

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

Order Instituting Rulemaking to Develop an  
Electricity Integrated Resource Planning  
Framework and to Coordinate and Refine  
Long-Term Procurement Planning  
Requirements.

Rulemaking 16-02-007  
(Filed February 11, 2016)

**REPLY COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE  
TO THE RULING OF ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW  
JUDGE SEEKING COMMENT ON POLICY ISSUES AND OPTIONS RELATED TO  
RELIABILITY**

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January 14, 2019

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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”)<sup>1</sup> hereby submits these reply comments on *Ruling of Assigned Commissioner and Administrative Law Judge Seeking Comment on Policy Issues and Options Related to Reliability* (“Ruling”), issued

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<sup>1</sup> 174 Power Global, 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, AltaGas Services, Amber Kinetics, American Honda Motor Company, Inc., Avangrid Renewables, Axiom Exergy, Boston Energy Trading & Marketing, Brenmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Centrica Business Solutions, Clean Energy Associates, 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 X North America, Enerport, ENGIE, E.ON Climate & Renewables North America, esVolta, Fluence, Form Energy, GAF, General Electric Company, Greensmith Energy, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Iteros, Johnson Controls, KeraCel, 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, Quidnet Energy, 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, Tenaska, Inc., 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>).

by Commissioner Liane M. Randolph and Administrative Law Judge Julie A. Fitch on November 16, 2018.

**I. INTRODUCTION.**

Most parties held the view that near-term and/or medium-term reliability challenges facing the state’s electric grid do exist, pointing to challenges with planning, identifying, and retaining/replacing gas generators needed for reliability, such as, among other things, flexible capacity needs and coordination across multiple load-serving entities (“LSEs”). Few parties expressed the view that no imminent or urgent reliability needs exist (that could not otherwise be addressed within existing constructs).

CESA agrees with most parties on the need to take certain concrete policy actions now in the Integrated Resources Planning (“IRP”) proceeding (R.16-02-007) as well as other relevant proceedings to address some of the reliability challenges that the Commission will face over the next 3-5 years. In these reply comments, CESA highlights key points made by other parties that we wish to respond to and clarify, with a focus on the role of energy storage, given that parties had a wide range of views on the benefits, limitations, and/or possibilities of energy storage.

**II. PROACTIVE PLANNING APPROACHES SHOULD BE COUPLED WITH A RELIABILITY THRESHOLD MECHANISM TO ENSURE THAT BOTH EXPECTED AND UNEXPECTED RELIABILITY CHALLENGES ARE ADDRESSED.**

In our comments, CESA expressed how proactive planning for reliability needs should be taken by the Commission in order to deliver cost-effective outcomes that ensure reliability while delivering ratepayer value for resource investments. CESA continues to support the Reliability Threshold Mechanism (“RTM”) concept proposed by Southern California Edison Company

("SCE"),<sup>2</sup> subject to further discussion and refinement in this proceeding. CESA maintains that this concept should be utilized as a backstop mechanism for when normal planning and procurement processes do not provide a sufficiency of resources in a timely fashion. Such a mechanism could also potentially deliver selective loading-order based 'cleaner' alternatives and more cost-effective outcomes when compared to resources retained under the usual California Independent System Operator ("CAISO") backstop mechanisms.<sup>3</sup> While CESA, like the Union of Concerned Scientists ("UCS") and the Center for Energy Efficiency and Renewable Technologies ("CEERT"),<sup>4</sup> agrees that a proactive approach is preferable to a reactive one insofar as it may allow for broader competition (*e.g.*, from resources that cannot be procured on an expedited timeframe) as well as more controlled consideration of air quality and disadvantaged community ("DAC") or other impacts, CESA also observes that a reactive mechanism should *also* be in place for all the potential sudden reliability events that could occur.

Some concerns were expressed about the reliance and/or exclusive focus on energy storage under any variation of the RTM, but CESA does not see any reason to limit the eligible resources to be procured under the RTM to just energy storage.<sup>5</sup> As SCE expressed, energy storage happens to be a resource that has demonstrated the ability to be procured under an expedited timeline and possess the flexible, fast-responding traits that align with near-term grid needs, but other resource types that can be deployed on a quick timeframe and have the right

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<sup>2</sup> SCE's comments at p. 21.

