SENATE COMMITTEE ON ENERGY, UTILITIES AND COMMUNICATIONS
Senator Josh Becker, Chair
2025 - 2026 Regular

Bill No:	SB 842	**Hearing Date:**	4/29/2025
Author:	Stern		
Version:	3/26/2025 Amended		
Urgency:	No	**Fiscal:**	Yes
Consultant:	Nidia Bautista		

SUBJECT: Energy: firm zero-carbon resources

DIGEST: This bill requires specified actions by the state's energy agencies to support the deployment of firm zero-carbon resources, in particular to support local capacity.

ANALYSIS:

Existing law:

1) Establishes the California Public Utilities Commission (CPUC) with regulatory authority over all public utilities, including electrical and gas corporations. (Article XII of the California Constitution)

2) Establishes the 100 Percent Clean Energy Act of 2018 as a policy of the state that eligible renewable energy resources and zero-carbon resources supply 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. (Public Utilities Code §454.53)

3) Requires the California Energy Commission (CEC) to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices and to use these assessments and forecasts to develop and evaluate energy policies and programs that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. (Public Resources Code §25301(a))

4) Establishes the California Independent System Operator (CAISO) as a nonprofit public benefit corporation, and requires the CAISO to ensure the efficient use and reliable operation of the electrical transmission grid consistent with the achievement of planning and operating reserve criteria. (Public Utilities Code §345.5)

5) Requires the CPUC and CEC, in consultation with the California Air Resources Board (CARB), to take steps to ensure that a transition to a zero-carbon electric system for the State of California does not cause or contribute to greenhouse gas (GHG) emissions increases elsewhere in the western grid. Requires the CPUC, CEC, and CARB, and all other state agencies to incorporate that policy into all relevant planning. Requires the CPUC, CEC, and CARB to use programs authorized under existing statutes to achieve that policy. (Public Utilities Code §454.53)

6) Requires the CPUC, in consultation with the CAISO, to establish resource adequacy (RA) requirements for all load-serving entities (LSEs), including electrical corporations, electric service providers (ESPs), and community choice aggregators (CCAs), in accordance with specified objectives. (Public Utilities Code §380)

7) Requires the CPUC to adopt a process for each of those LSEs to file an integrated resource plan (IRP) and a schedule for periodic updates to the plan to ensure that it meets, among other things, the state's targets for reducing emissions of GHGs and the requirement to procure at least 60% of its electricity from eligible renewable energy resources by December 31, 2030. (Public Utilities Code §454.52)

8) Requires that the IRP contribute to a diverse and balanced portfolio of resources needed to ensure a reliable supply of electricity that provides optimal integration of renewable energy resources in a cost-effective manner and prevents cost shifting among LSEs. (Public Utilities Code §454.54)

9) Requires the CEC, in consultation with the CPUC, CAISO, and CARB, on or before December 31, 2023, to submit to the Legislature an assessment of the firm zero-carbon resources that support a clean, reliable, and resilient electrical grid in California and will achieve the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of all retail sales of electricity to California end-use customers and 100% of electricity procured to serve all state agencies by December 31, 2045, as specified. (Public Resources Code §25216.7)

This bill:

1) Requires the CEC, on or before July 1, 2026, through a new or ongoing proceeding, to identify programs it administers that provide, or could provide, financial support to deploy firm zero-carbon resources, mechanisms to use

uncommitted or new authorized funds in a manner that maximizes system and local reliability benefits and affordability outcomes, as provided, and the expected scope of energy resources that could be deployed based on current and expected funding availability.

2) Requires the CPUC, on or before December 31, 2026, through a new or ongoing proceeding, to establish or identify a process by which each LSE subject to its jurisdiction may solicit bids and propose projects for new firm zero-carbon resources to meet identified local reliability needs, as provided.

3) Requires the CPUC, on or before December 31, 2026, to produce a report identifying opportunities and needs to provide for local reliability with firm zero-carbon resources over the short term, midterm, and long term, as provided.

