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

**Senator Benjamin Allen, Chair
2025 - 2026 Regular**

Bill No:	AB 2647	Hearing Date:	6/24/2026
Author:	Calderon		
Version:	4/16/2026 Amended		
Urgency:	No	Fiscal:	Yes
Consultant:	Nidia Bautista		

SUBJECT: Energy: nuclear powerplants: assessment

DIGEST: This bill requires the California Energy Commission (CEC), on or before July 1, 2027, to prepare a comprehensive assessment of the potential role for advanced nuclear technologies in supporting critical infrastructure in California, and of the potential for new, in-state nuclear power plants to cost-effectively meet the expressed policy of 100% zero-carbon and renewable energy resources by 2045.

ANALYSIS:

Existing law:

- 1) Establishes and vests the State Energy Resources Conservation and Development Commission (also known as the CEC) with the exclusive jurisdiction to certify thermal powerplants with a generating capacity of 50 megawatts (MW) or more. (Public Resources Code §25000 *et seq.*)
- 2) Establishes the 100 Percent Clean Energy Act of 2018, declares that it is the policy of the state to achieve 100% zero-carbon electricity by 2045. (Public Utilities Code §454.52)
- 3) Declares the policy of the state to encourage the use of nuclear energy, wherever feasible, recognizing that such use has the potential of providing direct economic benefit to the public, while helping to conserve limited fossil fuel resources and promoting clean air. (Public Resources Code §800)
- 4) Prohibits any nuclear fission thermal powerplant from being permitted in the state until the federal government approves technologies to reprocess the spent nuclear fuel rods, and the CEC reports to the Legislature affirmative findings of that federal action. (Public Resources Code §25524.1)

- 5) Prohibits the CEC from certifying a nuclear fission thermal powerplant, except for specified powerplants, and provides that a nuclear fission thermal powerplant, except those specified powerplants, is not a permitted land use in California unless certain conditions are met regarding the existence of technology for the construction and operation of nuclear fuel rod processing plants and of demonstrated technology or means for the disposal of high-level nuclear waste. (Public Resources Code §25524.2)
- 6) Requires the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices and 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 §§25000, *et seq.*)
- 7) Requires the CEC, as part of its 2027 Integrated Energy Policy Report (IEPR), to include an assessment of the potential of fusion energy to contribute to the state's power supply. Defines "fusion" to mean a reaction in which at least one heavier, more stable nucleus is produced from at least one lighter, less stable nucleus, typically through high temperatures and pressures, and emitting energy as a result. Defines "fusion energy" to mean the product of fusion reactions inside a fusion device and used to generate electricity or other commercially usable forms of energy. (Public Resources Code §25302.4)

This bill:

- 1) States it is the intent of the Legislature to ensure the use of a skilled and trained workforce which is required to perform work on other dangerous industrial facilities and also applies to the initial construction and maintenance of any new advanced nuclear reactors that may be permitted and constructed in the future.
- 2) Requires the CEC, on or before July 1, 2027, to prepare as part of the IEPR or a separate report, a comprehensive assessment of the potential role for advanced nuclear technologies in supporting critical infrastructure in California, and of the potential for new, in-state nuclear powerplants to cost-effectively meet statewide needs for new electricity resources, and to meet the expressed policy of 100% zero-carbon and renewable energy resources by 2045.
- 3) Requires the CEC to consider specified analysis and evaluations, including:
 - a) System costs, reliability benefits, emission impacts, deployment timelines, waste management and disposal pathways, environmental and public health impacts, and potential siting considerations.

- b) Potential of nuclear energy using high-renewable grid scenarios that require firm, dispatchable, zero-carbon resources to complement renewable resources, grid reliability, and reduce overall system costs.
 - c) Ratepayer, taxpayer, and private costs associated with spent nuclear fuel management, including onsite, interim, and long-term storage pathways in comparison with other electricity generation technologies.
 - d) Potential for employment of a skilled and trained workforce.
 - e) Comparative outcomes relative to existing and projected energy pathways in California.
- 4) Authorizes the CEC to update the assessment as appropriate.
- 5) Authorizes the CEC, the California Public Utilities Commission (CPUC), the California Independent System Operator (CAISO), and other public agencies to evaluate the potential of nuclear energy to meet long-term resource needs, notwithstanding the prohibitions on siting new nuclear powerplants.

