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114TH CONGRESS
1ST SESSION

H. R. 1898

To provide for investment in innovation through research and development and STEM education, to improve the competitiveness of the United States, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 21, 2015

Ms. EDDIE BERNICE JOHNSON of Texas (for herself, Ms. LOFGREN, Mr. LIPINSKI, Ms. EDWARDS, Ms. BONAMICI, Mr. SWALWELL of California, Mr. GRAYSON, Mr. BERA, Ms. ESTY, Mr. VEASEY, Ms. CLARK of Massachusetts, Mr. BEYER, Mr. PERLMUTTER, Mr. TONKO, Mr. TAKANO, and Mr. FOSTER) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committee on Education and the Workforce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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A BILL

To provide for investment in innovation through research and development and STEM education, to improve the competitiveness of the United States, 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 "America Competes Reauthorization Act of 2015".

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

TITLE I—OSTP; GOVERNMENTWIDE SCIENCE

Subtitle A—General Provisions

SEC. 101. FEDERAL RESEARCH AND DEVELOPMENT FUNDING.

Congress finds the following:

(1) The predominant driver of gross domestic product growth over the past half century has been scientific and technological advancement.

(2) Investments in research and development have also delivered significant benefits for national security, health, energy security, education, and the personal well-being of all Americans.

(3) Virtually every new technological product is traceable to a research discovery, often one pursued with no application in mind.

(4) Nondefense Federal research and development accounts for only 1.7 percent of the Federal budget. Federal basic research accounts for only 1 percent of the budget.

(5) There is a deficit between what America is investing and what it should be investing to remain competitive, not only in research but in technology transfer, innovation, and job creation, thereby causing America's highly successful science and technology enterprise to atrophy.

(6) Many research and development initiatives, due to the long time periods required to achieve completion, have benefited from stable and predictable investments and from multiyear financial planning.

(7) The Federal science agencies should receive sustained and steady growth in funding for research and development activities, including basic research, across a wide range of disciplines, including physical, geological, and life sciences, mathematics, engineering, and social, behavioral, and economic sciences.

SEC. 102. NATIONAL SCIENCE AND TECHNOLOGY COUNCIL AMENDMENTS.

Section 401 of the National Science and Technology Policy, Organization, and Priorities Act of 1977 (42 U.S.C. 6651) is amended—

(1) in subsection (a), by striking ''Federal Coordinating Council for Science, Engineering, and Technology'' and inserting ''National Science and Technology Council'';

(2) in subsection (b), by striking ''and Energy Research and Development Administration'' and inserting ''Department of Energy, and any other agency designated by the President''; and

(3) in subsection (e)—

(A) by striking ''engineering, and technology'' and inserting ''engineering, technology, innovation, and STEM education'';

(B) in paragraph (1), by striking ''engineering, and technological'' and inserting ''engineering, technological, innovation, and STEM education'';

(C) by redesignating paragraphs (3) and (4) as paragraphs (4) and (5), respectively; and

(D) by inserting after paragraph (2) the following new paragraph:

''(3) address research needs identified under paragraph (2) through appropriate funding mechanisms, which may include solicitations involving 2 or more agencies and public-private partnerships;''.

SEC. 103. REVIEW OF FEDERAL REGULATIONS AND REPORTING REQUIREMENTS.

(a) ESTABLISHMENT.—The Director of the Office of Science and Technology Policy shall establish or designate a working group under the National Science and Technology Council with the responsibility of reviewing Federal regulatory and reporting requirements across Federal agencies that affect the conduct of United States research in an effort to reduce regulatory burdens and to eliminate and harmonize duplicative regulatory and reporting requirements.

(b) RESPONSIBILITIES.—The working group established or designated under subsection (a) shall—

(1) periodically review all Federal regulations and reporting requirements that affect the conduct of United States research to—

(A) identify ways to harmonize overlapping or duplicative research regulations and reporting requirements across Federal agencies;

(B) evaluate such regulations and reporting requirements in relationship to the risks the

requirements seek to address to determine if the benefits of the requirements are commensurate with the costs to the progress of science or to the taxpayer;

(C) identify any regulations that are applied to scientific researchers or to research-performing institutions for which exemptions could be reasonably applied or for which adjustments could be made to better fit those regulations to diverse research environments; and

(D) identify any specific regulations which could be refocused on performance-based goals rather than on process while still meeting the desired outcome;

(2) examine the extent to which agencies' guidance documents adhere with the most recently updated version of the Office of Management and Budget's Agency Good Guidance Practices bulletin; and

(3) develop and update at least once every 3 years a strategic plan for streamlining Federal regulations and reporting requirements that affect the conduct of United States research that contains, at a minimum—

(A) a priority list of research-related regulations, reporting requirements, and agency guidance to be harmonized, streamlined, updated, or eliminated; and

(B) a plan, including a timeline, for implementing the regulatory and reporting reforms identified in subparagraph (A).

