

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
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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.

26 CESA also believes that 'downward flexibility' capacity planning is warranted, but this issue could
27 be addressed in Track 3, given the other priorities. Recall that fleet planning should ensure that a viable

1 fleet with appropriate market participation structures. A fleet that cannot reliably address overgeneration
2 and downward flexibility concerns is likely inadequate and will prompt excessive out-of-market dispatches
3 or capacity procurement. Such actions represent inefficiencies in the RA solution and can raise costs for
4 ratepayers. This can be avoided through smart fleet planning that ensures overgeneration challenges and
5 downward ramping needs are addressed in all grid conditions.

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

9 **II. Proposals**

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

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

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

- 19 • RA rules should establish that solar-plus-storage ELCC values can exceed traditional
20 ELCC values.
- 21 • Solar-plus-storage ELCC values should be established based on forecasted 'Year 0'
22 operations, and historical performance should inform RA values for Year 1 and
23 beyond.
- 24 • Solar thermal resources should be able to access these updated ELCCs where
25 appropriate.

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

5 CESA believes it is possible to work with the ELCC framework to authorize and determine
6 appropriate capacity counting values, but other approaches are possible. It may be prudent to explore
7 alternative approaches, perhaps only for near-term use, if the workload of calculating ELCC values for
8 plus-storage resources is difficult to manage inside Track 2. Consider that the ELCC approach is
9 directed through California Public Utilities Code, which states "...the commission shall determine the
10 effective load carrying capacity of wind and solar energy resources on the California electrical grid.
11 The commission shall use those effective load carrying capacity values in establishing the contribution
12 of wind and solar energy resources toward meeting the resource adequacy requirements established
13 pursuant to Section 380."¹ Since resources paired with energy storage resources can have different
14 performance, dispatchability, and generation profiles, it may be legally reasonable to define plus-
15 storage resources as different from traditional stand-alone solar. Through this alternative definition,
16 plus-storage resources could receive RA capacity values through a simpler Commission-determined
17 methodology. CESA suggests consideration of this alternative path in order to provide options to the
18 Commission for expedient resolution of the pressing matter of establishing RA counting and
19 contracting values for plus-storage resources.

20 There is strong rationale for prioritizing the authorization and formulation of plus-storage
21 ELCC values. Through power purchase agreements ("PPAs"), many ratepayers are paying for
22 resources with unexpectedly declining RA values. Ratepayers should thus be presented with exposure
23 to the benefits of boosting the RA value of resources by adding energy storage. Since ELCC
24 calculations for solar and wind can be greatly affected by the performance of a resource in short-

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27 ¹ California Code, Public Utilities Code - PUC § 399.26 (d).

1 duration increments, the addition of even modest amounts of energy storage may materially boost the
2 ELCC of the combined resource. CESA notes that the energy storage in this plus-storage case would
3 not have standalone RA value, but instead would be part of the renewable resource’s RA count. These
4 resources would also have improved dispatchability and economics via the addition of energy storage.²

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

14 CESA notes that it provided proposals for plus-storage ELCC values in the 2017 cycle of the
15 RA proceeding (R.14-10-010) and in Track 1 of this proceeding (R.17-09-020). CESA appreciates the
16 Commission’s consideration of these types of ideas as clear enhancements to ELCC rules that are
17 needed to ensure energy storage additions are appropriately reflected and valued in RA counting
18 conventions, ultimately supporting improved reliability.

25 ² CESA only endorses prudent and reasonable capacity counting approaches and is not, at this time,
26 indicating support for a non-ELCC methodology. The non-ELCC option, however, may be pragmatic for
27 establishing a near-term capacity value for plus-storage resources. This is especially relevant as some
28 additional ELCC enhancements (*e.g.*, considerations for 'vintaging') may be addressed by the
Commission in current or future RA proceedings

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

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

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

17 The CAISO has signaled a willingness to support this unbundling in their jurisdictional roles
18 (of measuring deliverability via studies), as have other stakeholders. Full EFC deliverability should
19 therefore be authorized separately from any NQC deliverability. While CESA has not seen details of
20 the CAISO’s potential study form and is not endorsing it at this time, the CAISO is exploring this
21 concept in Phase 2 of the FRACMOO Initiative.³ CESA imagines that a separate EFC deliverability
22 authorization or examination could expedite the process of getting resources online to provide valuable
23 flexible capacity services in least-cost fashion, benefitting ratepayers.

