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The Public Advocates Office's Comments on 2025 SB 100 Joint Agency Report Draft Results

Additional submitted attachment is included below.



**The Public Advocates Office’s Comments
on 2025 SB 100 Joint Agency Report Draft Results**

California Energy Commission Docket 23-SB-100

Submitted by	Organization	Date Submitted
Ryan Saraie Senior Analyst	Public Advocates Office - California Public Utilities Commission	March 20, 2026
Paul Worhach Senior Analyst	505 Van Ness Avenue San Francisco, CA 94102	
Kanya Dorland Senior Analyst		
Phone: (415) 703-1457 Email: Ryan.Saraie@cpuc.ca.gov		

I. INTRODUCTION

Pursuant to California Energy Commission (CEC) staff directions, the Public Advocates Office (Cal Advocates) at the California Public Utilities Commission (CPUC) submits these comments regarding the 2025 Senate Bill (SB) 100 Joint Agency Report Draft Results.¹ On February 19, 2026, the CEC, CPUC, and California Air Resources Board (CARB) (collectively, Joint Agencies) presented their 2025 update to the SB 100 Joint Agency Report through a Staff Workshop. The Joint Agencies also provided information on draft modeling results, non-energy impacts analyses, and SB 100 implementation challenges and opportunities.² Cal Advocates recommends that the Joint Agencies reassess their cost assumptions for both lithium-ion energy

¹ CEC, *Notice of Extension of Public Comment Period – 2025 SB 100 Joint Agency Report Draft Results*, March 4, 2026 at 1 and 2. Available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-SB-100>.

² CEC, *Presentations – Workshop on 2025 SB 100 Joint Agency Report Draft Results*, February 18, 2026 (CEC Workshop Presentations) at 3 and 4. Available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-SB-100>.

storage and long-duration energy storage (LDES), so as to align those cost assumptions with CPUC staff and ensure consistent cost inputs. Additionally, the Joint Agencies should consider the cost of new transmission in their estimated scenario costs.

II. BACKGROUND

SB 100 mandates that eligible renewable resources and zero-carbon resources comprise 100% of retail sales of electricity to California end-use customers and 100% of electricity procured to serve all state agencies by December 31, 2045.³ Additionally, SB 100 requires the CEC, CPUC, and CARB to submit a joint filing starting January 1, 2021, and at least every four years thereafter, to report the state's progress toward the legislation's goals.⁴ In the February 19, 2026 Staff Workshop, the Joint Agencies detailed their efforts to comply with SB 100 requirements (see the 2025 update), and provided a summary of their quantitative modeling results. As part of the SB 100 Joint Agency Report, the Joint Agencies conducted multiple stages of capacity expansion, resource adequacy, and system dispatch modeling to develop a representation of California's electricity system supply.⁵

III. DISCUSSION

A. **The Joint Agencies and the CPUC should coordinate with CPUC staff to align cost assumptions for lithium-ion energy storage and LDES resources.**

The SB 100 Joint Agency Report has notable differences in cost assumptions for lithium-ion energy storage and LDES resources compared with the cost assumptions the CPUC uses in its Integrated Resource Planning (IRP) Rulemaking.⁶ For example, the Joint Agencies calculate lower capital costs for 4-hour and 8-hour storage compared to the capital costs that the CPUC

³ SB 100, (De León Reg. Sess. 2017-2018), California Renewables Portfolio Standard Program: emissions of greenhouse gases, codified as Public Utilities Code Sections 399.11, 399.15, 399.30, and 454.53. See Section 5 which adds Public Utilities Code Section 454.53(a).

⁴ SB 100. See Section 5 which adds Public Utilities Code Section 454.53(d)(2).

⁵ CEC Workshop Presentations at 12 and 17. The Joint Agencies include separate modeling inputs and assumptions in the SB 100 Joint Agency Report to plan for future resource builds compared to such existing statewide resource planning efforts as CARB's 2022 Scoping Plan and the CPUC's 2023 Preferred System Plan.

⁶ CPUC, *2024 – 2026 Integrated Resource Planning (IRP), Inputs & Assumptions*, February 10, 2026 (CPUC I&A). Available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2024-2026-irp-cycle-events-and-materials/2025_inputs_and_assumptions_report_20260210.pdf.

includes for IRP modeling. Additionally, the Joint Agencies' capital costs for 25-hour LDES fall significantly below the CPUC's IRP cost for the equivalent 24-hour LDES which the CPUC models in the IRP.

These cost assumption differences are due to the use of different data sources. The Joint Agencies source costs for 4 and 8-hour lithium-ion battery storage resources from the National Renewable Energy Laboratory's (NREL's) 2024 Annual Technology Baseline report.⁷ Additionally, the Joint Agencies source costs for LDES resources from a single report from the Long Duration Energy Storage Council (LDES Council) and McKinsey & Company⁸ on LDES costs.⁹ In contrast, the CPUC calculates an average cost from multiple studies to set costs for 4 and 8-hour lithium-ion energy storage.¹⁰ The CPUC applies a similarly robust set of cost studies to inform LDES costs.¹¹ Specifically, the CPUC references data from the Pacific Northwest National Laboratory's (PNNL) 2024 Energy Storage Cost and Performance Database,¹² the LDES Council and McKinsey and Company's 2021 report, and Form Energy's 2023 multi-day storage analysis.¹³

⁷ CEC Workshop Presentations at 21 and 22.

⁸ LDES Council and McKinsey & Company, *Net-zero power, Long duration energy storage for a renewable grid*, November 2021. Available at: https://www.mckinsey.com/~/_/media/mckinsey/business%20functions/sustainability/our%20insights/net%20zero%20power%20long%20duration%20energy%20storage%20for%20a%20renewable%20grid/net-zero-power-long-duration-energy-storage-for-a-renewable-grid.pdf.

