

119TH CONGRESS
1ST SESSION

H. R. 4999

To support fusion education and related skilled technical workforce activities,
and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

AUGUST 19, 2025

Ms. LOFGREN (for herself and Mr. OBERNOLTE) introduced the following bill;
which was referred to the Committee on Science, Space, and Technology

A BILL

To support fusion education and related skilled technical
workforce activities, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “STEM Education and
5 Skilled Technical Workforce for Fusion Act” or the “Fu-
6 sion Workforce Act”.

7 **SEC. 2. DEFINITIONS.**

8 In this Act:

9 (1) DIRECTOR.—The term “Director” means
10 the Director of the National Science Foundation.

1 (2) EPSCoR INSTITUTION.—The term
2 “EPSCoR institution” means an institution of high-
3 er education, nonprofit organization, or other insti-
4 tution located in a jurisdiction eligible to participate
5 in the program under section 113 of the National
6 Science Foundation Authorization Act of 1988 (42
7 U.S.C. 1862g).

8 (3) HISPANIC-SERVING INSTITUTION.—The
9 term “Hispanic-serving institution” has the meaning
10 given such term in section 502(a) of the Higher
11 Education Act of 1965 (20 U.S.C. 1101a(a)).

12 (4) HISTORICALLY BLACK COLLEGE AND UNI-
13 VERSITY.—The term “historically Black college and
14 university” has the meaning given the term “part B
15 institution” in section 322 of the Education Act of
16 1965 (20 U.S.C. 1061).

17 (5) INSTITUTION OF HIGHER EDUCATION.—The
18 term “institution of higher education” has the
19 meaning given such term in section 101(a) of the
20 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

21 (6) JUNIOR OR COMMUNITY COLLEGE.—The
22 term “junior or community college” has the meaning
23 given such term in section 312(f) of the Higher
24 Education Act of 1965 (20 U.S.C. 1058(f)).

1 (7) LABOR ORGANIZATION.—The term “labor
2 organization” has the meaning given such term in
3 section 2(5) of the National Labor Relations Act (29
4 U.S.C. 152(5)), except that such term shall also in-
5 clude the following:

6 (A) Any organization composed of labor
7 organizations, such as a labor union federation
8 or a State or municipal labor body.

9 (B) Any organization which would be in-
10 cluded in the definition for such term under
11 such section 2(5) but for the fact that such or-
12 ganization represents any of the following:

13 (i) Individuals employed by the United
14 States, any wholly owned Government cor-
15 poration, any Federal Reserve Bank, or
16 any State or political subdivision thereof.

17 (ii) Individuals employed by persons
18 subject to the Railway Labor Act (45
19 U.S.C. 151 et seq.).

20 (iii) Individuals employed as agricul-
21 tural laborers.

22 (8) MINORITY-SERVING INSTITUTIONS.—The
23 term “minority serving institution” means an Alaska
24 Native-serving institution or Native Hawaiian-serv-
25 ing institution (as such term is defined in section

1 317(b) of such Act (20 U.S.C. 1059d(b))), or a Pre-
2 dominantly Black institution, Asian American and
3 Native American Pacific Islander-serving institution,
4 or Native American-serving nontribal institution (as
5 such terms are defined in section 371(c) of such Act
6 (20 U.S.C. 1067q(c))).

7 (9) NATIONAL LABORATORY.—The term “Na-
8 tional Laboratory” has the meaning given such term
9 in section 2 of the Energy Policy Act of 2005 (42
10 U.S.C. 15801).

11 (10) NONPROFIT ORGANIZATION.—The term
12 “nonprofit organization” means an organization de-
13 scribed in section 501(c)(3) of the Internal Revenue
14 Code of 1986 and exempt from tax under section
15 501(a) of such Code.

16 (11) PREK–12.—The term “PreK–12” means
17 pre-kindergarten through grade 12.

18 (12) SECRETARY.—The term “Secretary”
19 means the Secretary of Energy.

20 (13) SKILLED TECHNICAL WORKFORCE.—The
21 term “skilled technical workforce” has the meaning
22 given such term in section 4(b)(3) of the Innovations
23 in Mentoring, Training, and Apprenticeships Act (42
24 U.S.C. 1862p note; Public Law 115–402).

1 (14) STEM.—The term “STEM” means
2 science, technology, engineering, and mathematics.

3 (15) TRIBAL COLLEGE OR UNIVERSITY.—The
4 term “Tribal College or University” has the meaning
5 given such term in section 316 of the Higher Edu-
6 cation Act of 1965 (20 U.S.C. 1059c).

