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*Comment Received From: California Energy Storage Alliance (CESA)  
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**CESA's Comments on the Initial Public Workshop on Long Duration Energy Storage Scenarios**

*Additional submitted attachment is included below.*

December 17, 2020

Email to: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

Docket Number: 20-MISC-01

Subject: CESA's Long Duration Energy Storage Scenarios Comments

**Re: Comments of the California Energy Storage Alliance (CESA) following the December 3, 2020 Long Duration Energy Storage Scenarios Workshop**

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The California Energy Storage Alliance (CESA) appreciates the opportunity to comment on the Long Duration Energy Storage Scenarios Workshop held by California Energy Commission (CEC) on December 3, 2020. CESA commends the leadership of the CEC for assembling a vast group of experts and stakeholders to provide feedback and proposals regarding the opportunities long duration energy storage (LDES) presents for enabling the State to complete its transition to a zero-carbon electric grid by 2045.

CESA is a 501(c)(6) organization representing over 100 member companies across the energy storage industry. CESA is technology neutral and represents companies involved in the development of all types of energy storage resources. Moreover, CESA has actively engaged in first-in-class modeling studies to better understand the need and opportunity for energy storage, particularly LDES, given SB 100 targets.<sup>1</sup> As such, our background and experience providing technical and policy insights are of particular relevance to this subject.

CESA is generally pleased with the initial proposal and methodology shared at the December 3, 2020 workshop. In particular, CESA supports consideration of a diverse array of storage technologies, as well as the evaluation of much needed reforms and modifications to the RESOLVE model. Our comments focus on the following areas:

- **The CEC should consider modifying the timeline of this study to enhance its impact on other grid planning processes:** It is fundamental to utilize the insights and tools derived from this project in all applicable planning venues within California in order to properly value LDES assets. As such, CESA urges the CEC to consider modifying the schedule of this project to enhance its contribution to the California Public Utility Commission's (CPUC) Integrated Resource Planning (IRP) proceeding, the California Independent System Operator's (CAISO) Transmission Planning Process (TPP), and the next iteration of the Senate Bill (SB) 100 Joint Agency report.

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<sup>1</sup> See Strategen, "Long Duration Energy Storage for California's Clean, Reliable Grid", 2020. Available at [https://static1.squarespace.com/static/5b96538250a54f9cd7751faa/t/5fcf9815caa95a391e73d053/1607440419530/LDES\\_CA\\_12.08.2020.pdf](https://static1.squarespace.com/static/5b96538250a54f9cd7751faa/t/5fcf9815caa95a391e73d053/1607440419530/LDES_CA_12.08.2020.pdf)

- **RESOLVE must be modified to include 8,760-hour optimization to solve for long duration storage needs:** As CESA has noted in other dockets, RESOLVE’s current optimization scheme may overlook the need for multi-day dispatch of storage assets, hindering its ability to robustly select an optimal portfolio for the purposes of SB 100. Given this limitation, CESA supports the decision to consider means to expand the model’s optimization horizon and include multiple long duration storage candidate technologies. Once these modifications are done, CESA recommends this version of RESOLVE be used for the SB 100 Joint Agency Report and the IRP.
- **The study should consider the potential effects of Western decarbonization within the axes used for scenario development:** CESA acknowledges E3’s thought-work on identifying different axes that could serve to identify the key drivers behind LDES need and selection. While these axes consider the potential role of regionalization and transmission investment across the West, it fails to account for the growing prevalence of electric decarbonization policies across Western states, via the adoption of policies like the Renewable Portfolio Standard, for example. Considering these complex interactions, CESA urges E3 to assess these decarbonization efforts in an axis of its own as it could prove a challenging driver.

**The CEC should consider modifying the timeline of this study to further its impact on other grid planning processes**

The CEC has recognized the need for thorough analysis of the ability for LDES assets to support California’s energy and environmental goals. Currently, the main planning venues within the State are not properly equipped to either represent existing LDES technologies or appropriately assess the value they would provide to the grid. While the CEC has correctly identified this need, it has not established a timeline that would best support all applicable planning venues within California.

The most recent Reference System Portfolio (RSP) developed in the IRP proceeding includes the selection of 0.9 to 1.6 GW of LDES by 2026 in order to achieve California’s ambitious climate goals.<sup>2 3</sup> As a result, the CPUC directed load-serving entities (LSEs) to better understand which resources could meet the operational characteristics needed and plan to integrate LDES assets within their individual IRP filings. This, in turn, has prompted LSEs, particularly community choice aggregators (CCAs), to initiate the procurement of LDES technologies. The procurement of these resources shows that market participants understand the need and the value of LDES, despite the fact that the tools used in the IRP proceeding are inadequate to properly identify and

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<sup>2</sup> See CPUC, “2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning”, 2020. Available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M331/K772/331772681.PDF>

<sup>3</sup> It is worth highlighting these figures were derived from an analysis using the RESOLVE model, which does not optimize build decisions based on an 8,760-hour optimization horizon.

quantify that value. As such, the limitations LDES selection faces are mostly related to the deficiencies of the current planning methodologies and models. It is worth highlighting that these limitations are not unique to the IRP proceeding, but extend to other planning venues such as the SB 100 Joint Agency Report.

