes it is possible to work with the ELCC framework to authorize and determine appropriate capacity counting values, but other approaches are possible. It may be prudent to explore alternative approaches, perhaps only for near-term use, if the workload of calculating ELCC values for plus-storage resources is difficult to manage inside Track 2. Consider that the ELCC approach is directed through California Public Utilities Code, which states "...the commission shall determine the effective load carrying capacity of wind and solar energy resources on the California electrical grid. The commission shall use those effective load carrying capacity values in establishing the contribution of wind and solar energy resources toward meeting the resource adequacy requirements established pursuant to Section 380."⁸ Since resources paired with energy storage resources can have different performance, dispatchability, and generation profiles, it may be legally reasonable to define plus-storage resources as different from traditional stand-alone solar. Through this alternative definition, plus-storage resources could receive RA capacity values through a simpler Commission-determined methodology. CESA suggests consideration of this alternative path in order to provide options to the Commission for expedient resolution of the pressing matter of establishing RA counting and contracting values for plus-storage resources.

⁸ California Code, Public Utilities Code - PUC § 399.26 (d).

1 There is strong rationale for prioritizing the authorization and formulation of plus-storage
2 ELCC values. Through power purchase agreements (“PPAs”), many ratepayers are paying for
3 resources with unexpectedly declining RA values. Ratepayers should thus be presented with exposure
4 to the benefits of boosting the RA value of resources by adding energy storage. Since ELCC
5 calculations for solar and wind can be greatly affected by the performance of a resource in short-
6 duration increments, the addition of even modest amounts of energy storage may materially boost the
7 ELCC of the combined resource. CESA notes that the energy storage in this plus-storage case would
8 not have standalone RA value, but instead would be part of the renewable resource’s RA count. These
9 resources would also have improved dispatchability and economics via the addition of energy storage.⁹

10 CESA looks forward to developing analyses to support a plus-storage ELCC. The actual
11 ‘counting’ of an ELCC for a solar-plus-storage can likely be determined using data amassed by the
12 Commission. Importantly, if the Commission does not wish to be responsible for performing
13 calculations of plus-storage ELCC values, the Commission should direct a ‘Year 1’ RA amount. For
14 Year 2 and beyond, the normal ELCC calculation can reflect the performance and dispatch of the
15 paired resource, thereby increasing the ELCC. Consideration of Effective Flexible Capacity (“EFC”)
16 values is also warranted, and such considerations should be included in any ‘unbundling’ discussions in
17 Track 2 or in future RA deliberations. Pre-approval or pre-authorization by the Commission of any
18 approach should be clear so that developers have a clear path forward.

19 CESA notes that it provided proposals for plus-storage ELCC values in the 2017 cycle of the
20 RA proceeding (R.14-10-010) and in Track 1 of this proceeding (R.17-09-020). CESA appreciates the
21 Commission’s consideration of these types of ideas as clear enhancements to ELCC rules that are

24 ⁹ CESA only endorses prudent and reasonable capacity counting approaches and is not, at this
25 time, indicating support for a non-ELCC methodology. The non-ELCC option, however, may
26 be pragmatic for establishing a near-term capacity value for plus-storage resources. This is
27 especially relevant as some additional ELCC enhancements (*e.g.*, considerations for ‘vintaging’)
28 may be addressed by the Commission in current or future RA proceedings

1 needed to ensure energy storage additions are appropriately reflected and valued in RA counting
2 conventions, ultimately supporting improved reliability.

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4
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6 **B. Track 2 of the proceeding should explicitly authorize and unbundle Flexible RA from**
7 **System or Local RA attributes so that flexibility-focused resources can be designed and**
8 **interconnected without needing or planning for other RA duties and peak deliverability,**
9 **benefiting ratepayers**

10 Under current RA rules and interconnection practices, resources that provide Flexible RA
11 services generally must seek full capacity deliverability status (“FCDS”). FCDS studies examine
12 whether a resource is capable of delivering during peak times on the entire system. Such a study is
13 burdensome for resources only seeking to provide Flexible RA services only during the subset of hours
14 when flexibility need is greatest, while this peak deliverability approach requires full capacity
15 capability during all hours of the day and constrains resources to face costly system upgrades that
16 might be avoidable but for the coupling of Flexible and System/Local RA needs.

17 To address this inefficiency, CESA proposes that the Commission’s RA rules explicitly
18 unbundle the sale and counting of Flexible RA attributes from those of Local and/or System RA. This
19 should further be reflected through the establishment of a separate pathway for determining flexible
20 deliverability – *i.e.*, EFC – instead of through the FCDS study, as is used today to determine the net
21 qualifying capacity (“NQC”).