4) Requires the CPUC, beginning on or before December 31, 2026, to evaluate resources necessary to optimize local reliability at least cost.

5) Requires the CPUC, as part of the evaluation, to ensure that each LSE's IRP considers all reasonable new resource options that could be deployed to meet local reliability requirements at least cost and that each LSE take reasonable actions to ensure that an appropriate proportion of new resource development occurs in local reliability areas.

Background

Firm zero-carbon resources. "Firm energy resources" (also referred to as "firm power") refers to electricity-generating resources that can deliver electricity at any time, even under adverse conditions. California's electric grid currently relies on fossil fuels (natural gas), to meet its reliability needs. As California moves towards a decarbonized electric grid and away from fossil fuels, other sources of firm power are necessary. Solar and wind have become mature technologies and enjoy substantial public support. However, these resources present challenges because they depend on the weather, which varies in predictable and unpredictable ways, and results in intermittent generation. Although the costs of solar and wind power are now fully competitive with other electricity generating resources per kilowatt-hour, their inescapable variability means other resources are necessary to provide generation when these resources are not able to provide electrons to the grid. This transition has been characterized by widespread adoption of renewable energy complemented by natural gas power plants, which offer operational flexibility and reliability. Firm zero-carbon resources are those that can reliably produce zero-carbon or renewable electricity on demand.

While battery energy storage has been improving, and can help make up for fluctuations that last for multiple hours, they cannot make up for the longer fluctuations. Other firm zero-carbon resources include: geothermal, offshore wind, green electrolytic hydrogen, long-duration energy storage, and multi-day energy storage. Though they differ in capacity, expense, and geographic feasibility, these sources are all carbon-free power sources that can be relied on whenever needed, for as long as they are needed. California today has 48 gigawatts (GW) of total firm power capacity, most of which (42 GW) come from natural gas-fired power plants. The remaining GW come from nuclear power, geothermal, and a small amount from coal.

SB 100/SB 1020 clean energy goals. With the adoption of SB 100 (De León, Chapter 312, Statutes of 2018) and SB 1020 (Laird, Chapter 361, Statutes of 2022), statute established the policy of the state that eligible renewable energy resources and zero-carbon resources supply 90% of all retail sales of electricity to California end-use customers by December 31, 2035, 95% of all retail sales of electricity to California end-use customers by December 31, 2040, 100% of all retail sales of electricity to California end-use customers by December 31, 2045, and 100% of electricity procured to serve all state agencies by December 31, 2035. In March 2021, the CEC, CPUC and CARB, released the first joint agency SB 100 report, to determine how best to implement the 100% clean energy policy, and found that in order to meet the state's energy goals, California will need to roughly triple its current electricity power capacity.

Renewable Portfolio Standard (RPS). California's ambitious RPS program is jointly implemented and administered by the CPUC and the CEC. The RPS program requires the state's energy LSEs, including investor-owned Utilities (IOUs), CCAs, ESPs and publicly owned utilities (POUs) to procure 60% of their total electricity retail sales from eligible renewable energy resources by 2030, and a mix of RPS-eligible and zero-carbon resources by December 31, 2045, for a total of 100% clean energy. The RPS requires milestones on the path to 2030, including interim goals of 25% by 2016, 33% by 2020, 44% by 2024, and 52% by 2027. The state is well on its way to achieving its existing RPS targets. Most POUs are on track to meet their 2020 goals and working towards their 2030 goals. The state's three largest electric utilities generally have met current procurement goals and anticipate exceeding future procurement goals, with each having procured over 40% eligible renewable energy resources.

