SENATE THIRD READING
SB 80 (Caballero and McNerney)
As Amended September 8, 2025
Majority vote

SUMMARY

Creates the Fusion Research Development and Innovation *Initiative (Fusion Initiative)* to accelerate the development and growth of fusion energy by advancing fusion science and technology with the goal of delivering the world's first fusion energy pilot *project* in California by the 2040s.

Major Provisions

1) Establishes the Fusion *Initiative* within the California Energy Commission (CEC).

2) Requires the CEC, in consultation with the Governor's Office of Business and Economic Development (GoBiz) and the California Public Utilities Commission (CPUC), *to establish and administer the Fusion Initiative to provide financial incentives for projects that advance technologies for fusion energy benefiting California.*

3) Requires the CEC to provide financial incentives, defined as a contract, grant, loan or other appropriate funding mechanism, for any of the following:

   a. To advance research and development in fusion energy and support the establishment or expansion of testing facilities addressing gaps in fusion science and technology.

   b. To accelerate the deployment of new research and technology capabilities that support commercialization of fusion energy.

   c. To achieve the initiative's goal of delivering the world's first fusion energy pilot project in the state by the 2040s.

4) Authorizes the CEC to adopt guidelines governing the award, eligibility, and administration of funding for the Fusion Initiative.

5) Authorizes the CEC to do all of the following:

   a. Solicit applicants and award financial incentives using a competitive award process. The commission may noncompetitively award follow-on financial incentives to awardees of a prior competitive award process.

   b. Use the competitive award process of another organization to award funds or provide follow-on funding for an entity previously selected through a competitive award process for the purposes of attracting significant federal or private funding for the projects or of accelerating the delivery of program benefits.

   c. Notwithstanding any other law, noncompetitively award financial incentives to an entity that will use the moneys as matching funds for federally awarded moneys.

   d. Noncompetitively award financial incentives to national laboratories and any public entities.

e. Noncompetitively award financial incentives to any entity when the cost to the state is reasonable and the commission determines that either the expertise, service, or product is unique; a competitive solicitation would frustrate obtaining necessary information, goods, or services in a timely manner; or it is in the best interests of the state.

6) Prohibits the commission from noncompetitively awarding funds unless both of the following conditions are met:

a. The commission, at least 60 days before taking an action pursuant to this bill, notifies the Joint Legislative Budget Committee and the relevant policy committees in both houses of the Legislature, in writing, of its intent to take the proposed actions.

b. The Joint Legislative Budget Committee either approves or does not approve the proposed action within 60 days from the date of notification to the committees.

7) Provides that this bill shall be liberally construed to maximize CEC's ability to utilize and award federal funds expeditiously and in accordance with federal law.

8) Makes the provisions of this bill operative, and its implementation contingent, upon an appropriation.

9) Provides that the provisions of this bill shall remain in effect only until January 1, 2028.

COMMENTS

Nuclear fusion as a zero-carbon energy resource. The need for zero-carbon and renewable energy resources is critical to advance the state's clean energy and climate goals, including those for 100% zero-carbon and renewable energy by 2045 as established by SB 100 (De León, Chapter 312, Statutes of 2018) and the interim targets established by SB 1020 (Laird, Chapter 361, Statutes of 2022). Nuclear fusion energy has the potential to become a source of clean and resilient energy, however, many important science and technological challenges remain.

As explained by the U.S. Department of Energy (USDOE), nuclear *fission* is the process where the nucleus of an atom splits into two or more smaller nuclei and other particles and can release large amounts of energy in the form of heat and radiation. Nuclear fission is fully commercialized technology and is used around the world to produce electricity, as it does in California at the Diablo Canyon Nuclear Power Plant.

In contrast, nuclear *fusion*—the subject of this bill—occurs, again according to USDOE, when two light nuclei merge to form a single heavier nucleus, a process that releases energy because the total mass of the resulting single nucleus is less than the mass of the two original nuclei, so leftover mass becomes energy. Nuclear fusion is how our sun and the stars make energy. However, there are no commercial operations that produce large amounts of energy from nuclear fusion, and the use of fusion in this way remains largely theoretical. Nonetheless, many see nuclear fusion as a potential source of "baseload"—that is, constant—energy that does not produce climate warming gases.

California Progress on Fusion. Many research facilities are exploring nuclear fusion, including several in California. Bill proponents hope this bill, and seed funding that may follow it, will

signal to federal authorities and motivated researchers that California is serious in its efforts to explore fusion science and technology.

In December 2022, the team at the world's most powerful laser fusion facility, the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL), conducted the first controlled fusion experiment in history to reach the ignition milestone, meaning it achieved a net energy gain, producing more energy from fusion than the laser energy used to drive it. Using its 192 laser beams, NIF is able to deliver more than 60 times the energy of any previous laser system to its target. To date, the NIF at LLNL has achieved laboratory fusion ignition eight times: beginning with the historic event on December 5, 2022, and with subsequent success as recently as April 2025, according to science news sources. It is reported that each ignition event lasts for a few hundred picoseconds (i.e., 100 trillionths of a second), far less than the blink of an eye.