<sup>3</sup> These backstop tools include Reliability Must-Run ("RMR") and Capacity Procurement Mechanism ("CPM") capacity contracting approaches. In their comments (p. 6), the CAISO also expressed how it is not "appropriate" to defer procurement to its short-term backstop procurement authority, suggesting that the RTM may be the more appropriate and perhaps preferred backstop approach for the state to ensure reliability while advancing the state's clean energy, air quality, and disadvantaged community goals.

<sup>4</sup> UCS' comments at pp. 5-6 and CEERT's comments at pp. 4-5.

<sup>5</sup> California Large Energy Consumers Association's ("CLECA") comments at p. 12 and Alliance for Retail Energy Markets' ("AReM") comments at p. 2.

operating characteristics should also be able to compete. CESA generally agrees that the RTM should appropriately reflect state policy goals and the loading order where feasible, and should direct resource procurement subject to the ‘clean’ resource adequacy (“RA”) requirements of Senate Bill (“SB”) 1136. Similarly, to support a “smooth and reliable transition” to the state’s zero-carbon future, as SCE puts it,<sup>6</sup> CESA also recommends that the RTM consider the procurement of energy storage paired with existing gas generators. This hybrid gas-plus-storage configuration is not only explicitly identified as a SB 1136 compliant resource but also provides many of the reliability benefits while reducing greenhouse gas (“GHG”) emissions and criteria pollutants, as our preliminary modeling results in our opening comments demonstrated.<sup>7</sup>

To facilitate the preferred proactive approach, CESA supports the comprehensive reliability assessment proposed by Pacific Gas and Electric Company (“PG&E”), starting with some modeling of the 2017-2018 IRP Preferred System Plan, which PG&E argues is needed to assess not only RA but also to ensure operational reliability.<sup>8</sup> Among other things, PG&E correctly notes that the Commission’s production cost model, SERVVM, only has hourly granularity and does not capture intra-hour flexibility issues, which the CAISO has identified as a growing reliability issue in analysis conducted in the Flexible Resource Adequacy Capacity and Must-Offer Obligation (“FRACMOO”) Phase 2 Initiative. At the January 7, 2019 IRP production cost modeling workshop, the CAISO also identified some discrepancies in their production cost modeling as compared to that of the Commission staff, highlighting how significant amounts of gas generators that were subject to age-based retirement were actually added back to the system for reliability purposes and how the assumptions for the net export

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<sup>6</sup> SCE’s comments at p. 7.

<sup>7</sup> See also Wellhead Power Solutions’ (“Wellhead”) comments at pp. 1-2 and 4-5.

<sup>8</sup> PG&E’s comments at pp. 2-3, 7, 10, and 14.

constraint had a significant impact on the modeling results. These modeling discrepancies raise serious concerns that the proactive modeling done in the IRP is inaccurate and insufficient and may miss not only some key system-level reliability problems (*e.g.*, load following, operating reserves) but also some key localized reliability problems and constraints, all of which will inform grid planning via backstop mechanisms if not otherwise planned for and resolved in normal planning horizons. While the IRP focuses on system-level issues, synergies with local and intra-hour planning needs should be pursued through an iterative approach wherein more granular or localized modeling inputs and feedback from local CAISO studies inform any IRP system plan to be modeled as well as other production cost modeling that is used to benchmark the RESOLVE and SERVM modeling results.

CESA also recommends that key changes be made to the inputs, assumptions, and functionalities of RESOLVE in the 2019-2020 IRP modeling to ensure an effective proactive approach to the aforementioned reliability challenges. Under the proactive approach, CESA points the Commission to our preliminary modeling analysis, included as Attachment A in our comments, where early procurement of hybrid gas-plus-storage resources for a subset of the gas fleet provided load following and operating reserves that displaced much of the one-hour battery storage capacity selected in GridPath, a model that is similar to RESOLVE but looks at individual unit dispatches, at a lower cost. Given these early results, CESA believes it is important to proactively consider where hybridization of certain gas plants with energy storage could cost-effectively prevent the potential reliability issues. CESA provides recommendations in a separate set of comments (to be filed on January 15, 2019) on how the inputs and

assumptions for 2019-2020 IRP modeling could be adjusted accordingly to incorporate this new “candidate” resource.<sup>9</sup>

### **III. LOCATIONAL GUIDANCE IS NEEDED TO ENSURE LOAD-SERVING ENTITIES CAN EFFECTIVELY ADDRESS GRANULAR RELIABILITY NEEDS.**

Multiple parties highlighted the need for greater Commission and CAISO coordination to provide more effective forward procurement guidance for LSEs.<sup>10</sup> This guidance would identify resources at risk of retirement or with the potential to exercise market power and support targeted procurement and siting of replacement or retrofitted resources, including distributed energy resources (“DERs”), as commented by many parties.<sup>11</sup> Some stakeholders proposed central capacity markets or other central buyer frameworks to address near-term reliability issues, but as CESA expressed in our comments on the Proposed Decision (“PD”) in the RA proceeding (R.17-09-020),<sup>12</sup> many of the issues that the PD aims to address could be accomplished through improved locational guidance to allow LSEs to more optimally self-procure for local and sub-local capacity needs.

