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(Original Signature of Member)

119TH CONGRESS
2D SESSION

H. R. _____

To amend the Department of Energy Research and Innovation Act to enhance support for certain fusion energy commercial application activities, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Ms. LOFGREN introduced the following bill; which was referred to the Committee on _____

A BILL

To amend the Department of Energy Research and Innovation Act to enhance support for certain fusion energy commercial application 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; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''American Leadership in Fusion Act''.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

TITLE I—FUSION ENERGY ACTIVITIES

SEC. 101. FUSION ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACTIVITIES.

Section 307 of the Department of Energy Research and Innovation Act (42 U.S.C. 18645; Public Law 115–246) is amended—

(1) by redesignating subsections (j), (k), (l), (m), (n), (o), (p), (q), and (r) as subsections (o), (l), (p), (q), (r), (s), (t), (u), and (x), respectively;

(2) in subsection (a)—

(A) by striking ''section 209 of the Department of Energy Organization Act (42 U.S.C. 7139) and''; and

(B) by inserting '', support activities that seek to demonstrate a sustained burning plasma in a fusion device,'' after ''fusion applications'';

(3) except in paragraph (2)(I) of subsection (r), as so redesignated, by striking ''Director'' each place it appears and inserting ''Secretary'';

(4) by amending subsections (b) through (g) to read as follows:

''(b) FUSION MATERIALS, BLANKET, AND FUEL CYCLE RESEARCH AND DEVELOPMENT.—

''(1) IN GENERAL.—As part of the activities authorized in section 978 of the Energy Policy Act of 2005 (42 U.S.C. 16318) the Secretary shall carry out research and development activities to—

''(A) identify, characterize, and demonstrate materials that can endure the neutron, plasma, heat fluxes, and corrosion expected in a fusion energy system;

''(B) address challenges to establishing sustainable fuel cycles for fusion energy systems, including the development of blankets for fuel breeding;

''(C) manage materials and byproduct that arise from fusion energy systems, including—

''(i) characterizing activated and tritiated materials;

''(ii) developing disposal pathways for fusion-relevant materials;

"(iii) recycling and reusing activate and tritiated materials;

"(iv) classifying fusion-relevant waste; and

"(v) planning for the decommissioning of fusion facilities;

"(D) when appropriate, leverage public-private partnerships and collaborate with international partners to maximize the impact of the investment of Federal resources to accelerate the commercialization of fusion power; and

"(E) coordinate research and development activities carried out under this section with the milestone-based fusion energy development program established under subsection (i), the demonstration program under subsection (j), and other relevant public-private partnerships.

"(2) FUNDING.—

"(A) FISCAL YEAR 2027.—There is appropriated to the Secretary $800,000,000, to remain available until expended, for fiscal year 2027 to carry out activities described in paragraph (1).

"(B) AUTHORIZATION OF APPROPRIATIONS.—Out of funds authorized to be appro-

priated under subsection (x), there is authorized to be appropriated to the Secretary $150,000,000 for each of fiscal years 2027 through 2031 to carry out activities described in paragraph (1).

''(c) SUPPLY CHAIN FOR FUSION TECHNOLOGIES.—

''(1) IN GENERAL.—The Secretary, in collaboration with the Secretary of Commerce, shall carry out research, development, demonstration, and commercial application activities to establish reliable supply chains for critical fusion energy manufacturing equipment and other critical fusion energy technologies, including the following:

''(A) High temperature superconducting magnets.

''(B) Lasers and components of such lasers relevant to fusion energy systems.

''(C) Systems that inject and track targets in a fusion chamber.

''(D) Systems related to the precision of manufacturing fusion targets.

''(E) Fusion chambers or vacuum vessels, including any component of such chambers or vessels.

''(F) Blanket systems.

''(G) Fuel production, handling, and storage systems and components of such systems.

''(H) Heating systems.

''(I) Cooling system components.

''(J) High-power capacitors and components of such capacitors.

