Date of Hearing: July 9, 2025

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Cottie Petrie-Norris, Chair
SB 842 (Stern) – As Amended June 27, 2025

**SENATE VOTE**: 29-10

**SUBJECT**: Energy: firm zero-carbon resources

**SUMMARY:** Requires the California Public Utilities Commission (CPUC), by December 31, 2026, to produce a report identifying the opportunities and needs to provide for local and system reliability through firm zero-carbon resources over the short term, midterm, and long term as specified. Specifically, **this bill**:

1) Requires the report to include, among other things, characterization of the resource attributes vital for local and system reliability and identification of barriers, including market barriers, to deploying firm zero-carbon resources to enhance local and system reliability.

**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)

**FISCAL EFFECT**:

According to the Senate Committee on Appropriations, the CPUC may incur unknown but potentially significant ongoing costs—funded by ratepayers—to implement the provisions of this bill. The CEC anticipates any associated costs would be minor and absorbable.

**CUSTOMER COST IMPACTS:** Unknown.

**BACKGROUND:**

*"Firm power"* – Generally, "firm power" refers to electricity resources that can deliver electricity at any time, for as long as needed.[1] These resources may include anything from fossil fuel plants (coal, biomass, natural gas, etc.) to nuclear energy to geothermal or hydropower. Much of the firm power currently in use in California is from natural gas.[2] As California transitions to a decarbonized grid, studies highlight the growing need for clean firm power to maintain reliability California is not adequately preparing these resources for future procurement. Without adequately planning for these resources, the state may fall short for the timely procurement of these resources. As such, the Legislature adopted SB 423 (Stern, Chapter 243, Statutes of 2021) which requires the CEC in consultation with CPUC, CAISO, and CARB to submit by December 31, 2023, an assessment of firm zero-carbon resources that support a clean,

[1] Long, JCS, et al., "Clean Firm Power is the Key to California's Carbon-Free Energy Future," *Issues in Science and Technology,* March 24, 2021.
[2] Roughly 42 MW; Long, JCS, et al. *"*Clean Firm…," *Issues.*

reliable, and resilient electrical grid. This legislation provided a statutory definition of "firm zero-carbon resources" as electrical resources that can individually, or in combination, deliver zero-carbon electricity with high availability for the expected duration of multiday extreme or atypical weather events, including periods of low renewable energy generation, and facilitate integration of eligible renewable energy resources into the electrical grid and the transition to a zero-carbon electrical grid. This definition could apply to a variety of generation and storage technologies, both known and nascent, from geothermal to green electrolytic hydrogen to long-duration storage.

*Planning for the Future: the IRP, SB 100, IEPR, and RA* – California has a complicated but robust electric planning and procurement regime spread across the CPUC, CEC, and CAISO. This regime guides the current procurement the LSEs conduct, and informs mid- and long-term procurement strategies. The regime is complementary, where one resource may count toward meeting many facets of an LSE's procurement requirements and planning goals. The main pieces of the regime are the IRP, the related SB 100 Report, the IEPR, and RA.

*Recent Integrated Resource Planning (IRP) framework* – To achieve procurement targets for SB 100, the CPUC, adopted an Integrated Resource Plan (IRP)[3] planning process that runs on a two-year cycle. In February 2024, the CPUC adopted a decision in its integrated resource planning that meets a statewide 25 million metric ton (MMT) greenhouse gas (GHG) target for the electric sector by 2035.[4]The decision represents the most aggressive target identified by CARB, which identifies that 56,000 megawatts of clean new resources are needed by 2035. The CPUC also recommended to the California Independent System Operator (CAISO) that the resource portfolio achieving the 25 MMT GHG goal be the foundation for planning transmission investments – utilized as both the reliability base case and the policy-driven base case for study in its 2024-2025 Transmission Planning Process (TPP).

*SB 100 Report* – While the IRP focuses on what energy mix is best suited to meet our GHG and reliability goals 10 years into the future, the Joint Agency SB 100 Report looks at a planning horizon 24 years out, to determine how best to implement the 100%-clean-electricity-by-2045 policy enacted under SB 100 (De León, Chapter 312, Statutes of 2018).[5] The first SB 100 report was finalized in March 2021, and included analyses of many pathways to achieve the state's 2045 clean energy goal, including a core scenario which selected offshore wind resources and long-duration storage, as well as study scenarios examining "zero-carbon firm resources."[6] The SB 100 Report will be updated every four years, with future work focused on system reliability,[7] among other considerations.