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26 ³ *Flexible Resource Adequacy Criteria and Must Offer Obligation Phase 2 Initiative Revised Flexible*
27 *Capacity Framework*, published on January 31, 2018, pp. 9, 35-37.
28 [http://www.caiso.com/Documents/RevisedDraftFlexibleCapacityFrameworkProposal-
FlexibleResourceAdequacyCriteria-MustOfferObligationPhase2.pdf](http://www.caiso.com/Documents/RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleResourceAdequacyCriteria-MustOfferObligationPhase2.pdf)

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

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

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

16 The original three-hour approach has been helpful in establishing the first generation of
17 flexible capacity products, but CESA believes CAISO data shows that the three-hour 'count' fails to
18 capture and target the more acute intra-hour ramping needs. In fact, block-schedule resources like
19 imports can address some degree of hour-to-hour trending ramps. By contrast, only sub-hourly,
20 dispatchable, and fast-ramping resources like energy storage can address system uncertainty and

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24 ⁴ CESA appreciates that Commission rules smartly authorize energy storage to have EFCs that exceed
25 NQC's in D.14-06-050, *Decision Adopting Local Procurement and Flexible Capacity Obligations for*
26 *2015, and Further Refining the Resource Adequacy Program*, filed on June 26, 2014, p. B10

27 ⁵ See CAISO *Revised Flexible Capacity Framework* and presentations in the FRACMOO Phase 2
28 Initiative stakeholder meeting on February 7, 2018.
[https://www.caiso.com/Documents/Agenda-Presentation-
RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleRACriteria-MustOfferObligationsPhase2-
Feb72018.pdf](https://www.caiso.com/Documents/Agenda-Presentation-RevisedDraftFlexibleCapacityFrameworkProposal-FlexibleRACriteria-MustOfferObligationsPhase2-Feb72018.pdf)

1 balancing needs. The availability of such resources should be assured through an appropriate capacity
2 planning regime. The Flex RA product must therefore evolve.

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

11
12 **D. The RA planning tool should ensure sufficient capacity with participation obligations for**
13 **downward ramping flexibility by establishing a new 'Flex Down RA' product**

14 CESA maintains that our capacity fleet should support a reliable and efficiently-functioning
15 electric system. Capacity market valuations and competitive outcomes are linked to actual grid
16 dispatches and energy markets. The Commission should ensure that any fleet yielded by the RA
17 market is sufficient to prudently address and meet grid conditions across the month through 'in-market'
18 solutions as compared to operational adjustments or out-of-market actions, which can be a sign of
19 inefficiency in the dispatch or fleet. As such, an RA market or planning capacity value for downward
20 flexibility that includes a must-offer obligation ("MOO") is needed.

21 CESA proposes that the Commission include the development of a Flex Down RA product in
22 this proceeding. This product could be implemented in a non-binding fashion for a 'pilot year' if
23 needed and should be defined so that physically designated resources with downward ramping
24 capability can compete to provide these services. Any related MOOs should emphasize the provision
25 of downward ramping bids in the CAISO markets during key times. Resources would 'count' based
26 on their expected downward ramping range across a brief time – e.g., 5- or 15-minute periods.
27 Resources with minimum run times or minimum load levels that reduce ramping capabilities in the

1 determined intervals should face lower qualifying capacity ‘counts’ for Flex Down RA. The
2 downward ramping range of variable energy resources could be calculated based on their expected
3 downward flexibility at the period of need. For in-front-of-the-meter (“IFOM”) energy storage, the
4 Flex Down RA count should include the full range from maximum discharge to maximum charge. For
5 behind-the-meter (“BTM”) resources, ‘load shifting’ capability along with the ability to increase load
6 should inform the eligibility and counting of these resources.

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

20 Any assumptions that overgeneration is an ‘operational issue only’ understates the
21 complicated nature of energy markets, grid reliability, capacity contracts, and other factors. CESA
22 believes it is discriminatory and unreasonable to presume, particularly in planning exercises, that
23 curtailments can occur in unlimited quantities. In many cases, this ‘operational only’ perspective is not
24 true due to physical or contractual conditions, and it also relies on selective treatment in CAISO
25 markets where some resources are shut off so others can run. An over-reliance on curtailment also
26 may inadvertently authorize over-commitments of fossil resources, again where out-of-market costs
27 lead to inefficiency and where greenhouse gas emissions can be higher than if a more efficient dispatch

1 via Flex Down RA offers had been scheduled. In some cases, curtailments may be allowing imports of
2 unspecified power, potentially coal, into California. Finally, downward ramping shortages are
3 occurring and may occur with greater frequency. Planning for this eventuality with a smartly designed
4 capacity planning tool is logical and reasonable for ratepayers who may otherwise bear costs of out-of-
5 market payments and backstop procurement. For all of these reasons, the Commission should explore
6 capacity planning for downward ramping needs. Such an exploration will likely yield a more efficient,
7 clean, and reliable operation of the grid in ways that also signals to market participants and to
8 contracting parties what types of services are valuable.

9
10 **Q: Does this conclude your testimony?**

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