With the hope of advancing the state's efforts, the UC established the Pacific CREST Fusion initiative and the concept of a Pacific CREST Fusion special purpose entity, which the Board of Regents approved at its January 22, 2025, meeting. The vision is to have the Pacific CREST Fusion organization be a UC led not-for-profit organization to advance fusion energy in California through a public-private partnership. The Pacific CREST Fusion initiative is intended to build off the existing laboratories, research capabilities, and private companies to advance nuclear fusion energy. In addition to LLNL, these include other research and development facilities in the state, specifically: the DIII-D National Fusion Facility in San Diego, Lawrence Berkeley National Laboratory, Sandia National Laboratories, and the SLAC National Accelerator Laboratory at Stanford University, as well as, the world-class researchers at the state's universities, including at several of the UC campuses.

According to the Author
According to the author: "Fusion energy, considered the 'holy grail' of energy solutions, promises virtually unlimited clean energy without long-lived nuclear waste. California has some of the most prestigious universities, and they are training the next generation of scientists in the mechanics of fusion energy. Yet if California does not invest in this emerging technology, students will be forced to leave the state to continue their careers. Additionally, fusion research has been supported primarily through the federal government with little to no state involvement or facilitation. This bill would authorize the [CEC] to establish regional fusion energy hubs in California and provide grant funding to assist in closing the infrastructure gap to make fusion energy part of California's zero-carbon energy system. California is a leader in technology and green energy; it should similarly lead the nation in fostering fusion energy."

Arguments in Support
In support of the bill, General Atomics states: "[T]he federal government has shown significant interest in establishing new partnerships with states and industry to drive investments in research and development. In June 2024, the DOE proposed a new Public-Private Consortium Framework (PPCF) meant to amplify federal funding by catalyzing and bringing together state and local government, private entities, philanthropic funding, and partnerships to accelerate the commercialization of fusion energy. While deployment is not immediate, it is imperative that California facilitate the development of fusion energy to support the state's existing ecosystem and remain the leader for carbon-free energy in the US and world…The Hub Program established in the bill would help leverage federal funding and private investment to complement the PPCF framework—driving new investments in academia, workforce development, science,

and technology and positioning California as a partner with the DOE and foreign like-minded nations to advance fusion energy."

Arguments in Opposition
This bill has no opposition on file.

FISCAL COMMENTS

According to the Assembly Appropriations Committee, *the prior version* of this bill creates cost pressure of an unknown but significant amount, likely in the millions of dollars, to provide money for the Fusion Research and Development Fund (General Fund, bond funds and special funds).

The bill also creates costs to CEC of an unknown, but significant amount, likely in the mid hundreds of thousands of dollars annually, to designate three fusion hubs and to oversee, coordinate and provide assistance to each hub (Energy Resources Program Account (ERPA)). CEC estimates these costs to be approximately $350,000 to for "at least" two technical experts with nuclear fission experience, at an annual cost of $175,000 each. CEC also anticipates the need to conduct a formal rulemaking to implement the bill, though it did not provide an estimate of costs for this activity. ERPA is CEC's main funding source and continues to face a structural imbalance, with annual costs exceeding annual revenues.

Each of the state entities the bill tasks with consulting with CEC on designation of the fusion hubs—GoBiz, CPUC and UC—will likely be able to absorb the workload with existing resources.

Cost impacts of the new amendments to this bill are not analyzed.

VOTES

SENATE FLOOR: 38-0-2
YES: Allen, Alvarado-Gil, Archuleta, Arreguín, Ashby, Becker, Blakespear, Cabaldon, Caballero, Cervantes, Choi, Cortese, Dahle, Durazo, Gonzalez, Grayson, Grove, Jones, Laird, Limón, McGuire, McNerney, Menjivar, Niello, Ochoa Bogh, Padilla, Pérez, Richardson, Rubio, Seyarto, Smallwood-Cuevas, Stern, Strickland, Umberg, Valladares, Wahab, Weber Pierson, Wiener
ABS, ABST OR NV: Hurtado, Reyes

ASM UTILITIES AND ENERGY: 18-0-0
YES: Petrie-Norris, Patterson, Boerner, Calderon, Chen, Davies, Mark González, Harabedian, Hart, Irwin, Kalra, Papan, Rogers, Schiavo, Schultz, Ta, Wallis, Zbur

ASM APPROPRIATIONS: 15-0-0
YES: Wicks, Sanchez, Arambula, Calderon, Caloza, Dixon, Elhawary, Fong, Mark González, Ahrens, Pacheco, Pellerin, Solache, Ta, Tangipa

UPDATED

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