''(K) Plasma compression systems.

''(L) High-power switches.

''(M) High-voltage conductors and insulators.

''(N) Plasma formation devices.

''(O) Dielectric fluids and systems.

''(P) Controls equipment.

''(Q) Any other technology identified by the Secretary.

''(2) FUNDING.—There is appropriated to the Secretary $100,000,000, to remain available until expended, for fiscal year 2027 to carry out activities described in paragraph (1).

''(d) TOKAMAK AND STELLARATOR RESEARCH AND DEVELOPMENT.—The Secretary shall support research and development activities and facility operations to optimize the tokamak and stellarator approaches to fusion energy.

''(e) INERTIAL FUSION RESEARCH AND DEVELOPMENT.—

''(1) IN GENERAL.—The Director shall carry out a program of research and technology development in inertial fusion for energy applications, including ion beam, laser, and pulsed power fusion systems.

''(2) ACTIVITIES.—As part of the program described in paragraph (1), the Director shall support activities at and partnerships with universities and the National Laboratories to—

''(A) develop novel target designs;

''(B) support modeling of various inertial fusion energy concepts and systems;

''(C) develop diagnostic tools; and

''(D) improve inertial fusion energy driver technologies.

''(3) AUTHORIZATION OF APPROPRIATIONS.—Out of funds authorized to be appropriated under subsection (x), there is authorized to be appropriated to the Secretary to carry out the activities described in this subsection $50,000,000 for each of fiscal years 2027 through 2031.

''(f) ALTERNATIVE CONCEPTS.—

''(1) IN GENERAL.—The Secretary shall support research and development activities and facility operations at institutions of higher education, National Laboratories, and private facilities in the United States for a portfolio of alternative fusion energy concepts that may provide solutions to significant challenges to the establishment of a commercial fusion power plant, prioritized based on the ability of the United States to play a leadership role in the international fusion research community.

''(2) ACTIVITIES.—Fusion energy concepts and activities explored under paragraph (1) may include the following:

''(A) Field-reversed configuration concepts.

''(B) Levitated dipole concepts.

''(C) Magnetic mirror concepts.

''(D) Magnetized target fusion energy concepts.

''(E) Other promising fusion energy concepts identified by the Secretary that are not otherwise supported by the Secretary under subsections (d) and (e).

''(3) AUTHORIZATION OF APPROPRIATIONS.—Out of funds authorized to be appropriated under subsection (x), there is authorized to be appro-

priated to the Secretary $50,000,000 for each of fiscal years 2027 through 2031 to carry out this subsection.

''(g) COORDINATION WITH ARPA-E.—The Director shall coordinate with the Director of the Advanced Research Projects Agency-Energy (referred to in this subsection as ''ARPA-E'') to—

''(1) assess the potential for any fusion energy project supported by ARPA-E to represent a promising approach to a commercially viable fusion power plant;

''(2) determine whether the results of any fusion energy project supported by ARPA-E merit the support of follow-on research activities carried out by the Office of Fusion and

''(3) avoid the unintentional duplication of activities.'';

(5) in subsection (i)—

(A) in paragraph (2)—

(i) in the heading, by striking ''PURPOSE'' and inserting ''ACTIVITIES'';

(ii) by striking ''The purpose of the program established by paragraph (1) shall be to'' and inserting the following:

''(A) IN GENERAL.—The program established by paragraph (1) shall''; and

(iii) by adding at the end the following new subparagraph:

''(B) FUNDING.—In addition to amounts otherwise available, there is appropriated to the Secretary $2,000,000,000 for fiscal year 2027, to remain available until expended, to carry out activities pursuant to this subsection.''; and

(B) by striking paragraph (10);

(6) by inserting after subsection (i) the following new subsections:

''(j) MILESTONE-BASED DEMONSTRATION PROGRAM.—

''(1) IN GENERAL.—Not later than 6 months after the date of the enactment of this subsection, the Secretary shall carry out a program to demonstrate a variety of fusion power technologies, including such technologies that generate the following:

''(A) Electricity.

