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**SENATE COMMITTEE ON ENERGY, UTILITIES AND  
COMMUNICATIONS**

**Senator Steven Bradford, Chair  
2023 - 2024 Regular**

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**Bill No:** SB 1508 **Hearing Date:** 4/22/2024  
**Author:** Stern  
**Version:** 3/18/2024 Amended  
**Urgency:** No **Fiscal:** Yes  
**Consultant:** Nidia Bautista

**SUBJECT:** Electricity: energy storage systems

**DIGEST:** This bill would require the California Public Utilities Commission (CPUC), by March 1, 2025, to adopt appropriate targets for each load-serving entity (LSE) to procure viable and cost-effective energy storage systems, including long-duration energy storage systems, multiday energy storage systems, and emerging energy storage technologies to be achieved by specific

**ANALYSIS:**

Existing law:

- 1) Establishes and vests the CPUC with regulatory authority over public utilities, including electrical corporations, while local publicly owned electric utilities are under the direction of their governing boards. (Article XII of the California Constitution)
- 2) Establishes a renewables portfolio standard (RPS) and requires all retail sellers, including investor-owned utilities (IOUs), energy service providers (ESPs), and community choice aggregators (CCAs), to procure a minimum quantity of electricity products from eligible renewables energy resources, as defined, so that total kilowatt hours of those products sold to their retail end-use customers achieves 25 percent of retail sales by December 31, 2016, 33 percent by December 31, 2020, 44 percent by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. (Public Utilities Code §399.15)
- 3) Requires the CPUC to identify a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply that provides optimal integration of renewable energy in a cost-effective manner as part of the integrated resource planning (IRP) process. (Public Utilities Code §454.51)

- 4) Requires the CPUC to adopt a process for each electrical corporation, ESP or CCA to file an IRP and a schedule for periodic updates to the plan, and to ensure that LSEs meet other specified requirements. (Public Utilities Code §454.52)
- 5) Establishes the policy of the state that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end use customers by December 31, 2045. (Public Utilities Code §454.53)
- 6) Requires the CPUC to open a proceeding to determine appropriate targets, if any, for each LSE, to procure viable and cost-effective energy storage systems, as defined, to be achieved by specified dates, and authorizes the CPUC to consider a variety of possible policies to encourage the cost-effective deployment of energy storage systems. (Public Utilities Code §2836(a))
- 7) Requires the governing board of each local publicly owned electric utility to initiate a process to determine appropriate targets, if any, for the utility to procure viable and cost-effective energy storage systems and authorizes the governing board to consider a variety of possible policies. (Public Utilities Code §2836(b))
- 8) Requires each electrical corporation's renewable energy procurement plan to require the utility to procure new energy storage systems that are appropriate to allow the electrical corporation to comply with the energy storage system procurement targets and policies and to address the acquisition and use of energy storage systems in order to achieve specified purposes. (Public Utilities Code §2837)
- 9) Requires each LSE to submit, by specified dates, reports to the CPUC demonstrating that it has complied with the energy storage system procurement targets and policies adopted by the CPUC. (Public Utilities Code §2838)

This bill:

- 1) Requires the CPUC, on or before March 1, 2025, to adopt appropriate targets for each LSE to procure viable and cost-effective energy storage systems, including long-duration energy storage systems, multiday energy storage systems, and emerging energy storage technologies, to be achieved by specified dates, and would require the CPUC to determine the amount of new energy

storage systems, as defined, that each LSE would be required to deploy in order to facilitate a reliable, zero-carbon electricity grid, and achieve net-zero greenhouse gas (GHG) emissions as soon as possible.

- 2) Requires the governing board of each local publicly owned electric utility, on or before March 1, 2025, to initiate a process to determine appropriate targets, if any, for the utility to procure viable and cost-effective energy storage systems, to be achieved by specified dates, and to report those targets to the State Energy Resources Conservation and Development Commission (California Energy Commission (CEC)).
- 3) Requires that each electrical corporation's renewable energy procurement plan achieve additional specified purposes, including reducing the demand for electricity during net peak periods, achieving permanent load shifting, achieving the objectives of a reliable, zero-carbon electricity grid and net-zero GHG emissions as soon as possible, and achieving an optimized overall portfolio of resources that use renewable energy generation and energy storage systems. Updates the specified dates by which each LSE is required to submit reports to the CPUC demonstrating that it has complied with the energy storage system procurement targets and policies adopted by the CPUC.