*The Integrated Energy Policy Report (IEPR)* – Alongside the IRP and SB 100 Report, which focus on potential mid- and long-term procurement needs for the electricity system, the CEC conducts an IEPR to forecast all aspects of energy industry supply, production, transportation,

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[3] IRP provides the umbrella process by which the CPUC oversees long-term procurement for its regulated load-serving entities (electrical corporations, community choice aggregators, and electric service providers), which serve approximately 75% of the state. The intent of this process is to ensure system needs are being met by the sum actions of the many LSEs in that system. The IRP looks a decade or more into the future.
[4] Proposed Decision issued 2/15/2021 in IRP Proceeding, Rulemaking 20-05-003
[5] CEC, CPUC, & CARB; *2021 SB 100 Joint Agency Report: Achieving 100 Percent Clean Electricity in California: An Initial Assessment*;" March 2021.
[6] Pg. 12, 2021 SB 100 Report.
[7] Pg. 1, 2021 SB 100 Report.

delivery, distribution, demand, and pricing. 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 with updates every other year. The information generated from the IEPR's demand forecast informs the IRP and RA processes at the CPUC.

*Resource Adequacy (RA)* – Running concurrently, the RA process, overseen by the CPUC and CAISO, is designed to identify resources needed to ensure reliability. Following the California energy crisis of 2000-01, the California Legislature enacted AB 380 (Nunez, Chapter 367, Statutes of 2005) to prevent future incidents of widespread blackouts and rolling brownouts due to lack of electricity. This statute established the RA program to guide resource procurement and promote infrastructure investment by requiring that Load Serving Entities (LSEs) procure capacity so that capacity is available to the CAISO when and where needed. The program lives at the CPUC, which must work in consultation with the CAISO to establish RA requirements for all LSEs.

The current RA program consists of system, local, and flexible requirements for each month of a compliance year. System requirements are determined for each LSE based on the CEC's integrated energy policy report (IEPR) electricity forecast plus a 17% planning reserve margin (PRM) for 2024-25.[8] Due to higher energy demand in hotter months, the effective PRM increases to between 20-22.5% for the three large investor-owned utilities (IOUs) in the summers of 2024 and 2025.[9] Local requirements are determined based on an annual CAISO study using a 1-in-10 LOLE and an N-1-1 contingency.[10] Flexible requirements are based on an annual CAISO study that currently looks at the largest three-hour ramp for each month needed to run the system reliably. In October, LSEs 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. There is an additional monthly reporting requirement for RA, where LSEs must demonstrate they have procured 100% of their monthly system and flexible RA obligation.

The RA market has experienced significant constraint recently, largely driven by resource retirements across the western U.S. and the growing frequency of. For example, in 2020, two extreme heatwaves impacted the western United States and strained electric system operations in California.[11] One of the heatwaves resulted in two days (August 14-15) of rotating outages in the CAISO territory from 6-9 p.m. These outages marked the first time in nearly 20 years that such rotating outages occurred in California.[12] This event led to extensive effort and collaboration amongst California's energy agencies to understand the root cause of the event and to develop

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[8] The 17% PRM represents an increase relative to the 16% PRM applicable in 2022 and the 15% applicable from 2005-21. CPUC; "Fact Sheet on Decision in Phase 3 of the Implementation Track in the Resource Adequacy (RA) Proceeding (R. 21-10-002); July 2023; https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/fact-sheet-on-ra-d2306029-on-implementation-track-phase-3.pdf

[9] The 20-22.5% effective PRM represents an increase relative to the 15% effective PRM before 2022.

[10] N-1-1 Contingency: A sequence of events consisting of the initial loss of a single generator or transmission component (Primary Contingency), followed by system adjustments, followed by another loss of a single generator, or transmission component (Secondary Contingency).

[11] CBS News; "Another record-breaking heat wave is building in the West"; September 2020. https://www.cbsnews.com/news/labor-day-weekend-heat-wave-forcast-western-united-states/.

[12] CAISO, CPUC, CEC; "Preliminary Root Cause Analysis: Mid-August 2020 Heat Storm"; October 2020.

strategies, which are promulgated in a Final Root Cause Analysis to ensure such events do not recur, including making changes to the RA program.

**COMMENTS**:

1) *Author statement.* According to the author, "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."

2) *This Bill.* This measure requires the CPUC in consultation with CAISO, to produce a report identifying how firm zero-carbon resources can support local and system reliability across the short, mid, and long term. The report must also examine market and regulatory barriers to deployment and propose strategies to address these barriers. Supporters of the legislation argue that firm zero-carbon resources are essential to achieving the state's reliability and climate goals. However, they contend that current planning efforts do not adequately account for the optimal benefits of these resources or address the dual challenge of ensuring local reliability and meeting the state's decarbonization goals in a cost-effective manner. To close this gap, SB 842 directs the CPUC to identify key resource attributes, deployment scenarios, priority regions, implementation timelines, and the regulatory or stakeholder processes needed in planning and procurement decisions.

3) *Prior Legislation.*

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

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

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

   SB 1020 (Laird) 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. Status: Chapter 361, Statutes of 2022.

   SB 887 (Becker) 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. Status: Chapter 358, Statutes of 2022.

   SB 423 (Stern) 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. Status: Chapter 243, Statutes of 2021.

SB 100 (De León) 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. Chapter 312, Statutes of 2018.

**REGISTERED SUPPORT / OPPOSITION**:

**Support**

Advanced Energy United
Clean Power Campaign
Form Energy
Pacific Gas and Electric Company
Union of Concerned Scientists

**Opposition**

None on file.

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