Office of Senate Floor Analyses
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UNFINISHED BUSINESS

Bill No: SB 80
Author: Caballero (D) and McNerney (D), et al.
Amended: 9/8/25 in Assembly
Vote: 21

SENATE ENERGY, U. & C. COMMITTEE: 16-0, 4/21/25
AYES: Becker, Ochoa Bogh, Allen, Archuleta, Arreguín, Ashby, Caballero, Dahle, Gonzalez, Grayson, Limón, McNerney, Rubio, Stern, Strickland, Wahab
NO VOTE RECORDED: Grove

SENATE APPROPRIATIONS COMMITTEE: 6-0, 5/23/25
AYES: Caballero, Seyarto, Cabaldon, Grayson, Richardson, Wahab
NO VOTE RECORDED: Dahle

SENATE FLOOR: 38-0, 6/2/25
AYES: 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
NO VOTE RECORDED: Hurtado, Reyes

ASSEMBLY FLOOR: 63-0, 9/12/25 – Roll call available

SUBJECT: Energy: Fusion Research and Development Innovation Initiative

SOURCE: General Atomics-Energy Group

DIGEST: This bill requires the California Energy Commission (CEC) to establish a program to provide financial incentives for fusion energy research. This bill specifies that it will only become operative if a separate measure or budget bill provides funding for its implementation.

Assembly Amendments removes provisions related to establishing a fusion research hub program and instead require the CEC to provide financial incentives for fusion

research. Amendments also clarify the CEC's authority to issue non-competitive awards and sunset this bill on January 1, 2028.

ANALYSIS:

Existing law:

1) Establishes the CEC as a five-member body appointed by the Governor and specifies the duties of the CEC, which includes, but is not limited to conducting research and development or contracting for research and development related to alternative energy sources, improvements in energy generation, and other topics related to energy supply, demand, safety, ecology, and conservation. (Public Resources Code §25200 et. seq.)

2) Establishes the Electric Program Investment Charge (EPIC) program, which provides funding for research, development and demonstration projects that advance energy goals while providing benefits to ratepayers. EPIC is funded by a ratepayer surcharge from the state's investor-owned utilities (IOUs). (Public Resources Code §25711)

3) Authorizes the CEC to use a sole source or interagency agreement method to noncompetitively award funding for an EPIC research project if the project has a reasonable cost, the project meets certain criteria and both of the following conditions are met:

    a) At least 60 days before making a non-competitive award, the CEC submits a specified written notice to the Joint Legislative Budget Committee (JLBC) and relevant legislative policy committees regarding the CEC's proposed non-competitive award.
    b) The JLBC either approves or does not disapprove of the proposed non-competitive award within 60 days of receiving a notice from the CEC. (Public Resources Code §25711.5)

4) Defines "Fusion" and "Fusion Energy" and requires the CEC to include an assessment in the 2027 Integrated Energy Policy Report (IEPR) regarding the potential for fusion energy to contribute to California's power supply. (Public Resources Code §25302.4)

5) Authorizes the Governor's Office of Business and Economic Development (GO-Biz) to take steps necessary to apply for federal regional clean hydrogen hubs funding. Existing law defines "clean hydrogen" for the purposes of the

clean hydrogen hub funding as hydrogen produced from Renewable Portfolio Standard (RPS)-eligible energy resources and otherwise consistent with federal law for the clean hydrogen hub program. (Government Code §12100.161–12100.162)

This bill:

1) Establishes the Fusion Research and Development Innovation Initiative at the CEC to accelerate the development and growth of fusion science and technology.

2) Requires the CEC to work with GO-Biz and the California Public Utilities Commission (CPUC) to establish and administer this bill's initiative to provide financial incentives for projects that advance fusion energy for California.

3) Authorizes the CEC to use specified federal fusion research reports to determine priorities for fusion hub activities.

4) Authorizes the CEC to adopt guidelines to implement this bill.

5) Requires the CEC to provide financial incentives to support the following:

   a) Research and development in fusion energy.
   b) The establishment or expansion of fusion testing facilities.
   c) Research and technology development supporting the commercialization of fusion energy.

6) Authorizes the CEC to use a competitive or non-competitive award process to provide financial incentives for fusion projects. This bill establishes criteria for awarding incentives on a non-competitive basis and prohibits the CEC from making non-competitive awards unless both of the following occurs:

   a) The CEC submits a specified written notice to the JLBC and relevant policy committees of the Legislature at least 60 days before making the award.
   b) The JLBC either approves or does not disapprove of the proposed award within 60 days of receiving a notice from the CEC.

7) Specifies that this bill shall be liberally construed to maximize the CEC's ability to use funds provided for fusion financial incentives.

8) Specifies that this bill's implementation is contingent upon the Legislature making an appropriation to support this bill through the annual Budget Act or other legislation.

9) Sunsets this bill on January 1, 2028.