## Background

*SB 100 (De León, Chapter 312, Statutes of 2018).* SB 100 established the state's target to meet 100 percent of the state's electricity retail load with renewable and zero-carbon resources by 2045. SB 1020 (Laird, Chapter 361, Statutes of 2022) established interim goals to meeting the SB 100 target, specifically requiring 90 percent of retail sales by 2035, 95 percent by 2040 to be met with renewable and zero-carbon energy resources. SB 100 Joint Agency Report evaluates the challenges and opportunities in implementing SB 100. It includes an initial assessment of the additional energy resources and the resource building rates needed to achieve 100 percent clean electricity, along with the associated costs. It uses a computer model to analyze these factors under various conditions and technologies. The report is scheduled to be updated every four years. The first report issued on March 2021 identified preliminarily that on average the state may need six gigawatts of new renewable and energy storage annually to meet the SB 100 goals.

*IRP process.* SB 350 (De León, Chapter 547, Statutes of 2015) required each LSE to file a biennial IRP for approval or certification by the CPUC. The CPUC combines all LSEs' IRPs to ensure the state is on its path to meet its clean energy procurement goals. Publicly owned utilities (POUs) are required to file their own

IRPs with the CEC. The goal of the IRP is a two-year planning process to ensure that LSEs are meeting targets that allow the electricity sector to contribute to California's economy-wide GHG emissions reductions goals and that helps to reduce overall costs. The effort is intended to forecast needs on a 10-year horizon. In this regard, the IRP is a forward-looking activity. Whereas the requirements to meet renewable energy standards is a compliance activity to review whether LSEs and POU's have satisfied their three-year compliance obligation under the Renewable Portfolio Standard (RPS) requirements to meet an increasing share of its retail load with eligible renewable energy resources, until achieving 60 percent by 2035. As part of the IRP process, the CPUC has issued several procurement orders on LSEs to address near-term and mid-term procurement needs, including the need for energy storage resources.

### Comments

*Need for this bill.* The author of this bill contends:

California's energy grid is susceptible to power outages from extreme weather conditions and during times of excessive power demand, which often occur during periods of extreme heat, renewable energy lulls, transmission outages, wildfires, and other extreme and atypical weather conditions. These occurrences are increasing and are typically multi-day events that necessitate the need for a variety of energy solutions and demand response to provide grid resiliency. Under current market rules and energy planning processes, the state continues to rely on aging fossil-fueled power plants to provide reliability during these time periods. Emerging firm zero-carbon resources, including long-duration energy storage and multiday energy storage, can replace the state's reliance on fossil fuel backup and help efficiently incorporate renewables into the grid cost-effectively and with lower land use impacts. These technologies are able to do this by storing energy when it is abundant and low-cost, and then delivering power to the grid, without recharge, at their full rated capacity for periods up to as long as 100 hours. However, agency planning efforts do not fully incorporate appropriate modeling to incorporate these benefits, and market rules do not provide compensation mechanisms for the services that they could provide, given that these constructs were designed before such technologies were commercially available.

*Energy storage.* Energy storage systems can absorb energy, and store it for a period of time, and thereafter dispatch the energy when needed. Energy storage can provide a multitude of benefits to the electric grid, including supporting the integration of greater amounts of renewable energy into the electric grid, deferring

the need for new fossil-fueled power plants, and transmission, and distribution infrastructure, and reducing dependence on fossil fuel generation to meet peak loads. Energy storage comes in many forms, including pumped hydroelectricity, lithium-ion batteries, flow batteries, and other technologies. Long-duration storage can store energy for eight hours and more. Thereby providing these benefits over a greater time period. According to the CEC, today California has roughly over 3.3 gigawatts (GW) of installed energy storage, with roughly 15 GW needed by 2032 (per the CPUC), of which 1 GW is needed of long-duration storage.

*CEC administering long duration energy storage program.* Approved through budget trailer language and budget appropriations, the Long Duration Energy Storage program invests up to \$330 million into the demonstration of non-Lithium-ion energy storage technologies and projects to implement long duration energy storage systems across California. The Long Duration Energy Storage program will pave the way for opportunities to foster a diverse portfolio of energy storage technologies that will contribute to a safe and reliable future grid. As part of the program, the CEC is investing in long-duration storage technologies, including a front-of-the-meter project with PG&E using first-of-its-kind 5 MW/100-hour iron-air technology, by one of the sponsors of this bill. There are other projects funded that include long-duration emerging technologies.