''(B) Thermal energy for cogeneration, industrial purposes, district energy, community heating, and desalination.

''(C) Hydrogen.

''(D) Radioisotopes.

''(2) ELIGIBILITY.—

''(A) IN GENERAL.—Any non-public entity, or consortia thereof, is eligible to participate in the program carried out under paragraph (1) provided that the Secretary has determined such entity, or consortia thereof, has the necessary resources and expertise to construct a fusion pilot plant.

''(B) PARTNERSHIPS.—An entity described in subparagraph (A) may partner with a public entity to carry out this section.

''(3) REQUIREMENTS.—In carrying out the demonstration program under paragraph (1), the Secretary shall carry out the following:

''(A) Request proposals from eligible entities, as determined by the Secretary under subparagraph (A) of paragraph (2), that include proposed technical and commercial application milestones, including estimated timelines relating to and total costs for the construction of a fusion pilot plant.

''(B) Establish criteria for the evaluation of any such proposal, including relating to the following:

''(i) The likelihood that the operating cost of a commercial unit related to a proposed fusion pilot plant is cost competitive in a relevant market.

''(ii) The technology readiness level of a proposed fusion power technology related to such plant.

''(iii) The technical abilities and qualification of such an eligible entity to demonstrate a proposed fusion pilot plant.

''(iv) The business model, commercial expertise, and financial qualifications of such an eligible entity.

''(v) The capacity of such an eligible entity to satisfy cost-share requirements of the Department.

''(C) Establish by mutual agreement with an eligible entity selected by the Secretary the following:

''(i) A rigorous technical and financial review process to develop and make publicly accessible milestones for such eligible entity.

''(ii) A predetermined amount to be awarded by the Secretary to such eligible entity upon satisfaction of such milestones.

''(D) Award funding to such an eligible entity—

''(i) in the predetermined amount established under subparagraph (C)(ii); or

''(ii) in an amount for an expense the Secretary determines to be reimbursable, in accordance with any terms negotiated for such funding.

''(E) Communicate regularly with selected eligible entities and, if the Secretary deems appropriate, exercise small amounts of flexibility for technical milestones as projects mature.

''(4) AWARDS.—For the program established under paragraph (1)—

''(A) a selected eligible entity shall be responsible for all costs until milestones referred to in paragraph (3)(C) are achieved, reviewed, and verified by the Department;

''(B) an award provided by the Secretary for the successful achievement of a milestone shall not exceed fifty percent of the total cost

incurred by the selected eligible entity to achieve the milestone;

''(C) if a selected eligible entity does not meet the milestones, the Secretary may end the partnership with an award recipient and use the remaining funds in the ended agreement for new or existing projects carried out under this section; and

''(D) consistent with the existing authorities of the Department, the Secretary may end the partnership with an selected eligible entity for cause during the performance period.

''(5) CONSULTATION.—In carrying out the demonstration program under paragraph (1), and in a manner that protects any confidential information of a selected eligible entity, the Secretary shall consult with relevant experts, including the following:

''(A) Experts from the following:

''(i) Private fusion industry entities, and any suppliers and vendors of such entities.

''(ii) National Laboratories.

''(iii) Environmental and public health and safety.

''(iv) Institutions of higher education.

''(B) Customers and end users of fusion power, including electric utilities.

''(C) Potential end users of thermal energy or other fusion power technologies described in paragraph (1).

''(6) FUSION PILOT PLANT DEFINED.—In this subsection, the term 'fusion pilot plant' means a fusion facility that can demonstrate at least 50 megawatts of net electricity supplied to the electric grid for more than 3 continuous hours, with the goal of demonstrating the suitability of the design of such facility for commercial application of fusion power.

''(7) FUNDING.—There is appropriated $3,000,000,000 to the Secretary to carry out the program under this subsection until expended.