### **IV. FLEXIBLE CAPACITY PROPOSALS FROM THE CAISO SHOULD BE ADOPTED BY THE COMMISSION.**

CESA believes that flexible capacity needs are a current and growing future issue for the grid as significant amounts of intermittent renewables are added, particularly solar, through

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<sup>9</sup> See also Wellhead’s comments at p. 6 on how hybrid gas-plus-storage could be modeled as a candidate resource in RESOLVE.

<sup>10</sup> Department of Market Monitoring’s (“DMM”) comments at pp. 2 and 4.

<sup>11</sup> Environmental Defense Fund’s (“EDF”) comments at p. 3; California Environmental Justice Alliance (“CEJA”) and Sierra Club’s comments at pp. 2, 7, and 9; Public Advocates Office’s (“PAO”) comments at pp. 6-8; and California Community Choice Association’s (“CalCCA”) comments at pp. 3 and 7-8.

<sup>12</sup> *Comments of the California Energy Storage Alliance on the Proposed Decision Refining the Resource Adequacy Program*, R.17-09-020, filed on December 11, 2018, pp. 8-9. See link [here](#).

2030. SCE, California Large Energy Consumers Association (“CLECA”), and LS Power highlighted the importance of Flexible RA capacity and how reforms are needed to incentivize the right resource mix and resource owners to invest in maximizing flexibility.<sup>13</sup> This issue did not appear to get too much of the attention of the parties in opening comments, but CESA reminds the Commission about the growing importance of grid flexibility, which the Flexible RA product currently falls short in ensuring.

V. **A STUDY ON ENERGY STORAGE DURATIONS IS PRUDENT AND POTENTIAL ADDITIONAL CATEGORIES OF RA ARE NEEDED FOR LONGER-DURATION ENERGY STORAGE RESOURCES.**

A number of parties highlighted the need to study energy-limited or availability-limited resources, such as energy storage, in meeting local capacity needs, especially as energy storage has been positioned as a one of the main viable alternatives to potentially retiring gas generators but is only required to have four hours of duration to qualify for RA capacity.<sup>14</sup> CESA agrees that a study would be beneficial, similar to the Moorpark special study conducted by the CAISO in August 2017 to highlight how 8-9 hour storage durations would be needed to address the local capacity requirements (“LCR”) need in that area. CESA, however, cautions against categorically limiting the amount of four-hour energy storage resources in addressing any identified LCR need. These studies should highlight the level of energy storage duration (as well as other operating characteristics) is needed and how much of the LCR need could be addressed by RA-qualifying four-hour energy storage.

In addition, CESA agrees with the recommendation from Hydrostor that different RA categories for energy storage may need to be established. If studies reveal that longer-duration

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<sup>13</sup> CLECA’s comments at p. 10 and LS Power’s comments at pp. 2-3.

<sup>14</sup> Calpine’s comments at pp. 3 and 7-8; CAISO’s comments at pp. 6-7; NRG’s comments at p. 11; and WPTF’s comments at pp. 5-6.



storage may be needed to meet future LCR needs, there may need to be additional categories of RA that provide some additional capacity value beyond the minimum four hours.<sup>15</sup> Similar to the need to reform Flexible RA to incentivize and pay for the enhanced flexibility performance capabilities, greater energy storage durations also need to be incentivized and valued. Furthermore, as long-duration storage capabilities are increasingly needed, the Commission should also take policy action in a successor Energy Storage rulemaking to focus on transforming the market for longer-duration energy storage technologies. The proactive planning approach in the IRP process that allows longer lead times for procurement will also support the procurement and deployment of longer-duration energy storage systems, which generally face challenges under expedited or short procurement and deployment timelines, as noted by Hydrostor.<sup>16</sup>

## **VI. THE COMMISSION SHOULD MOVE TOWARD STREAMLINED CONTRACT APPROVAL PROCESSES FOR ENERGY STORAGE SOLUTIONS.**

With energy storage resources playing an important role in the transition to the state's 2030 and 2045 futures and with much experience gained in contracting for and procuring energy storage projects under the Assembly Bill ("AB") 2514 framework, CESA believes that the state's LSEs and the Commission are ready to move toward a more streamlined contract approval process. CESA agrees with the Western Power Trading Forum ("WPTF") in this regard,<sup>17</sup> as the LSEs, Commission and energy storage industry have matured and developed *pro forma* contracts and have become familiar with energy storage operations such that advice letter processes could be adopted, similar to what is done for other mainstream resource types (*e.g.*,

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<sup>15</sup> Hydrostor's comments at pp. 5, 9-10, 12, and 17.