Supporters wish to accelerate the deployment of long-duration energy storage and to support retirement of conventional resources, including natural gas plants. While the CPUC has proposed 1 GW of long-duration storage, they express frustration with the relative lack of diversity of resources that are procured, largely limited to lithium-ion technologies. As developers of other technologies, including emerging technologies, they find limitations with the assumptions in the CPUC RESOLVE modeling to identify their resources within the procurement. In the 2021 Mid-term Reliability Procurement Order (D. 21-06-035) the CPUC noted:

We have specified that long-duration storage must be able to discharge at maximum capacity over at least an eight-hour period from a single resource, though we also note that 12 hours or even multi-day storage options may be even more favorable, given the grid needs. LSEs should bear these considerations in mind when evaluating proposals to deliver long-duration storage, and strive to increase the diversity of resources on the grid with this category, if possible

*Need for amendments.* The Legislature may wish to proceed with caution. While long-duration energy storage has the ability to provide benefits to the electric grid, the costs of the proposed procurement and concerns about the specific carve-outs are warranted. *The author and committee may wish to amend this bill to delete the*

*provisions currently in this bill and replace with language to have the CPUC to model long duration storage within its IRP process.*

### **Prior/Related Legislation**

SB 1020 (Laird, Chapter 361, Statutes of 2022) established interim targets to reach SB 100 clean energy goals and required state agencies to purchase 100 percent zero carbon electricity by 2035 to serve their load, including obligations on State Water Project.

SB 423 (Stern, Chapter 243, Statutes of 2021) required the CEC to submit to the Legislature an assessment by December 31, 2023, of firm zero-carbon resources that support a clean, reliable, and resilient electrical grid and will help achieve the existing statutory goal of ensuring renewable energy and zero-carbon resources supply 100 percent of all retail sales of electricity to California customers by December 31, 2045.

SB 100 (De León, Chapter 312, Statutes of 2018) established the 100 Percent Clean Energy Act of 2017 which increases the RPS requirement from 50 percent by 2030 to 60 percent, and created the policy of planning to meet all of the state's retail electricity supply with a mix of RPS-eligible and zero-carbon resources by December 31, 2045, for a total of 100 percent clean energy.

SB 350 (De León, Chapter 547, Statutes of 2016) enacted the "Clean Energy and Pollution Reduction Act of 2015," which established targets to increase retail sales of renewable electricity to 50 percent by 2030 and double the energy efficiency savings in electricity and natural gas end uses by 2030 and also required the CPUC to develop an integrated resource planning process.

AB 2227 (Bradford, Chapter 606, Statutes of 2012) deleted provisions from AB 2514 on POUs and clarified the CEC's role as not having authority to enforce the requirements in AB 2514.

AB 2514 (Skinner, Chapter 469, Statutes of 2010) required the CPUC to determine appropriate targets, if any, for load serving entities to procure energy storage systems. This bill required LSEs to meet any targets adopted by the CPUC by 2015 and 2020. The bill required POUs to set their own targets for the procurement of energy storage and then meet those targets by 2016 and 2021.

**FISCAL EFFECT:** Appropriation: No Fiscal Com.: Yes Local: Yes

**SUPPORT:**

Advanced Energy United  
Form Energy  
GreenGenStorage  
Union of Concerned Scientists

**OPPOSITION:**

Pacific Gas and Electric Company  
San Diego Gas and Electric Company  
Southern California Edison

**ARGUMENTS IN SUPPORT:** In support of this bill, the Union of Concerned Scientists states:

Since AB 2514 was passed, energy markets, technologies and state goals have evolved significantly. California now aims to achieve 100 percent clean energy and achieve carbon neutrality and net negative emissions economywide by no later than 2045. To meet these goals and maintain electric reliability most cost-effectively, with the least land use, a broader set of energy storage technologies are needed, including long-duration and multi-day energy storage. Long-duration and multi-day energy storage are new energy resource classes that complement short-duration lithium-ion storage. These new resource classes are designed to solve a new set of electric grid reliability and renewable energy integration challenges that are upon us, and that will grow more urgent in the coming years.

**ARGUMENTS IN OPPOSITION:** The utilities oppose this bill contending it is a procurement carve-out for energy storage resources. They argue that LSEs are currently able to sign contracts for these resources. They raise concerns about obligating customers to use a specific resource, as it would not be efficient or cost-effective. They state:

Regulations should be technology agnostic to preserve competition and ensure the best possible outcome for customers. Additionally, this procurement order could be duplicative of other forthcoming or current procurement orders that exist within CPUC proceedings such as the Integrated Resource Plan or the Reliable and Clean Power Procurement Plan.

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