''(k) AUTHORIZATION OF APPROPRIATIONS FOR MILESTONE-BASED PROGRAMS.—Out of funds authorized to be appropriated under subsection (x), there is authorized to be appropriated to the Secretary, to remain available until expended, $150,000,000 for each of fiscal years 2027 through 2031, to carry out subsections (i) and (j).'';

(7) by inserting after subsection (l), as so redesignated, the following new subsections:

''(m) INTELLECTUAL PROPERTY PROTECTIONS.—Unless otherwise required by chapter 18 of title 35,

United States Code, or the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.)—

''(1) an eligible entity and any third-party contractor or subcontractor of such eligible entity shall retain all rights to—

''(A) background intellectual property developed outside or prior to the signature of agreements negotiated for an individual award under subsection (i) or subsection (j), as the case may be; or

''(B) intellectual property that may be developed by eligible entities as a result of participating in either such program; and

''(2) the Department may not—

''(A) obtain any right to any intellectual property described in subparagraph (A) or (B) of paragraph (1), either for the Department or any other Federal department or agency; or

''(B) implement or enforce any policy, form, or agreement, if such policy, form, or agreement contains provisions that conveys to the Department or any other Federal department or agency any such right.

''(n) DOMESTIC CONTENT REQUIREMENTS WAIVER.—

''(1) IN GENERAL.—The Secretary may not impose any requirement on a selected eligible entity described in subsection (i) or (j), as the case may be, with respect to an award or funding, respectively, under such subsections to utilize materials, articles, components, or other supplies produced or substantially manufactured in the United States, unless the Secretary makes a determination that such materials, articles, components, or other supplies, as the case may be, are available in the United States—

''(A) in sufficient quantities,

''(B) at a reasonable price, compared to materials, articles, components, or other supplies available, and

''(C) are of sufficient quality,

for the eligible entity to utilize such award or funding, as the case may be.

''(2) WAIVER PETITION.—

''(A) IN GENERAL.—A selected eligible entity described in paragraph (1) may submit to the Secretary a petition to appeal a determination of the Secretary under such paragraph.

''(B) TIMELINE.—Not later than 90 days after the date on which a selected eligible entity described in paragraph (1) submits to the Sec-

retary a petition described in subparagraph (A), the Secretary shall—

''(i) issue a publicly accessible certification of the previous determination; or

''(ii) retract the determination.

''(3) SUNSET.—The authority under paragraph (1) shall expire on December 31, 2036.'';

(8) in paragraph (2)(I) of subsection (r), as so redesignated, by striking ''Director of the Office of Science'' and inserting ''Secretary'';

(9) by amending subsections (t) and (u), as so redesignated, to read as follows:

''(t) MATERIAL PLASMA EXPOSURE EXPERIMENT.—

''(1) IN GENERAL.—The Secretary shall operate a Material Plasma Exposure Experiment facility as described in the 2020 publication approved by the Fusion Energy Sciences Advisory Committee entitled 'Powering the Future: Fusion and Plasmas'. The Secretary shall consult with the private sector, institutions of higher education, National Laboratories, and relevant Federal agencies to ensure that the facility is capable of meeting Federal research needs for steady state, high-heat-flux, and plasma-material interaction testing of fusion materials over a range of fusion energy relevant parameters.

''(2) FACILITY CAPABILITIES.—The Secretary shall ensure that the facility described in paragraph (1) will provide the following capabilities:

''(A) A magnetic field at the target of 1 Tesla.

''(B) An energy flux at the target of 10 MW/m^2.

''(C) The ability to expose previously irradiated plasma facing material samples to plasma.

''(3) START OF OPERATIONS.—The Secretary shall, subject to the availability of appropriations, ensure that the start of full operations of the facility described in paragraph (1) occurs before December 31, 2027.