Background

Fusion vs. Fission. Both nuclear fusion and nuclear fission are processes by which atomic nuclei are treated to generate massive quantities of energy. While nuclear fusion occurs when two or more nuclei merge, nuclear fission occurs when a single nucleus is split into two or more nuclei. In the energy sector, nuclear power plants use nuclear reactors to split atoms, which heats water, generates steam, and then turns a turbine that creates electricity. Nuclear fission requires a substantial amount of energy to heat and compress atoms into plasma and force nuclei to collide with each other. Scientists have pursued both fission and fusion energy for the ability to produce carbon-free electricity; however, if achieved, fusion can generate substantially more energy than fission.

Keeping the lights on will require more than ignition. Nuclear fission has existed as a commercial energy source for more than 70 years. By contrast, nuclear fusion is a relatively nascent energy technology. Researchers worked to create successful nuclear fusion experiments for decades before scientists at the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL) achieved a nuclear fusion reaction that produced more energy than it required to create the reaction. The process of producing this additional energy is known as "ignition." The achievement of ignition represents a major scientific breakthrough in fusion research; however, it is not yet clear that fusion can produce reliable net energy sufficient to supply electricity in a manner that can be commercialized. Despite the early stage of fusion as an energy resource, a number of private companies are seeking to develop nuclear fusion energy technology.

Bill aims to implement one-time funding for fusion energy research. This bill would require the CEC to establish a program to provide financial incentives for specified fusion research development activities. This bill does not specify a funding source for these grants; however, this bill would only become operative if a separate measure or budget bill provides funding for this bill's implementation. This bill authorizes the CEC to provide incentives for the establishment or expansion of fusion testing facilities. While a number of companies and institutions are participating in research related to nuclear fusion, only a limited

number of entities operate labs capable of achieving ignition. Of these labs, only the National Ignition Facility has achieved ignition through nuclear fusion. This bill does not limit the provision of financial incentives to only those facilities that maintain a fusion reactor. As a result, facilities and institutions that conduct research without a reactor may also be eligible for incentives under this bill.

Bill follows efforts by the Biden Administration to support fusion research. In 2024, the Biden Administration's Department of Energy solicited comments on a request for information (RFI) regarding the development of a public-private consortium framework for fusion technology. Responses to this RFI included comments submitted by General Atomics on behalf of the Pacific Coalition for Advancing Research, Education, Science, and Technology (CREST) for Fusion Energy. General Atomics is a San Diego-based company that operates a fusion laboratory on behalf of the federal Department of Energy (DOE), and the company is one of many members of Pacific CREST. The UC Office of the President and LLNL are also members of Pacific CREST. Comments from Pacific CREST to the RFI proposed the creation of a public-private partnership program modeled on California's Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) hydrogen hub program, which is overseen by GO-Biz. Since the transition from the Biden Administration to the Trump Administration, the status of federal efforts to accelerate nuclear fusion research public-private partnerships has become less clear. This bill would require the CEC to consult with GO-BiZ and the CPUC when establishing financial incentives under this bill.

Bill's non-competitive award provisions closely mirror existing law regarding the CEC's authority to award sole source research awards. This bill contains provisions that allow the CEC to award financial incentives under this bill through a competitive or non-competitive process. Existing law provides the CEC with the authority to issue sole source or non-competitive research grants in the EPIC program as long as certain conditions are met. Under existing law, those conditions include submitting a specified written notice to the JLBC and relevant legislative policy committees. This bill's provisions authorizing the CEC to issue non-competitive financial incentives closely mirror those in existing law regarding the EPIC research and development program.

Prior/Related Legislation

SCR 25 (Blakespear, Chapter 161, Statutes of 2025) celebrated the contributions of public and private sector organizations 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 86 (McNerney) of 2025, authorizes 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. The bill is pending before the full Senate.

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.

AB 157 (Committee on Budget, Chapter 570, Statutes of 2022) authorized GO-Biz to take steps to prepare and submit an application to receive funding from the regional clean hydrogen hubs program or to otherwise participate in the regional clean hydrogen hubs program. The bill also established a definition of clean hydrogen.

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

According to the Assembly Appropriations Committee:

1) 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).
2) Cost 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.
3) 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.

SUPPORT: (Verified 9/9/25)

General Atomics- Energy Group (Source)
B3K Prosperity
Blue Laser Fusion
City of Livermore
City of San Diego
Cleantech San Diego
Ex-Fusion
Fusion Fuel Cycles
i-GATE
Innovation Tri-Valley Leadership Group
Kyoto Fusioneering America Ltd.
Livermore Laboratory Foundation
Livermore Valley Chamber of Commerce
Monarch Energy
Next Step Fusion
NVIDIA
Pacific Fusion
San Diego Regional Chamber of Commerce
San Diego Regional Economic Development Corporation
San Diego State University-Division of Research and Innovation
Stanford University-XLab Engineering
TAE Technologies
Tokamak Energy
University of California, Irvine
Two Individuals

OPPOSITION: (Verified 9/9/25)

None received

ARGUMENTS IN SUPPORT: 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 and 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 GO-Biz 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.

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9/12/25 21:38:38

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