7 **SEC. 3. FUSION EDUCATION AND SKILLED TECHNICAL**
8 **WORKFORCE ACTIVITIES.**

9 (a) NATIONAL SCIENCE FOUNDATION ACTIVITIES.—

10 (1) IN GENERAL.—The Director, in coordina-
11 tion, and as appropriate, in collaboration, with the
12 Secretary, may make awards to institutions of high-
13 er education, including junior and community col-
14 leges, nonprofit organizations, labor organizations,
15 or consortia thereof, for research, development, and
16 related activities to advance innovative approaches to
17 developing, improving, and expanding education and
18 workforce development (including supporting the re-
19 tention, development, and growth of a diverse and
20 sustainable workforce for fusion related fields to sat-
21 isfy the evolving needs of industry, academia, Na-
22 tional Laboratories, and Federal, State, local, and
23 Tribal governments) activities and learning experi-
24 ences at all levels of education in fields and dis-
25 ciplines related to fusion.

(2) USES OF FUNDS.—Awards made under this section shall be used to support activities and learning experiences referred to in paragraph (1), including the following:

(A) Development of industry-oriented curricula, teaching modules, and stackable credentials for topics relevant to fusion, including such curricula, teaching modules, and stackable credentials that provide meaningful hands-on learning experiences.

(B) Development and implementation of training, research, and professional development programs for teachers, including innovative pre-service and in-service programs, in fusion and related fields.

(C) Identification of critical skills and core competencies required for the successful commercial application of fusion technologies.

(D) Support for learning activities and experiences that provide physical, simulated, or remote access to National Laboratories, Federal training facilities, and industry-standard processes and tools, including equipment and software tools for both traditional and nontraditional students.

1 (E) Increasing the integration of fusion
2 content into STEM curricula at all education
3 levels.

4 (F) Growing academic research capacity in
5 fusion by incentivizing the hiring and retention
6 of faculty in fields critical to fusion sciences
7 and engineering.

8 (G) Support for innovative industry path-
9 way programs that connect PreK–12 schools,
10 junior or community colleges, nonprofit organi-
11 zations, labor organizations, and institutions of
12 higher education programs or programs that
13 serve or support veterans.

14 (H) Providing informal hands-on learning
15 opportunities relating to fusion sciences and en-
16 gineering for PreK–12 students in different
17 learning environments, including regional and
18 national competitions.

19 (I) Support for STEM programs for the
20 skilled technical workforce that are aligned with
21 the needs the fusion industry workforce, includ-
22 ing internships and other hands-on activities in
23 industry.

24 (J) Support for research and evaluation of
25 the activities described in subparagraphs (A)

1 through (H) to identify successful programs
2 and resources.

3 (3) FUSION RESEARCH EXPERIENCES.—The
4 Director shall seek to increase opportunities for fu-
5 sion research for students and trainees at all levels
6 by encouraging the following:

7 (A) Research experiences for undergradu-
8 ates pursuant to section 514 of the America
9 COMPETES Reauthorization Act of 2010 (42
10 U.S.C. 1862p–6).

11 (B) Postdoctoral fellowship programs es-
12 tablished pursuant to section 522 of the Amer-
13 ica COMPETES Reauthorization Act of 2010
14 (42 U.S.C. 1862p–11).

15 (C) Graduate fellowships, traineeships, and
16 other training opportunities established pursu-
17 ant to section 10 of the National Science Foun-
18 dation Act of 1950 (42 U.S.C. 1869).

19 (D) Informal STEM education programs
20 established pursuant to section 3 of the STEM
21 Education Act of 2015 (42 U.S.C. 1862q).

22 (E) The Robert Noyce Teacher Scholar-
23 ship Program established pursuant to section
24 10 of the National Science Foundation Author-
25 ization Act of 2002 (42 U.S.C. 1862n–1).

1 (F) Major research instrumentation pro-
2 grams established pursuant to section 7036 of
3 the America COMPETES Act (42 U.S.C.
4 1862o–14).

5 (G) The low-income scholar program estab-
6 lished pursuant to section 414(d) of the Amer-
7 ican Competitiveness and Workforce Improve-
8 ment Act of 1998 (42 U.S.C. 1869c).

9 (4) EXISTING PROGRAMS.—In carrying out this
10 subsection, the Director may leverage existing pro-
11 grams of the National Science Foundation.

12 (5) NON-FEDERAL PARTNERSHIPS.—In car-
13 rying out this subsection, the Director shall encour-
14 age awardees to partner with nonprofit organiza-
15 tions, labor organizations, industry, and other pri-
16 vate sector organizations.

17 (b) DEPARTMENT OF ENERGY ACTIVITIES.—

18 (1) IN GENERAL.—The Secretary, acting
19 through the Director of the Office of Science, in co-
20 ordination, and as appropriate, in collaboration, with
21 the Director of National Science Foundation, may
22 make awards to institutions of higher education,
23 nonprofit organizations, labor organizations, Na-
24 tional Laboratories, or consortia thereof, for re-
25 search, development, and related activities to ad-

1 vance innovative approaches to developing, improv-
2 ing, and expanding education and workforce develop-
3 ment activities and learning experiences at all levels
4 of education in fields and disciplines related to fu-
5 sion.