22 The CAISO has signaled a willingness to support this unbundling in their jurisdictional roles
23 (of measuring deliverability via studies), as have other stakeholders. Full EFC deliverability should
24 therefore be authorized separately from any NQC deliverability. While CESA has not seen details of
25 the CAISO’s potential study form and is not endorsing it at this time, the CAISO is exploring this
26

1 concept in Phase 2 of the FRACMOO Initiative.¹⁰ CESA imagines that a separate EFC deliverability
2 authorization or examination could expedite the process of getting resources online to provide valuable
3 flexible capacity services in least-cost fashion, benefitting ratepayers.

4 Moreover, Flexible RA rules should credit energy storage resources for the value of both
5 ramping up and ramping down services they are capable of providing.¹¹ All of these adjustments to the
6 current Flexible RA framework will work to make a greater amount of fast, flexible resources, such as
7 energy storage, available to address the dramatic ramps the system is forecasted to experience over the
8 next several months and years.

9
10 **C. Fast flexibility should be valued – the long-standing three-hour ‘standard’ should be**
11 **updated, or the CAISO’s FRACMOO proposals to productize flexibility as day-ahead, 15-**
12 **minute, and 5-minute flexible capacity products should be adopted**

13 For EFC counting, the Commission should modify its measurement methodology for
14 determining flexible capacity. Currently, the measure of flexible capacity hinges on a three-hour ramp
15 period, but, given that three-hour solutions may overstate the flexibility available for actual operations,
16 a shorter duration would be a more appropriate period, where 5-minute or 15-minute flexibility is
17 needed. The measurements based on three-hour intervals undervalue fast flexibility and do not support
18 the provision of a fleet that can meet many actual operating needs.¹²

21 ¹⁰ *Flexible Resource Adequacy Criteria and Must Offer Obligation Phase 2 Initiative Revised*
22 *Flexible Capacity Framework*, published on January 31, 2018, pp. 9, 35-37.
[http://www.caiso.com/Documents/RevisedDraftFlexibleCapacityFrameworkProposal-](http://www.caiso.com/Documents/RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleResourceAdequacyCriteria-MustOfferObligationPhase2.pdf)
23 [FlexibleResourceAdequacyCriteria-MustOfferObligationPhase2.pdf](http://www.caiso.com/Documents/RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleResourceAdequacyCriteria-MustOfferObligationPhase2.pdf)

24 ¹¹ CESA appreciates that Commission rules smartly authorize energy storage to have EFCs that
25 exceed NQCs in D.14-06-050, *Decision Adopting Local Procurement and Flexible Capacity*
Obligations for 2015, and Further Refining the Resource Adequacy Program, filed on June 26,
2014, p. B10

26 ¹² See CAISO *Revised Flexible Capacity Framework* and presentations in the FRACMOO
27 Phase 2 Initiative stakeholder meeting on February 7, 2018.

1 The original three-hour approach has been helpful in establishing the first generation of
2 flexible capacity products, but CESA believes CAISO data shows that the three-hour 'count' fails to
3 capture and target the more acute intra-hour ramping needs. In fact, block-schedule resources like
4 imports can address some degree of hour-to-hour trending ramps. By contrast, only sub-hourly,
5 dispatchable, and fast-ramping resources like energy storage can address system uncertainty and
6 balancing needs. The availability of such resources should be assured through an appropriate capacity
7 planning regime. The Flex RA product must therefore evolve.

8 RA payments remain critical for incentivizing and supporting 'needed' capacity, and for
9 signaling the types of capacity that are valued. In parallel with RA rules designed to ensure any load-
10 serving entity appropriately contracts for capacity to match its load, such rules should also ensure the
11 'right' capacity is provided. Modest, directionally correct changes to the Flexible RA product suite will
12 effectuate this, signaling to developers and LSEs alike what is needed. Year-over-year, this 'signaling'
13 will continue to support the healthy, contractually-backed, evolution of our grid. Multi-year RA
14 highlights the value of this approach, since LSEs can now more rigidly explore year-over-year
15 portfolio requirements, rather than opting solely for single-year least-cost portfolios.