Integrated Resources Plan (IRP). As required in SB 350 (De León, Chapter 547, Statutes of 2015), the IRP process requires the CPUC to identify a portfolio of resources for electricity procurement that provides optimal integration of renewable energy in a cost-effective manner, and minimize impacts on ratepayer's

bills. The identification of this portfolio is intended to guide LSEs' IRPs, which help ensure that utilities meet GHG reduction targets for the electricity sector. The reference system plan is a guide – not a mandate. As part of the IRP planning cycle, the CPUC adopts a reference system plan, which identifies the energy procurements needed to help the LSEs meet specific GHG reduction goals. In its most recent IRP, the CPUC adopted a GHG reduction goal of 25 million metric tons (MMT) by 2035 (CPUC Decision D. 24-02-047).

Resource Adequacy (RA). Following the California energy crisis of 2000-01, the California Legislature enacted legislation to prevent future incidents of widespread black outs and rolling brown outs due to lack of electric generating capacity. Among the reforms was the adoption of Public Utilities Code §380 which directs the CPUC, in consultation with the CAISO, to establish RA requirements for all LSEs, including IOUs, ESPs, and now includes CCAs which did not exist at the time of the crisis. The current RA program consists of system, local, and flexible requirements for each month of a compliance year. In October, LSEs under the jurisdiction of the CPUC must demonstrate that they have procured 90% of their system RA obligations for the five summer months (May-September) of the following year, as well as 100% of their local requirements, and 90% of their flexible requirements for each month of the coming compliance year. The CPUC has recently adopted changes to RA, including increasing the planning reserve margin from 15% to 17.5% and in some cases to 19%.

Integrated Energy Policy Report (IEPR). The IEPR provides a cohesive approach to identifying and solving the state's pressing energy needs and issues. The report, which is crafted in collaboration with a range of stakeholders, develops and implements energy plans and policies. SB 1389 (Bowen and Sher, Chapter 568, Statutes of 2002) required the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC is then required to use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety." The CEC adopts an IEPR every two years and an update every other year.

SB 423 (Stern, Chapter 243, Statutes of 2021). SB 423 required the CEC, in consultation with the CPUC, CAISO, and CARB to submit to the Legislature an assessment of emerging firm zero-carbon resources that support a clean, reliable, and resilient electrical grid in California. The final report defines and provides a qualitative assessment of various firm zero-carbon resources, those that reliably produce zero-carbon or renewable electricity on demand ensuring a consistent and stable power supply for extended periods. The CEC identified eight resources that

met the criteria, they are long-duration energy storage (8+ hours), hydropower, geothermal, renewable natural gas, hydrogen, small modular fission reactors, fusion, and carbon capture. Each technology is thoroughly reviewed, encompassing technological overviews, manufacturing and supply chain considerations, anticipated improvements, and performance and cost characteristics. The report also explores the fundamental barriers and recommendations for firm zero-carbon resources.

Comments

Author statement:

> California is a clean energy leader, yet its electricity system faces increasing challenges from wildfire, load growth and affordability challenges. It is more critical than ever to ensure that our energy planning is optimized for the array of reliability, affordability, and energy constraints the system faces, and accommodates a wide and diverse array of clean energy resources to optimize outcomes for ratepayers. SB 842 will support this optimized planning and help to reduce ratepayer costs.

Local reliability. The author contends that the state continues to depend on aging natural gas power plants to meet local reliability needs, particularly in areas with limited transmission capacity. The author and this bill's supporters seek to advance the state's efforts towards zero-carbon energy resources by supporting local reliability with firm zero-carbon resources. They contend that there is currently no structured approach to deploying firm zero-carbon resources in local reliability areas.

Procurement adjacent? The opponents raise concerns that this bill would circumvent existing procurement of the processes, including the CPUC's IRP process. They argue that the CPUC is already directing procurement of these and other resources. For example, the CPUC in its mid-term reliability (MTR) procurement orders, requires for Long Lead Time (LLT) resources of 1 GW of firm zero-carbon resources and 1 GW of long duration storage (8-hour duration or greater) by 2031. Under the CPUC's centralized procurement orders, the CPUC has extended the deadlines for LLT resources. Specifically, CPUC D.24-02-0474 extended the deadline for LLT procurement to 2031. Additionally, under SB 887 (Becker, Chapter 358, Statutes of 2022), the CAISO is tasked with providing information about transmission constrained resources in local reliability areas.