''(u) FACILITY CONSTRUCTION.—

''(1) LARGE FACILITIES.—The Secretary shall construct high priority research facilities, as described in the 2024 Report of the Fusion Energy Sciences Advisory Committee Facilities Projects Subcommittee and in the 2026 Fusion Science and Technology Roadmap published by the Director of the Office of Science of the Department, to conduct commercial scale testing of the following:

''(A) Fuel cycle and blanket technologies.

''(B) The impacts of fusion neutrons on fusion system materials, including through the construction of a fusion neutron source.

''(2) SMALL AND MID-SIZED FACILITIES.—The Secretary shall construct small and mid-sized research facilities to address research priorities identified in the 2026 Fusion Science and Technology Roadmap published by the Director of the Office of Science of the Department.

''(3) PARTNERSHIPS.—The Secretary may, as the Secretary determines appropriate, leverage any public-private partnership and collaboration with an international partner to maximize the impact of the investment of Federal resources in the construction of a high priority research facility under paragraph (1).

''(4) FUNDING.—In addition to amounts otherwise appropriated or made available for such purpose, there is appropriated to the Secretary the following:

''(A) $3,800,000,000 for fiscal year 2027, to remain available until expended, to carry out paragraph (1).

''(B) $300,000,000 for fiscal year 2027, to remain available until expended, to carry out paragraph (2).

''(5) REPORT.—Not later than 6 months after the date of the enactment of this subsection, the Secretary shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report that includes information relating to the construction of high priority research facilities under paragraphs (1) and (2), including any estimated schedules of and resource requirements for such construction.'';

(10) by inserting before subsection (x), as so redesignated, the following new subsections:

''(v) INNOVATION NETWORK FOR FUSION ENERGY.—

''(1) IN GENERAL.—The Secretary shall support a program to provide fusion energy researchers with access to scientific and technical resources and expertise at facilities supported by the Department, including such facilities at National Laboratories and institutions of higher education, to advance innovative fusion energy technologies toward commercial application.

''(2) AWARDS.—Financial assistance for the program described in paragraph (1)—

''(A) shall be awarded on a competitive, merit-reviewed basis; and

''(B) may be in the form of grants, vouchers, equipment loans, or contracts to private entities.

''(w) PRIVATE FACILITIES RESEARCH PROGRAM.—The Secretary shall carry out a private facilities research program to enable federally funded researchers to conduct studies related to fusion at fusion facilities that are owned and operated by private sector entities.''; and

(11) by amending subsection (x), as so redesignated, to read as follows:

''(x) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Secretary to carry out the activities described in this section the following:

''(1) $1,114,187,798 for fiscal year 2027.

''(2) $1,169,897,188 for fiscal year 2028.

''(3) $1,228,392,047 for fiscal year 2029.

''(4) $1,289,811,650 for fiscal year 2030.

''(5) $1,354,302,232 for fiscal year 2031.''.

SEC. 102. GRADED REVIEW FOR PARTNERSHIPS WITH NATIONAL LABORATORIES.

(a) IN GENERAL.—The Secretary of Energy shall establish a graded review process to review any private sector entity seeking to enter into an agreement with, or perform work with, one or more National Laboratories to reduce duplication of review by the Secretary of any of the following:

(1) The finances of such private sector entity.

(2) Whether such private sector entity is owned, controlled, influenced by a foreign entity.

(3) Technical reviews, as determined by the Secretary.

(b) REQUIREMENTS.—

(1) The process established under paragraph (a) shall distinguish among—

(A) entities and proposed work that have not previously been reviewed by the Department, which shall be subject to standard review;

(B) entities that have previously been reviewed by the Department but seek to perform work in a different technical area, scope of work, or risk profile, which shall be subject to expedited supplemental review that relies, to the maximum extent practicable, on prior Department review of the entity; and

(C) entities listed by the Department as having completed Department review for the same or similar technical area, scope of work, and risk profile, for which National Laboratories and their management and operating contractors shall rely on the prior Department review and shall not conduct a de novo review, except where additional review is required under this section.