6 (2) USES OF FUNDS.—Awards made under this
7 section shall be used to support activities, such as
8 the following:

9 (A) Internships, fellowships, apprentice-
10 ships, traineeships, and other research or work-
11 based learning opportunities relating to fusion.

12 (B) Educational programming for students
13 at all levels, especially experiential and project-
14 based learning opportunities relating to fusion.

15 (C) The acquisition, development, and
16 maintenance of state-of-the-art equipment and
17 facilities essential for fusion research and work-
18 force development, including the following:

19 (i) Purchasing advanced instrumenta-
20 tion and equipment to support experi-
21 mental and computational fusion research.

22 (ii) Renovating and modernizing lab-
23 oratory and teaching facilities to satisfy
24 the evolving requirements of fusion science.

1 (iii) Funding ongoing maintenance
2 and calibration of critical equipment to en-
3 sure operational readiness.

4 (D) Professional development opportunities
5 for educators and researchers relating to fusion.

6 (3) EXISTING PROGRAMS.—In carrying out this
7 subsection, the Secretary may leverage existing pro-
8 grams of the Department of Energy.

9 (c) PILOT PROGRAM FOR INDUSTRY PROFESSIONAL
10 INSTRUCTORS.—

11 (1) IN GENERAL.—The Director, in consulta-
12 tion with the Secretary, may implement one or more
13 pilot programs to award grants to institutions of
14 higher education, nonprofit organizations, or con-
15 sortia thereof, to establish short-term appointments
16 for professionals from the private sector, to educate
17 students on fusion sciences and engineering or re-
18 lated skills required for the fusion industry.

19 (2) USE OF FUNDS.—An institution may use
20 grant funds awarded under this subsection for the
21 following:

22 (A) Paying a stipend or living expenses for
23 short-term instructors who are industry profes-
24 sionals referred to in paragraph (1).

1 (B) Training of industry professionals in
2 relevant pedagogical or teaching methods.

3 (C) Developing or updating course mate-
4 rials.

5 (D) Administrative costs related to recruit-
6 ing or on-boarding instructors.

7 (3) PERIOD OF PERFORMANCE.—Subject to
8 paragraph (5), a pilot program under paragraph (1)
9 shall be for not more than three years.

10 (4) CONTINUATION AUTHORITY.—The Director
11 may extend the period specified in paragraph (4) if
12 the Director determines it is feasible and advisable
13 to do so.

14 (5) OUTREACH.—To increase the diversity of
15 participants in a pilot program under paragraph (1),
16 the Director shall support symposia, forums, con-
17 ferences, or other activities to expand and enhance
18 outreach to the following:

19 (A) Junior or community colleges.

20 (B) Hispanic-serving institutions.

21 (C) Historically Black colleges and univer-
22 sities.

23 (D) Tribal Colleges or Universities.

24 (E) Minority-serving institutions.

1 (F) Institutions of higher education that
 2 are located near or serve rural communities, in-
 3 cluding EPSCoR institutions.

4 (G) Other institutions of higher education.

5 **SEC. 4. FUSION EDUCATION AND WORKFORCE COORDINA-**
 6 **TION HUB.**

7 (a) IN GENERAL.—The Director, in consultation with
 8 the Secretary and the heads of other relevant Federal de-
 9 partments and agencies, as appropriate, shall make an
 10 award to a consortium led by an institution of higher edu-
 11 cation or nonprofit organization to establish a Fusion
 12 Skilled Technical Workforce and STEM Education Co-
 13 ordination Hub (in this section referred to as the “Hub”).

14 (b) CONSORTIUM.—The Hub—

15 (1) shall not include fewer than four institu-
 16 tions of higher education, including not fewer than
 17 one junior or community college; and

18 (2) may include National Laboratories, labor
 19 organizations, nonprofit organizations, and private
 20 sector entities.

21 (c) PURPOSE.—The purposes of the Hub are the fol-
 22 lowing:

23 (1) To identify and address cross-cutting work-
 24 force development challenges in fusion sciences and
 25 engineering, and the fusion industry, by serving as

1 a national and regional clearinghouse of relevant
2 Federal programs.

3 (2) To facilitate the establishment of programs
4 to disseminate to institutions of higher education
5 and career and technical education entities model
6 curricula, best practices, and instructional materials.

7 (d) USES OF FUNDS.—The activities of the Hub may
8 include the following:

9 (1) Testing, implementing, scaling, dissemi-
10 nating, assessing, and standardizing materials,
11 methods, open-source hardware and software, best
12 practices, and other outputs developed through ac-
13 tivities under this Act, including through the estab-
14 lishment of a publicly-accessible database and online
15 portal.