Background

Nuclear energy. Nuclear energy has been deployed in the country since the 1950s. As of mid-2012, California has one operating nuclear energy powerplant, the Diablo Canyon Nuclear Powerplant outside San Luis Obispo owned by Pacific Gas & Electric (PG&E), which consists of two units – Unit 1 is a 1,073 MW Pressurized Water Reactor (PWR) which began commercial operation in May 1985, while Unit 2 is a 1,087 MW PWR, which began commercial operation in March 1986. Pursuant to statute, both units are scheduled to end operations by 2029 and 2030. The state also has two decommissioned nuclear powerplants – PG&E’s Humboldt Bay plant and Sacramento Municipal Utility District’s Rancho Seco plant. Developed in the early 1960s, Humboldt Bay was shut down in 1976 for refueling and never restarted due to seismic and cost issues. Developed in the early 1970s, Rancho Seco was shut down in 1989 in response to a voter referendum, after a troubled operational history that made it unreliable and expensive. The fourth, the San Onofre Nuclear Generating Station (SONGS), jointly owned by Southern California Edison and San Diego Gas and Electric and Southern California Public Utilities, went offline in January 2012 for repairs and permanently retired abruptly in 2013. Diablo Canyon represents just under 9% of California’s total in-state generation depending on the state’s annual generation.

Nuclear history in California. In 1976, the Legislature passed AB 2820 (Goggin, Chapter 194, Statutes of 1976) and AB 2822 (Nestande, Chapter 196, Statutes of 1976) as amendments to the previously enacted 1974 Warren-Alquist Act which authorized the CEC to site nuclear powerplants in the state. The amendments to the

Act by the two bills established a moratorium on permitting new nuclear powerplants, specifically they require moratorium until the CEC finds there has been developed a means for permanent disposal of high-level nuclear wastes and provides that before a nuclear powerplant is built, the CEC, must determine that there will be adequate capacity for interim storage of the plant's spent fuel.¹ The California moratorium was challenged by PG&E and ultimately reviewed by the U.S. Supreme Court. In *PG&E v. State Energy Resources Conservation and Development Commission*, 461 U.S. 190 (1983), the Supreme Court upheld California's moratorium law. A key basis of the Court's decision was a division of authority to make safety determinations (federal) and economic determinations (state). The Court found that the absence of a permanent waste disposal site could lead to unknown negative economic consequences. Since that time, the CEC has not found that a high-level waste disposal technology has been demonstrated or approved. Likewise, the Nuclear Regulatory Commission, which regulates commercial nuclear power plants and other uses of nuclear materials, has never made a finding that a demonstrated technology exists for either nuclear fuel rod preprocessing plants or the disposal of high-level nuclear waste.

Comments

Need for this bill. The author states:

...California's own energy agencies confirmed in their 2021 Joint Agency Report that nuclear meets SB 100's definition of clean energy — yet because of the 1976 moratorium, they refrained from including it in their modeling scenarios, depriving the state of a clear understanding of its role in achieving SB 100. AB 2647 marks an important and historic step. In addition to mandating the CEC study, it authorizes the Energy Commission, the Public Utilities Commission, the Independent System Operator, and other public agencies to evaluate advanced nuclear energy's potential to meet statewide needs for new electricity resources.

Advanced nuclear also creates thousands of well-paid, permanent jobs in construction, engineering, and operations — these are careers that sustain families and stay in communities for decades. To conclude: 50 years ago, California made a choice based on the technologies and needs of that era. Today, we face an entirely different reality. Our grid needs firm clean power. Our families and businesses need affordable electricity. Our climate goals need every tool available. AB 2647 gives us the information to make a new choice, based on the technologies and needs of our century.”

¹ Public Resources Code § 25524.1, 25524.2

SB 100 (De León, Chapter 312, Statutes of 2018) goals. Under SB 100 the state adopted a policy goal to achieve 100% zero-carbon and renewable energy resources by 2045. The state continues to plan towards the SB 100 goal as well as the SB 1020 (Laird, Chapter 361, Statutes of 2022) interim goals, including through the Integrated Resource Planning efforts at the CPUC, transmission planning efforts at the CAISO, and demand forecasting at the CEC, and Renewables Portfolio Standard (RPS) compliance and planning by the CPUC and CEC working with retail-sellers and load-serving entities. The CEC, CPUC, and California Air Resources Board (CARB) published the *SB 100 Joint Agency Report* in 2021 (required to be updated every four years). The analysis in the Joint Agency Report is intended as a first step in an iterative and ongoing effort to assess barriers and opportunities to implementing the 100% clean electricity policy. The report includes system modeling to provide directional insights into what a 2045 portfolio of renewable and zero-carbon resources may look like, as well as the associated costs and resource build rates (the average amount of new generation required each year) required to achieve such a portfolio. The analysis builds on the modeling and assumptions used in the integrated resource plan. Initial findings suggest that the goals of SB 100 are achievable, though opportunities remain to reduce overall system costs. The report presents various scenarios to meet the 100% clean electricity target with existing technologies (commercially available), as well as alternative scenarios that explore additional factors. The SB 100 Core scenario shows an approximate tripling of generation resources relative to today's installed capacity, which is driven by the conversion to clean electricity resources and growing electricity demand. Though the report cautions additional analysis is needed. The agencies are currently working towards finalizing the 2025 Joint Agency Report.