(2) Reviews required under paragraph (a) shall be conducted by the counterintelligence office or its equivalence of the applicable National Laboratory, to the maximum extent practicable. Additional review by the Department shall be required only where the proposed work involves both—

(A) a technology area identified by the Secretary in a Department risk matrix as presenting elevated research security, export control, foreign engagement, or counterintelligence risk; and

(B) an entity that is organized under the laws of, owned in part or in whole, or controlled by, or otherwise subject to the jurisdiction or direction of, a country of concern.

(c) CENTRALIZED MECHANISM.—

(1) IN GENERAL.—In establishing a graded review process under subsection (a), the Secretary of Energy shall maintain a centralized mechanism that includes information relating to any entity reviewed under such subsection by the Secretary, including information related to the technical area, scope of work, or risk profile of such entity.

(2) UPDATES.—The Secretary of Energy shall establish procedures to update the centralized mechanism established under paragraph (1) to ensure such centralized mechanism includes any material change, as determined by the Secretary, in ownership, control, financing, foreign affiliations, proposed work, facility access, information access, or other risk-relevant circumstances of an entity reviewed under subsection (a).

(d) DEFINITIONS.—In this section:

(1) 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).

(2) COUNTRY OF CONCERN.—The term ''country of concern'' has the meaning given the term ''foreign country of concern'' in section 10638 of subtitle D of title VI of the Research and Develop-

ment, Competition, and Innovation Act (enacted as division B of Public Law 117–167; 42 U.S.C. 19237)).

SEC. 103. REESTABLISHMENT OF DEPARTMENT OF ENERGY OFFICE RELATING TO FUSION.

(a) OFFICE OF FUSION.—

(1) IN GENERAL.—Title II of the Department of Energy Organization Act is amended by inserting after section 215 (42 U.S.C. 7144b) the following new section:

"SEC. 216. OFFICE OF FUSION.

''(a) ESTABLISHMENT.—The Secretary shall establish the Office of Fusion (referred to in this section as the 'Office') within the Department to advance near-term and long-term fusion energy science and technology to meet the energy, environmental, and economic needs of the United States.

''(b) ASSISTANT SECRETARY FOR FUSION ENERGY.—The head of the Office shall be an Assistant Secretary for Fusion Energy.

''(c) CONSOLIDATION OF FUSION OFFICES.—The Secretary shall carry out the following:

''(1) Transfer to the Office all programs carried out by the Fusion Energy Sciences program of the Office of Science as of November 19, 2025.

''(2) Establish a timeline for such transfer.

''(d) DUTIES.—The Office shall carry out the following:

''(1) Enhance the economic and energy security of the United States.

''(2) Ensure United States leadership in—

''(A) fusion energy technologies; and

''(B) foundational and industrial plasma science.

''(3) Accelerate research, development, demonstration, deployment, and market adoption of fusion technologies, in partnership with the private sector.

''(4) Manage public-private partnerships with the United States fusion industry to accelerate the successful deployment of the first commercial fusion power plants, with a goal to start construction of more than one fusion pilot power plant not later than December 31, 2028.

''(5) Ensure an adequate national fusion supply chain infrastructure, including manufacturing capabilities.

''(6) Serve in a coordination role to align the capabilities of the Office of Science, the Advanced Research Projects Agency—Energy, and the Na-

tional Nuclear Security Administration for fusion-relevant technologies to serve a single goal of accelerating commercial plant deployment while meeting high standards for safety.

''(7) Expand international fusion energy cooperation to support the commercial application of fusion energy.

''(8) Ensure the availability of a well-trained workforce to support the fusion industry.

''(9) Provide technical expertise to regulators of fusion machines at the Federal, State, and international levels.

''(10) Partner with other agencies to support programs and initiatives to facilitate international market opportunities for the United States commercial fusion industry.