- 1 GW NQC Long Duration Storage (8+ hour duration)
- 1 GW NQC Clean Firm (>80% capacity factor)

Need for amendments. The opposition is rightfully concerned about the potential risks due to circumventing the CPUC's robust procurement processes where the principles of "least-cost, best fit" principles are applied. *In order to address the oppositions concerns about this bill encouraging procurement mandates and potentially unaffordable costs to customers, the author and committee may wish to amend this bill to:*

- *Delete section 3 of the bill.*
- *Add references of "system reliability" to the required report in section 2.*
- *Delete the CPUC authorization to deploy a pilot program in Section 4.*
- *Move the date to July 1, 2027 by when the CPUC must evaluate resources in Section 5.*
- *Delete the requirement on LSEs that new resource development must occur in local reliability areas.*

Prior/Related Legislation

AB 2368 (Petrie-Norris, Chapter 713, Statutes of 2024) modified several aspects of the RA program and IRP process at the CPUC in order to address challenges with electricity supply reliability.

AB 1373 (Garcia, Chapter 367, Statutes of 2023) directed the CPUC to evaluate the need for and authorizes establishing a central procurement entity to support deployment of certain LLT energy resources.

AB 205 (Committee on Budget, Chapter 61, Statutes of 2022) among its many provision, created the Strategic Reliability Reserve Program and Fund and related programs.

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

SB 887 (Becker, Chapter 358, Statutes of 2022) required 15-year projections of energy resource portfolios and energy demand to inform transmission planning to achieve the state's clean energy goals, and requires the CAISO to consider approval for specified transmission projects as part of the 2022-23 transmission planning process.

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) would establishes the 100 Percent Clean Energy Act of 2017 which increases the RPS requirement from 50% by 2030 to 60%, and creates 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% clean energy.

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

SUPPORT:

Clean Power Campaign
Form Energy
Terrament, Inc.
Union of Concerned Scientists

OPPOSITION:

Southern California Edison
Pacific Gas and Electric Company, unless amended

ARGUMENTS IN SUPPORT: The Union of Concerns Scientists:

> UCS supported SB 100 (2018) which set a 100 percent clean renewable target for California's electrical grid by 2045, while understanding that meeting that target would require meaningful investment in firm zero-carbon resources to help ensure a resilient electrical grid.
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> California's grid currently lacks a structured approach to deploy firm zero-carbon resources; yet further deployment of these resources could better support local reliability. Multiple studies, including the 2021 Joint Agency SB 100 Report and recent work funded by the California Energy Commission, show that incorporating long-duration and multi-day energy storage into the state's energy planning and grid mix could reduce costs and emissions associated with meeting the state's clean energy and climate change goals. …Under the provisions of SB 842, the CEC and PUC will take a proactive role in identifying and assessing existing and potential funding mechanisms to accelerate the deployment of reliability-enhancing resources, while maintaining affordability.

The bill also ensures that load-serving entities evaluate all reasonable options to optimize local reliability at the lowest possible cost, supporting greater energy equity and system-wide resilience across the state.

ARGUMENTS IN OPPOSITION: Southern California Edison states:

SB 842 creates a technology carveout for firm resources, bypassing the CPUC's collaborative planning process and increasing customers costs. …California's electric grid needs should be planned in a thoughtful, comprehensive manner so that the right resources are developed with the appropriate operating characteristics, in the correct locations and with enough lead time to ensure they are available to operate when needed. However, achieving these outcomes will fail if technology carveouts tie the hands of LSEs and increase costs for customers when more cost-effective alternatives are available.

-- END --