<sup>16</sup> Hydrostor's comments at p. 5.

<sup>17</sup> WPTF's comments at pp. 14-15.

renewables). The investor-owned utilities (“IOUs”) find energy storage contracting and deployment to be routine and reliable to the degree that they have supported the use of energy storage as a backstop resource for critical reliability needs. The Commission should work through the successor Energy Storage proceeding to establish the process for allowing for broad and wide-scale approval of energy storage contracts through advice letter filings.

**VII. LARGE-SCALE AND ‘INFRASTRUCTURE-LIKE’ RESOURCE PROJECTS REQUIRE SOME ATTENTION IN THE IRP TO ADDRESS MEDIUM-TERM AND LONG-TERM RELIABILITY CHALLENGES.**

In addition to ensuring an appropriate understanding of the duration requirements of energy storage, a related area requiring more immediate Commission action, attention, and consideration are the likely need for large-scale, infrastructure-like resources that may be more cost-effective in addressing the aforementioned reliability challenges. The IOUs and WPTF focused some of their comments on the challenges of meeting reliability challenges due to the growing number of LSEs.<sup>18</sup> CESA supports LSEs’ self-procurement authorities and pursuit of LSE-specific procurement preferences, but certain large-scale resources, such as pumped hydro storage (“PHS”) and some compressed air energy storage (“CAES”) projects, will need a framework for multiple off-takers, which is not currently established and may be overlooked due to smaller LSEs focusing only on their local areas.<sup>19</sup>

For long lead-time projects, a proactive approach to coordinate across agencies and LSEs and develop these frameworks are needed. Given that the 2017-2018 IRP Reference System Plan selected 1,000 to 2,000 MW of PHS by 2030 under the 30 MMT scenario and that the recent production cost modeling of the Hybrid Conforming Portfolio (“HCP”) under the 42

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<sup>18</sup> SCE’s comments at p. 31 and WPTF’s comments at p. 9.

<sup>19</sup> See Eagle Crest Energy Company’s (“ECE”) comments at pp. 4-5 and National Grid’s comments at p. 5.

MMT has found that RESOLVE overestimates GHG emissions, the need for pumped storage and other bulk, long-duration storage will likely be needed, even in the reference case. The California Energy Commission’s (“CEC”) Deep Decarbonization study<sup>20</sup> from last summer coupled with Governor Brown’s Executive Order,<sup>21</sup> point to a future in which not only will the energy sector be obliged to make substantial investments in both carbon-free energy sources, but also in long-duration bulk storage resources.<sup>22</sup> Thus, CESA agrees with parties’ comments for the need to focus on PHS as well as long-duration storage resources.<sup>23</sup>

### **VIII. CONCLUSION.**

CESA appreciates the opportunity to submit these comments to the Ruling. CESA looks forward to working with the Commission and stakeholders in this proceeding.

Respectfully submitted,



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Date: January 14, 2019

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<sup>20</sup> California Energy Commission, “*Deep Decarbonization in a High Renewable Future*,” (June 2018) (“*CEC Deep Decarbonization Study*”), available at <https://www.energy.ca.gov/2018publications/CEC-500-2018-012/CEC-500-2018-012.pdf>.

<sup>21</sup> Executive Order B-55-18 (issued September 10, 2018), available at <https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

<sup>22</sup> The CEC’s report concludes, for example, that achieving the state’s long-term carbon goals will require 95% of the electric sector to have zero emissions, underscoring the need for a massive investment in storage of varying capabilities and duration. See *CEC Deep Decarbonization Study* at p. 39.

<sup>23</sup> Eagle Crest Energy Company’s (“ECE”) at p. 3; San Diego County Water Authority (“SDCWA”) and City of San Diego (“CSD”) comments at pp. 3 and 5; National Grid’s comments at p. 4; and Hydrostor’s comments at p. 5.