I

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

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A BILL

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

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''STEM Education and Skilled Technical Workforce for Fusion Act'' or the ''Fusion Workforce Act''.

SEC. 2. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term ''Director'' means the Director of the National Science Foundation.

(2) EPSCoR INSTITUTION.—The term ''EPSCoR institution'' means an institution of higher education, nonprofit organization, or other institution located in a jurisdiction eligible to participate in the program under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g).

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

(4) HISTORICALLY BLACK COLLEGE AND UNIVERSITY.—The term ''historically Black college and university'' has the meaning given the term ''part B institution'' in section 322 of the Education Act of 1965 (20 U.S.C. 1061).

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

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

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

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

(B) Any organization which would be included in the definition for such term under such section 2(5) but for the fact that such organization represents any of the following:

(i) Individuals employed by the United States, any wholly owned Government corporation, any Federal Reserve Bank, or any State or political subdivision thereof.

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

(iii) Individuals employed as agricultural laborers.

(8) MINORITY-SERVING INSTITUTIONS.—The term ''minority serving institution'' means an Alaska Native-serving institution or Native Hawaiian-serving institution (as such term is defined in section

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

(9) NATIONAL LABORATORY.—The term ''National Laboratory'' has the meaning given such term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).

(10) NONPROFIT ORGANIZATION.—The term ''nonprofit organization'' means an organization described in section 501(c)(3) of the Internal Revenue Code of 1986 and exempt from tax under section 501(a) of such Code.

(11) PREK–12.—The term ''PreK–12'' means pre-kindergarten through grade 12.

(12) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

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

(14) STEM.—The term ''STEM'' means science, technology, engineering, and mathematics.

(15) TRIBAL COLLEGE OR UNIVERSITY.—The term ''Tribal College or University'' has the meaning given such term in section 316 of the Higher Education Act of 1965 (20 U.S.C. 1059c).

SEC. 3. FUSION EDUCATION AND SKILLED TECHNICAL WORKFORCE ACTIVITIES.

(a) NATIONAL SCIENCE FOUNDATION ACTIVITIES.—

(1) IN GENERAL.—The Director, in coordination, and as appropriate, in collaboration, with the Secretary, may make awards to institutions of higher education, including junior and community colleges, nonprofit organizations, labor organizations, or consortia thereof, for research, development, and related activities to advance innovative approaches to developing, improving, and expanding education and workforce development (including supporting the retention, development, and growth of a diverse and sustainable workforce for fusion related fields to satisfy the evolving needs of industry, academia, National Laboratories, and Federal, State, local, and Tribal governments) activities and learning experiences at all levels of education in fields and disciplines 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 preservice 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.

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

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

(G) Support for innovative industry pathway programs that connect PreK–12 schools, junior or community colleges, nonprofit organizations, labor organizations, and institutions of higher education programs or programs that serve or support veterans.

(H) Providing informal hands-on learning opportunities relating to fusion sciences and engineering for PreK–12 students in different learning environments, including regional and national competitions.

(I) Support for STEM programs for the skilled technical workforce that are aligned with the needs the fusion industry workforce, including internships and other hands-on activities in industry.

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

through (H) to identify successful programs and resources.

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

(A) Research experiences for undergraduates pursuant to section 514 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–6).

(B) Postdoctoral fellowship programs established pursuant to section 522 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–11).

(C) Graduate fellowships, traineeships, and other training opportunities established pursuant to section 10 of the National Science Foundation Act of 1950 (42 U.S.C. 1869).

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

(E) The Robert Noyce Teacher Scholarship Program established pursuant to section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1).

(F) Major research instrumentation programs established pursuant to section 7036 of the America COMPETES Act (42 U.S.C. 1862o–14).

(G) The low-income scholar program established pursuant to section 414(d) of the American Competitiveness and Workforce Improvement Act of 1998 (42 U.S.C. 1869c).

(4) EXISTING PROGRAMS.—In carrying out this subsection, the Director may leverage existing programs of the National Science Foundation.

(5) NON-FEDERAL PARTNERSHIPS.—In carrying out this subsection, the Director shall encourage awardees to partner with nonprofit organizations, labor organizations, industry, and other private sector organizations.

(b) DEPARTMENT OF ENERGY ACTIVITIES.—

(1) IN GENERAL.—The Secretary, acting through the Director of the Office of Science, in coordination, and as appropriate, in collaboration, with the Director of National Science Foundation, may make awards to institutions of higher education, nonprofit organizations, labor organizations, National Laboratories, or consortia thereof, for research, development, and related activities to ad-

vance innovative approaches to developing, improving, and expanding education and workforce development activities and learning experiences at all levels of education in fields and disciplines related to fusion.

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

(A) Internships, fellowships, apprenticeships, traineeships, and other research or work-based learning opportunities relating to fusion.

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

(C) The acquisition, development, and maintenance of state-of-the-art equipment and facilities essential for fusion research and workforce development, including the following:

(i) Purchasing advanced instrumentation and equipment to support experimental and computational fusion research.

(ii) Renovating and modernizing laboratory and teaching facilities to satisfy the evolving requirements of fusion science.