Need for firm, dispatchable clean power. SB 423 (Stern, Chapter 243, Statutes of 2021) 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. The report was published in December 2024 and identified the specific resources as those “that reliably produce zero-carbon or renewable energy on demand”: long duration energy storage, hydropower, geothermal, renewable natural gas, hydrogen, small modular reactors (SMRs), fusion, and carbon capture. In the SB 423 report, the resources listed above were identified, in part, for their commercial feasibility (or near-commercial feasibility) in addition to being able to potentially address system reliability needs.

Two of these resources – SMRs and fusion – are nuclear technologies which may be of focus for the assessment required by this bill. The SB 423 report notes that SMRs are largely at the demonstration phase, vary significantly in physical design,

coolant type, and nuclear process. The study focused on light water cooled thermal-spectrum fission SMRs, noting they are one of the more technologically mature types of SMRs under development and are the most widely deployed conventional reactors. The two classes of light water reactors are PWRs and boiling water reactors (BWRs) which use light (ordinary) water as the fluid to transfer heat from the reactor core to the turbine for power generation. Both designs use low enriched (three-five percent) uranium fuel and have expected lifetimes of 60 to 80 years. The classes differ in the number of loops used in the designs and, in turn, the operating pressure and temperature. They generally offer lower initial capital investments, increased siting flexibility, and greater scalability than traditional fission reactors. However, there are existing challenges with public perception of safety, and new deployment is barred in California due to California's moratorium on new fission reactors. Fusion technologies offer transformative potential without the production of nuclear waste, but systems are not close to commercial readiness and research has remained within a laboratory environment so far. To achieve controlled fusion, confinement is necessary to capture the energy produced from the reaction. In 2022, the National Ignition Facility at the Lawrence Livermore National Laboratory was the first fusion device to demonstrate net energy with their single-shot facility. Further development is needed to overcome technical challenges associated with creating a sustained energy source.

Concerns about safety and security persist. There is considerable and growing interest in developing nuclear energy in the world, particularly as a low-carbon energy source that may provide firm, dispatchable power to complement the integration of variable renewable energy resources, such as solar and wind. This includes efforts at the federal level to fund demonstration projects and provide tax credits. However, continued concerns about safety, security, and costs also affect the viability of these technologies. Recent history, particularly the Fukushima, Japan nuclear disaster in March 2011 which resulted in the release of radioactive contaminants. These concerns are heightened by the lack of permanent repository to store nuclear waste. The federal government is responsible for providing for the permanent disposal of high-level radioactive waste and spent nuclear fuel and was required to begin accepting spent nuclear fuel from nuclear power plants by 1998. However, although Congress selected the Yucca Mountain site in Nevada for a permanent deep geologic repository for the disposal of spent nuclear fuel, the federal waste disposal program has been plagued with technical and legal challenges, managerial problems, licensing delays, persistent weaknesses in quality assurance for the program, and increasing costs. Opponents to this bill raise concerns that the lack of a spent fuel disposal system means the costs of operating these plants cannot be fully accounted for given the ongoing costs to store, transport, and ensure the security of nuclear fuel for its full lifecycle. They quote

the 1983 Supreme Court decision that cost estimates “cannot be made until the Federal Government has settled upon the method of long-term waste disposal.”

Amendments needed. As noted by the opposition and in the Assembly Appropriations Committee analysis, the six months deadline proposed by this bill for the CEC to conduct the required assessment, including all public workshops and information, is likely not sufficient for a rigorous, comprehensive assessment of nuclear energy as envisioned by this bill. In this regard, *the author and committee may wish to amend this bill to extend the timeline by when the CEC must conduct the required assessment.* Additionally, while the proposed bill includes numerous requirements on the CEC as part of the assessment, the opposition is correct to note the need to incorporate additional requirements concerning security and its related financial impacts to ratepayers and taxpayers of handling and storing nuclear fuel. In this regard, *the author and committee may wish to amend this bill to explicitly require the CEC to consider the security-related financial costs of handling and storing nuclear fuel in the state.*

Prior/Related Legislation

SB 925 (McNerney, 2026) requires the CEC to develop a strategic plan for the development of fusion energy in California. The bill is pending in the Assembly Appropriations Committee.