''(e) GENERAL PLASMA SCIENCE AND APPLICATIONS.—Subsection (l) of section 307 of the Department of Energy Research and Innovation Act (42 U.S.C. 18645(l); Public Law 115–246) is amended to read as follows:

'' '(l) GENERAL PLASMA SCIENCE AND APPLICATIONS.—

'' '(1) IN GENERAL.—The Secretary, acting through the Assistant Secretary for Fusion Energy,

shall support a broad portfolio of research activities in general plasma science and high energy density physics that advance the understanding of the scientific community of fundamental properties and complex behavior of matter to control and manipulate plasmas for a broad range of applications, including support for research relevant to advancements in chip manufacturing and microelectronics.

"'(2) AUTHORIZATION OF APPROPRIATIONS.—Out of funds authorized to be appropriated under subsection (x), there is authorized to be appropriated to the Secretary to carry out the activities described in this subsection $75,000,000 for each of fiscal years 2027 through 2031. '.

"(f) CONSULTATION.—In carrying out the duties of the Office, the Assistant Secretary shall consult with the private sector, National Laboratories, institutions of higher education, and the public as to how to optimize the organization of the various programs within the Department.

"(g) COORDINATION AND NONDUPLICATION.—

"(1) IN GENERAL.—To the maximum extent practicable, the Assistant Secretary shall ensure that the activities of the Office are coordinated with, and do not duplicate the efforts of, other programs and

laboratories within the Department and other relevant research agencies.

''(2) COORDINATION.—In carrying out paragraph (1), the Assistant Secretary shall coordinate with the following:

''(A) The Director of the Advanced Research Projects Agency-Energy (ARPA-E).

''(B) The Assistant Secretary of Energy for Nuclear Energy.

''(C) The Director of the Office of Science.

''(D) The Director of the Loan Programs Office.

''(E) The Director of the Office of Technology Commercialization.

''(F) The Assistant Secretary of Energy for the Office of Environmental Management.

''(G) The Chief Executive Officer of the Foundation for Energy Security and Innovation.

''(H) The Administrator of the National Nuclear Security Administration.

''(I) The Director of the National Science Foundation.

''(J) The Secretary of Defense.

''(K) The Secretary of Commerce.

''(L) The Director of the National Institute of Standards and Technology.

''(M) The National Laboratories.

''(N) Relevant members of the fusion industry.

''(O) Relevant members of the academic community.''.

(b) ASSISTANT SECRETARY FOR FUSION ENERGY .—Section 203(a)(2) of the Department of Energy Organization Act (42 U.S.C. 7133(a)(2)) is amended—

(1) by redesignating subparagraphs (C), (D), and (E) as subparagraphs (D), (E), and (F), respectively; and

(2) by inserting after subparagraph (B) the following new subparagraph:

''(C) fusion energy resources;''.

(c) CLERICAL AMENDMENT.—The table of contents for the Department of Energy Organization Act (Public Law 95–91; 91 Stat. 565; 119 Stat. 764; 133 Stat. 2199) is amended by inserting after the item relating to section 215 the following:

''Sec. 216. Office of Fusion.''.

TITLE II—STEM EDUCATION AND SKILLED TECHNICAL WORKFORCE FOR FUSION

SEC. 201. 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 learn-

ing 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 Assistant Secretary for Fusion Energy, 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.

(G) Other institutions of higher education.

SEC. 202. 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. 203. DEFINITIONS.

In this title:

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

(2) 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)).

(3) 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).

(4) 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)).

(5) 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)).

(6) 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.

(7) 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))).

(8) 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).

(9) 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.

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

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

(12) 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).

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

(14) 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. 204. AUTHORIZATION OF APPROPRIATIONS.

(a) NATIONAL SCIENCE FOUNDATION.—To carry out this Act, there is authorized to be appropriated to the Di-

rector $30,000,000 for each of fiscal years 2027 through 2031.

(b) DEPARTMENT OF ENERGY.—To carry out this Act, there is authorized to be appropriated to the Secretary $15,000,000 for each of fiscal years 2027 through 2031.