⁹ CEC Workshop Presentations at 22. The Joint Agencies model LDES as a representative resource with a 25-hour duration.

¹⁰ CPUC I&A at 46. The CPUC refers to such publications as the National Laboratory of the Rockies' Annual Technology Baseline and the U.S. Energy Information Administration's Annual Energy Outlook.

¹¹ CPUC I&A at 107-109. The CPUC models two separate scenarios for LDES costs. The "mid" cost trajectory averages cost data from multiple technology types, while the "LDES Breakthrough" trajectory selects the most cost-competitive option at each storage duration and uses "low" cost trajectories for each. These scenarios use the same pool of cost studies to inform LDES costs.

¹² PNNL, *Energy Storage Cost and Performance Database*, 2024. Available at: <https://www.pnnl.gov/projects/esgc-cost-performance>.

¹³ Form Energy, *Modeling Multi-Day Energy Storage in New York*, August 2023. Available at: <https://formenergy.com/wp-content/uploads/2023/09/Form-Modeling-Multi-Day-Energy-Storage-in-NY-whitepaper-8.8.23.pdf>.

Table 1: Comparison of 2040 Energy Storage Capital Costs

Energy Storage Resource	SB 100 Joint Agency Report Draft Results Capital Costs (\$/kW)¹⁴	CPUC, 2024 – 2026 IRP I&A Capital Costs (\$/kW)¹⁵
4-Hour Lithium-Ion	\$800	\$1,211
8-Hour Lithium-Ion	\$1,300 to \$1,400	\$2,179
25-Hour LDES	\$800	N/A
24-Hour LDES “Mid” Scenario	N/A	\$4,750
24-Hour LDES “Breakthrough” Scenario	N/A	\$3,404

In the Joint Agencies model, capital costs are about 34% lower than the CPUC’s IRP modeling inputs for 4-hour lithium-ion energy storage, 36% to 40% lower for 8-hour lithium-ion energy storage, and 76% to 83% lower for LDES. In particular, the significantly lower LDES costs in the Joint Agency Report would likely have a meaningful impact on the amount of LDES resources that the Joint Agencies select in their modeling to comply with SB 100 targets compared with the CPUC’s selection of LDES resources in the IRP. The Joint Agencies should seek to coordinate cost inputs for the different models and identify the drivers of the divergent 4-hour, 8-hour, and LDES cost forecasts so as to identify any errors or unreasonable assumptions that could underlie the forecasts.

In future updates to the SB 100 Joint Agency Report, the Joint Agencies should standardize lithium-ion energy storage and LDES cost assumptions across the Joint Agencies and CPUC modeling inputs. The Joint Agencies should ensure that their cost assumptions for energy storage resources depict cost trajectories based on additional inputs to inform long-term resource plans for SB 100 compliance.

¹⁴ CEC Workshop Presentations at 22. In the “SB 100 Joint Agency Report Draft Results Capital Costs (\$/kW)” column of Table 1, Cal Advocates includes estimates of 2040 capital costs based on the Joint Agencies’ graphical illustrations of their modeled capital costs for storage resources. The Joint Agencies model these costs in 2021 dollars.

¹⁵ CPUC I&A at 105-108. Cal Advocates cites the CPUC’s 24-hour LDES capital costs to align with the SB 100 Joint Agency Report assumption to model LDES with a 25-hour duration. The CPUC models these costs in 2024 dollars.

B. The Joint Agencies should consider the cost of new transmission in their estimated scenario costs.

The Joint Agencies' February 19, 2026 workshop on the SB 100 Joint Agency Report presented seven different resource portfolio scenarios to meet the state's clean energy goals.¹⁶ While the Joint Agencies include scenario cost estimates, those estimates exclude transmission, distribution and public program costs. According to the Joint Agencies, those missing costs can account for approximately 70 percent of total costs.¹⁷ By way of contrast, the 2021 SB 100 Joint Agency report presented cost estimates for three scenarios that factored in specific fixed transmission and operating costs.¹⁸ The Joint Agencies should adopt a similar approach in all future SB 100 Joint Agency Reports in order to allow for accurate scenario cost comparisons.

One of the objectives of the SB 100 Joint Agency Reports is to identify the financial costs and barriers to achieving the state's clean energy goals.¹⁹ To this end, it is important to present complete cost estimates for the different SB 100 resource portfolio options in order to identify costs and barriers to achieve the state's clean energy goals. Without transmission costs, the Joint Agencies' cost estimates for SB 100 resource portfolio scenarios could be inexact as transmission costs can vary based on the resources that the Joint Agencies select across their portfolio scenarios. For example, there are likely substantial cost differences based on the transmission needs between the 2025 reference scenario and the 2025 offshore wind scenario.

IV. CONCLUSION

Cal Advocates requests that the CEC adopt the recommendations herein. Please contact Ryan Saraie at Ryan.Saraie@cpuc.ca.gov with any questions or comments.

¹⁶ CEC Workshop Presentations at 45.

¹⁷ CEC Workshop Presentations at 45.

¹⁸ CEC, *SB 100 Joint Agency Report: Charting a Path to a 100% Clean Energy Future*, March 15, 2021 at 10, 82, and 97. Available at: <https://www.energy.ca.gov/publications/2021/2021-sb-100-joint-agency-report-achieving-100-percent-clean-electricity>.

¹⁹ SB 100. See Section 5 which adds Public Utilities Code Section 454.53(d)(2).