16 (2) Facilitating post-education employment op-
17 portunities and workforce pathways in fusion-related
18 industries, including by facilitating opportunities for
19 internships, externships, continuing education and
20 upskilling, and such other activities as determined
21 appropriate by the Director.

22 (3) Coordinating with fusion industry and non-
23 profit entities to enhance the quality and availability
24 of fusion education in STEM degree programs and
25 skilled technical education programs, including

1 through the promotion of post-graduation opportuni-
2 ties for STEM students outside the classroom to in-
3 crease exposure to fusion industries.

4 (4) Supporting activities and programs to en-
5 hance the recruitment of students from groups his-
6 torically underrepresented in STEM to pursue un-
7 dergraduate and graduate studies related to fusion
8 and fusion education.

9 (5) Developing, testing, implementing, and co-
10 ordinating career development programs and strate-
11 gies for pre-university and university educators for
12 the purpose of increasing the number of fusion-in-
13 formed educators at all levels of education, including
14 by carrying out the following:

15 (A) Hosting career development work-
16 shops.

17 (B) Developing in-house and distance
18 learning career development tools for public
19 use.

20 (C) Facilitating access to related fusion
21 technology, tools, and resources.

22 (D) Developing training, research, and
23 professional development programs, including
24 innovative pre-service and in-service programs.

1 (E) Identifying and supporting education
2 and training activities with relevant National
3 Laboratories, including experiential learning op-
4 portunities.

5 (F) Facilitating relationships with State
6 and local entities to increase awareness of and
7 promote fusion-related career development ac-
8 tivities at the Hub.

9 (6) Establishing a framework for performing
10 ongoing regular data collection and analysis for the
11 domestic fusion workforce to report on trends and
12 perform other activities that expand the under-
13 standing of the current and future needs of the fu-
14 sion industry, and education capacity or readiness of
15 such workforce.

16 (7) Facilitating public education and outreach
17 activities to enhance the understanding and aware-
18 ness of fusion to a broader community to satisfy
19 broader impact requirements of award applications.

20 (8) Encouraging coordination on fusion edu-
21 cation in the broader STEM community.

22 (9) Identify opportunities to partner with other
23 industrial sectors, such as automotive research and
24 aviation, to build a skilled technical workforce.

1 (10) In coordination with the Director, identify
2 Federal funding opportunities, including grants, co-
3 operative agreements, and fellowships, for non-Fed-
4 eral entities, including such entities from the private
5 sector, to contribute financial resources or in-kind
6 contributions.

7 (e) INTERAGENCY COORDINATION.—The Hub shall
8 coordinate with the National Science Foundation, the De-
9 partment of Energy, the Department of Education, the
10 Department of Labor, and other relevant Federal agen-
11 cies, as appropriate, with respect to activities and re-
12 sources under this section.

13 (f) APPLICATION.—A consortium seeking funding
14 under this section shall submit to the Director an applica-
15 tion at such time, in such manner, and containing such
16 information as the Director may require. Each such appli-
17 cation shall include a description of how the consortium
18 shall carry out the following:

19 (1) Contribute to the success of the Hub and
20 fulfill the purposes of the Hub.

21 (2) Include industry participation in fulfilling
22 the purposes of the Hub.

23 (3) Collaborate with other members of the con-
24 sortium to share expertise in integrating fusion
25 science, engineering, and technology into existing

1 STEM programs and other relevant fields and dis-
2 ciplines.

3 (4) Support long-term and short-term fusion
4 workforce development.

5 (5) Develop outreach activities to increase the
6 participation of people in rural communities, women,
7 and students from groups historically underrep-
8 resented in STEM.

9 (g) SELECTION AND DURATION.—

10 (1) IN GENERAL.—The Hub is authorized to
11 carry out activities under this section for a period of
12 five years.

13 (2) REAPPLICATION.—An awardee may reapply
14 for an additional, subsequent period of five years fol-
15 lowing a successful, merit-based review.

16 (3) TERMINATION.—Consistent with the au-
17 thorities of the National Science Foundation, the Di-
18 rector may terminate the Hub if the Director deter-
19 mines the Hub is underperforming during the per-
20 formance period.

21 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

22 (a) NATIONAL SCIENCE FOUNDATION.—To carry out
23 this Act, there is authorized to be appropriated to the Di-
24 rector \$20,000,000 for each of fiscal years 2026 through
25 2030.

1 (b) DEPARTMENT OF ENERGY.—To carry out this
2 Act, there is authorized to be appropriated to the Sec-
3 retary \$10,000,000 for each of fiscal years 2026 through
4 2030.

○