(iii) Funding ongoing maintenance and calibration of critical equipment to ensure operational readiness.

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

(3) EXISTING PROGRAMS.—In carrying out this subsection, the Secretary may leverage existing programs of the Department of Energy.

(c) PILOT PROGRAM FOR INDUSTRY PROFESSIONAL INSTRUCTORS.—

(1) IN GENERAL.—The Director, in consultation with the Secretary, may implement one or more pilot programs to award grants to institutions of higher education, nonprofit organizations, or consortia thereof, to establish short-term appointments for professionals from the private sector, to educate students on fusion sciences and engineering or related skills required for the fusion industry.

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

(A) Paying a stipend or living expenses for short-term instructors who are industry professionals referred to in paragraph (1).

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

(C) Developing or updating course materials.

(D) Administrative costs related to recruiting or on-boarding instructors.

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

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

(5) OUTREACH.—To increase the diversity of participants in a pilot program under paragraph (1), the Director shall support symposia, forums, conferences, or other activities to expand and enhance outreach to the following:

(A) Junior or community colleges.

(B) Hispanic-serving institutions.

(C) Historically Black colleges and universities.

(D) Tribal Colleges or Universities.

(E) Minority-serving institutions.

(F) Institutions of higher education that are located near or serve rural communities, including EPSCoR institutions.

(G) Other institutions of higher education.

SEC. 4. FUSION EDUCATION AND WORKFORCE COORDINATION HUB.

(a) IN GENERAL.—The Director, in consultation with the Secretary and the heads of other relevant Federal departments and agencies, as appropriate, shall make an award to a consortium led by an institution of higher education or nonprofit organization to establish a Fusion Skilled Technical Workforce and STEM Education Coordination Hub (in this section referred to as the ''Hub'').

(b) CONSORTIUM.—The Hub—

(1) shall not include fewer than four institutions of higher education, including not fewer than one junior or community college; and

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

(c) PURPOSE.—The purposes of the Hub are the following:

(1) To identify and address cross-cutting workforce development challenges in fusion sciences and engineering, and the fusion industry, by serving as

a national and regional clearinghouse of relevant Federal programs.

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

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

(1) Testing, implementing, scaling, disseminating, assessing, and standardizing materials, methods, open-source hardware and software, best practices, and other outputs developed through activities under this Act, including through the establishment of a publicly-accessible database and online portal.

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

(3) Coordinating with fusion industry and nonprofit entities to enhance the quality and availability of fusion education in STEM degree programs and skilled technical education programs, including

through the promotion of post-graduation opportunities for STEM students outside the classroom to increase exposure to fusion industries.

(4) Supporting activities and programs to enhance the recruitment of students from groups historically underrepresented in STEM to pursue undergraduate and graduate studies related to fusion and fusion education.

(5) Developing, testing, implementing, and coordinating career development programs and strategies for pre-university and university educators for the purpose of increasing the number of fusion-informed educators at all levels of education, including by carrying out the following:

(A) Hosting career development workshops.

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

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

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

(E) Identifying and supporting education and training activities with relevant National Laboratories, including experiential learning opportunities.

(F) Facilitating relationships with State and local entities to increase awareness of and promote fusion-related career development activities at the Hub.

(6) Establishing a framework for performing ongoing regular data collection and analysis for the domestic fusion workforce to report on trends and perform other activities that expand the understanding of the current and future needs of the fusion industry, and education capacity or readiness of such workforce.

(7) Facilitating public education and outreach activities to enhance the understanding and awareness of fusion to a broader community to satisfy broader impact requirements of award applications.

(8) Encouraging coordination on fusion education in the broader STEM community.

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

(10) In coordination with the Director, identify Federal funding opportunities, including grants, cooperative agreements, and fellowships, for non-Federal entities, including such entities from the private sector, to contribute financial resources or in-kind contributions.

(e) INTERAGENCY COORDINATION.—The Hub shall coordinate with the National Science Foundation, the Department of Energy, the Department of Education, the Department of Labor, and other relevant Federal agencies, as appropriate, with respect to activities and resources under this section.

(f) APPLICATION.—A consortium seeking funding under this section shall submit to the Director an application at such time, in such manner, and containing such information as the Director may require. Each such application shall include a description of how the consortium shall carry out the following:

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

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

(3) Collaborate with other members of the consortium to share expertise in integrating fusion science, engineering, and technology into existing

STEM programs and other relevant fields and disciplines.

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

(5) Develop outreach activities to increase the participation of people in rural communities, women, and students from groups historically underrepresented in STEM.

(g) SELECTION AND DURATION.—

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

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

(3) TERMINATION.—Consistent with the authorities of the National Science Foundation, the Director may terminate the Hub if the Director determines the Hub is underperforming during the performance period.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

(a) NATIONAL SCIENCE FOUNDATION.—To carry out this Act, there is authorized to be appropriated to the Director $20,000,000 for each of fiscal years 2026 through 2030.

(b) DEPARTMENT OF ENERGY.—To carry out this Act, there is authorized to be appropriated to the Secretary $10,000,000 for each of fiscal years 2026 through 2030.

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