This CEC initiative is well suited to address and mitigate the limitations encountered in other planning processes. To do so, CESA urges the CEC to consider modifying the schedule of this project to further contribute to the Integrated Resource Planning (IRP) proceeding, the Transmission Planning Process (TPP), and the next iteration of the Senate Bill (SB) 100 Joint Agency report.

**RESOLVE must be modified to include 8,760-hour optimization to solve for long duration storage needs**

RESOLVE is the capacity expansion model used by both the CPUC in the IRP proceeding and the Joint Agencies<sup>4</sup> in their SB 100 Joint Agency Report. CESA has been vocal in both those venues regarding the inherent deficiencies of the RESOLVE model to identify and solve for LDES needs. In short, RESOLVE’s architecture does not optimize build decisions based on an 8,760-hour optimization horizon. This, in turn, inhibits the model from identifying the potential need for inter-day energy arbitrage, effectively overlooking the value proposition of several energy storage technologies.<sup>5</sup> In addition to this architectural deficiency, RESOLVE only considers LDES by a proxy resource, muting the value offered by the emerging array of LDES technologies.

Given the need for these changes, CESA is pleased to note several of the proposed modifications to the RESOLVE model in the context of this initiative. During the December 3, 2020 workshop held on this initiative, E3 noted that, in collaboration with the University of California (UC) Merced, they would expand the number of LDES candidate resources and study different options to modify the model’s optimization horizon. On this latter point, CESA recommends RESOLVE is modified to include an 8,760-hour optimization, as other options mentioned during the workshop would not result in an increment of the number of time-steps the model solves sequentially relative to the current formulation.<sup>6</sup> Having a full year of optimization performed in a sequential manner is more likely to identify the potential need for multi-day and even seasonal storage, noting periods where arbitrage for periods in excess of a day is economic. Finally, CESA recommends that the modifications applied to RESOLVE within this initiative are also adopted in both the SB 100 Joint Agency Report and the IRP processes, in order to foster a cohesive planning environment across all relevant initiatives and proceedings within the Californian policy landscape.

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<sup>4</sup> The Joint Agencies refer to the CEC, CPUC, and California Air Resources Board (CARB).

<sup>5</sup> Joint Agencies, “SB 100 Draft Final Report”, at 77.

<sup>6</sup> See UC Merced, “Long Duration Energy Storage Workshop”, at 42.

**The study should consider the potential effects of Western decarbonization within the axes used for scenario development**

In their presentation, E3 presented a list of variables or factors that could serve as the key drivers behind the selection of LDES across multiple scenarios.<sup>7</sup> The purpose of these key drivers is to identify a means to represent significantly different energy futures and understand which conditions and revenue streams are instrumental to the need for LDES. CESA is generally supportive of the different axes considered by E3; nevertheless, we recommend explicitly including the prevalence of decarbonization policies across the West as well as a factor independent of the “Generation Resources”, “Carbon Constraint”, and “Imports. Transmission & RA” axes.

During the December 3 workshop, E3 noted that broader Western coordination is relevant for this study as it is bound to the availability of imports, the development of transmission, and the availability of out-of-state resources. All these factors could greatly influence the resource mix selected. While CESA is supportive of the inclusion of this axis; we are concerned that a part of the trade-off around Western coordination might be overlooked by this approach. It is known that recent years have seen a considerable growth in the number of Western states adopting policies alike the Renewable Portfolio Standard (RPS). CESA considers the possible implications of these policies in the context of regionalization could be counterintuitive. As States become more interested in increasing the portion of renewable resources within their energy mixes current “clean” exports could find themselves replaced by exports with higher associated GHG emissions. As such, this proposed axis lives at the intersection of the “Carbon Constraint” and “Imports. Transmission & RA” axes. This possibility should be explored and analyzed within this study, as it could directly relate to the availability of renewable energy and California’s compliance of SB 100.

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<sup>7</sup> See E3, “Assessing Long Duration Energy Storage Deployment Scenarios to Meet California’s Energy Goals,” at 13.

**Conclusion**

CESA appreciates the opportunity to provide these comments and feedback on the Initial Workshop. We look forward to collaborating with the CEC, UC Merced, E3 and other stakeholders in this proceeding.

Sincerely,

Jin Noh  
Policy Director  
**CALIFORNIA ENERGY STORAGE ALLIANCE (CESA)**  
[jnoh@storagealliance.org](mailto:jnoh@storagealliance.org)  
510-665-7811 x 109

Sergio Dueñas  
Senior Regulatory Consultant  
**CALIFORNIA ENERGY STORAGE ALLIANCE (CESA)**