SB 80 (Caballero, Chapter 334, Statutes of 2025) created the Fusion Research and Development Innovation Hub Program within the CEC to accelerate the development and growth of fusion energy with the goal of delivering the world’s first fusion energy pilot plant in the state in the 2030s.

SB 86 (McNerney, Chapter 211, Statutes of 2025) authorized the California Alternative Energy and Advanced Transportation Financing Authority to provide financial assistance, in the form of exclusions from sales and use tax, to electrical generation facilities using nuclear fusion technology.

AB 1172 (Calderon, Chapter 360, Statutes 2023) required the CEC as part of its 2025 IEPR to include an assessment of the potential for fusion energy to contribute to California’s power supply.

SCR 25 (Blakespear, Chapter 161, Statutes of 2025) celebrates the numerous contributions of public and private sector organizations within California for advancing nuclear fusion energy research and supports developing the fusion energy ecosystem with the goal of siting a first-of-its-kind fusion pilot plant in California by the 2040s.

SB 846 (Dodd, Chapter 239, Statutes of 2022) among its provisions, authorizes the extension of operating the Diablo Canyon Nuclear power plant beyond the current expiration dates (of 2024 for Unit 1 and 2025 for Unit 2), to up to five additional years (no later than 2029 and 2030, respectively), under specified conditions.

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 that will achieve the existing statutory goal of ensuring eligible renewable energy resources and zero-carbon resources supply 100% of all retail sales of electricity to California end-use customers.

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% 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: No

SUPPORT:

Bay Area Council
California Large Energy Consumers Association
California State Association of Electrical Workers
California State Pipe Trades Council
Generation Atomic
Mothers for Nuclear
North American Young Generation in Nuclear
Nuclear Is Clean Energy Club
Southern California Edison
Southern California Public Power Authority
State Building & Construction Trades Council of California
The Breakthrough Institute
Water Replenishment District of Southern California
Three Individuals

OPPOSITION:

Alliance for Nuclear Responsibility
California Land Watch
Coalition for Nuclear Safety
Committee to Bridge the Gap

Green Party of Orange County
Green Party of Santa Clara County
Indivisible 49
Just Transition Alliance
Long Beach Alliance for Clean Energy
Nuclear Energy Information Service
Parents Against Santa Susana Field Lab
Physicians for Social Responsibility - Los Angeles
Physicians for Social Responsibility - San Francisco Bay
Public Watchdogs
Samuel Lawrence Foundation
San Luis Obispo Mothers for Peace
Sierra Club California
One Individual

ARGUMENTS IN SUPPORT: The Southern California Public Power Authority (SCPPA), which represents publicly owned utilities in Southern California, states:

It is widely recognized that achieving our clean energy goals will require the development and integration of next-generation carbon-free energy resources that can meet the grid reliability needs currently provided by natural gas plants. Advanced nuclear reactors is an emerging technology that has the potential to play a critical role in meeting California’s climate goals by providing firm, dispatchable power when the grids experience fluctuations in renewable generation and energy demand. ...SCPPA supports an “all-of-the-above” approach to achieving California’s decarbonization goals...existing state statutory restrictions limit the ability to develop and demonstrate these [advanced nuclear reactor] technologies in California. ...[AB 2647] takes the important first step by requiring a comprehensive state assessment of the potential role for advanced nuclear technologies in California.

ARGUMENTS IN OPPOSITION: The organizations in opposition to this bill state:

Nuclear energy comes with significant costs and risks. If California is to assess the potential consequences of inviting new nuclear reactors into the state, it is imperative that such an assessment be conducted carefully, with rigor and neutrality. AB 2647, as written, would direct the California Energy Commission (CEC) to conduct a study structured such that it could be expected to produce a biased, incomplete assessment.

They contend additional measures would strengthen the proposed assessment, including: a more realistic timeline, the impact on the state's ratepayers, the environmental justice implications of nuclear energy projects, the state's potential financial liability exposure from increased spent fuel storage and reactor accidents, cost projections for nuclear waste management extended across hundreds of thousands of years that spent fuel remains hazardous, and a comparative analysis of the specific implications presented by each of the technically distinct nuclear energy technologies foreseeably in development in the United States.

-- END --