16
17 **D. The RA planning tool should ensure sufficient capacity with participation obligations for**
18 **downward ramping flexibility by establishing a new 'Flex Down RA' product**

19 CESA maintains that our capacity fleet should support a reliable and efficiently-functioning
20 electric system. Capacity market valuations and competitive outcomes are linked to actual grid
21 dispatches and energy markets. The Commission should ensure that any fleet yielded by the RA
22 market is sufficient to prudently address and meet grid conditions across the month through 'in-
23 market' solutions as compared to operational adjustments or out-of-market actions, which can be a
24

25 [https://www.caiso.com/Documents/Agenda-Presentation-
26 RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleRACriteria-
27 MustOfferObligationsPhase2-Feb72018.pdf](https://www.caiso.com/Documents/Agenda-Presentation-RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleRACriteria-MustOfferObligationsPhase2-Feb72018.pdf)

1 sign of inefficiency in the dispatch or fleet. As such, an RA market or planning capacity value for
2 downward flexibility that includes a must-offer obligation (“MOO”) is needed.

3 CESA proposes that the Commission include the development of a Flex Down RA product in
4 this proceeding. This product could be implemented in a non-binding fashion for a ‘pilot year’ if
5 needed and should be defined so that physically designated resources with downward ramping
6 capability can compete to provide these services. Any related MOOs should emphasize the provision
7 of downward ramping bids in the CAISO markets during key times. Resources would ‘count’ based
8 on their expected downward ramping range across a brief time – *e.g.*, 5- or 15-minute periods.
9 Resources with minimum run times or minimum load levels that reduce ramping capabilities in the
10 determined intervals should face lower qualifying capacity ‘counts’ for Flex Down RA. The
11 downward ramping range of variable energy resources could be calculated based on their expected
12 downward flexibility at the period of need. For in-front-of-the-meter (“IFOM”) energy storage, the
13 Flex Down RA count should include the full range from maximum discharge to maximum charge. For
14 behind-the-meter (“BTM”) resources, ‘load shifting’ capability along with the ability to increase load
15 should inform the eligibility and counting of these resources.

16 CESA reminds stakeholders that some resources currently appear to be providing Flex Down
17 RA for ‘free’ in the form of a willingness to curtail or reduce output (or increase load) from resources,
18 some of which are in operations today. This implies a \$0/kW-month capacity payment. CESA notes
19 this because a Flex Down RA product might be extremely inexpensive to implement yet could
20 sufficiently guarantee that the RA fleet will support economic and reliable operations by the CAISO.
21 While some parties have asserted that a new product might just be used to direct more payments to
22 generators, that is not CESA’s goal. Rather, CESA aims to ensure that efficient and sufficient fleets
23 are available to the CAISO for meeting reliability needs through its market optimization and related
24 schedules. A Flex Down RA product also provides an important ‘market signal’ that fast-ramping
25 energy storage solutions are likely needed to integrate renewables and to promote reliability.
26 Consideration of all grid needs, including downward ramping and overgeneration conditions, is

1 appropriate for RA and can be done in ways that boost procurement efficiencies and reliability on
2 behalf of ratepayers.

3 Any assumptions that overgeneration is an ‘operational issue only’ understates the
4 complicated nature of energy markets, grid reliability, capacity contracts, and other factors. CESA
5 believes it is discriminatory and unreasonable to presume, particularly in planning exercises, that
6 curtailments can occur in unlimited quantities. In many cases, this ‘operational only’ perspective is not
7 true due to physical or contractual conditions, and it also relies on selective treatment in CAISO
8 markets where some resources are shut off so others can run. An over-reliance on curtailment also
9 may inadvertently authorize over-commitments of fossil resources, again where out-of-market costs
10 lead to inefficiency and where greenhouse gas emissions can be higher than if a more efficient dispatch
11 via Flex Down RA offers had been scheduled. In some cases, curtailments may be allowing imports of
12 unspecified power, potentially coal, into California. Finally, downward ramping shortages are
13 occurring and may occur with greater frequency. Planning for this eventuality with a smartly designed
14 capacity planning tool is logical and reasonable for ratepayers who may otherwise bear costs of out-of-
15 market payments and backstop procurement. For all of these reasons, the Commission should explore
16 capacity planning for downward ramping needs. Such an exploration will likely yield a more efficient,
17 clean, and reliable operation of the grid in ways that also signals to market participants and to
18 contracting parties what types of services are valuable.

19
20 **Q: Does this conclude your testimony?**

21 **A:** Yes. I appreciate the opportunity to submit this testimony and Track 2 proposals on behalf of CESA for the RA
22 proceeding, which is important and impactful for reliability and for shaping the fleet. CESA greatly looks forward
23 to working with the Commission and parties on the further development of a durable and robust RA program.

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