(c) STAKEHOLDER INPUT.—In carrying out the responsibilities under subsection (b), including the development of the strategic plan under subsection (b)(3), the working group established or designated under subsection (a) shall take into account input and recommendations from non-Federal stakeholders, including federally funded and nonfederally funded researchers, institutions of higher education, scientific disciplinary societies and associations, nonprofit research institutions, industry, including small businesses, federally funded research and development centers, and others with a stake in ensuring effectiveness, efficiency, and accountability in the performance of scientific research.

(d) RESPONSIBILITIES OF OSTP.—The Director of the Office of Science and Technology Policy, in collaboration with the Office of Management and Budget Office of Information and Regulatory Affairs, shall encourage and monitor the efforts of the participating agencies to

ensure that the strategic plan is developed under subsection (b)(3) and that appropriate steps are taken by the agencies to effectively implement the recommendations, achieve the objectives, and to adhere to the timeline in the strategic plan.

(e) REPORT.—Not later than 1 year after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall transmit the priority list and strategic plan developed under subsection (b)(3) to the Congress. The Director shall further provide a report annually to the Congress, to be submitted not later than 60 days after the submission of the President's annual budget request, on the progress toward implementation of the regulatory reforms outlined in the strategic plan.

SEC. 104. AMENDMENTS TO PRIZE COMPETITIONS.

Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719) is amended—

(1) in subsection (c)—

(A) by inserting ''competition'' after ''section, a prize'';

(B) by inserting ''types'' after ''following''; and

(C) in paragraph (4), by striking ''prizes'' and inserting ''prize competitions'';

(2) in subsection (f)—

(A) by striking ''in the Federal Register'' and inserting ''on a publicly accessible Government website, such as www.challenge.gov,''; and

(B) in paragraph (4), by striking ''prize'' and inserting ''cash prize purse'';

(3) in subsection (g), by striking ''prize'' and inserting ''cash prize purse'';

(4) in subsection (h), by inserting ''prize'' before ''competition'' both places it appears;

(5) in subsection (i)—

(A) in paragraph (1)(B), by inserting ''prize'' before ''competition'';

(B) in paragraph (2)(A), by inserting ''prize'' before ''competition'' both places it appears;

(C) by redesignating paragraph (3) as paragraph (4); and

(D) by inserting after paragraph (2) the following new paragraph:

''(3) WAIVER.—An agency may waive the requirement under paragraph (2). The annual report under subsection (p) shall include a list of such waivers granted during the preceding fiscal year,

along with an explanation of the reasons for granting the waivers.'';

(6) in subsection (j) by amending paragraph (2) to read as follows:

''(2) INTELLECTUAL PROPERTY.—

''(A) LICENSES.—The Federal Government may negotiate a license for the use of intellectual property developed by a participant for a prize competition.

''(B) OTHER CONDITIONS.—A Federal agency or agencies in cooperation may require participants to agree in advance to a specific approach to intellectual property as a condition for eligibility to participate in a prize competition.'';

(7) in subsection (k)—

(A) in paragraph (2)(A), by inserting ''prize'' before ''competition''; and

(B) in paragraph (3), by inserting ''prize'' before ''competitions'' both places it appears;

(8) in subsection (l), by striking all after ''may enter into'' and inserting ''a grant, contract, cooperative agreement, or other agreement with a private sector for-profit or nonprofit entity to administer the

prize competition, subject to the provisions of this section.'';

(9) in subsection (m)—

(A) by amending paragraph (1) to read as follows:

''(1) IN GENERAL.—Support for a prize competition under this section, including financial support for the design and administration of a prize competition or funds for a cash prize purse, may consist of Federal appropriated funds and funds provided by private sector for-profit and nonprofit entities. The head of an agency may accept funds from other Federal agencies, private sector for-profit entities, and nonprofit entities to support such prize competitions. The head of an agency may not give any special consideration to any private sector for-profit or nonprofit entity in return for a donation.'';

(B) in paragraph (2), by striking ''prize awards'' and inserting ''cash prize purses'';

(C) in paragraph (3)(A)—

(i) by striking ''No prize'' and inserting ''No prize competition''; and

(ii) by striking ''the prize'' and inserting ''the cash prize purse'';

(D) in paragraph (3)(B), by striking ''a prize'' and inserting ''a cash prize purse'';

(E) in paragraph (3)(B)(i), by inserting ''competition'' after ''prize'';

(F) in paragraph (4)(A), by striking ''a prize'' and inserting ''a cash prize purse''; and

(G) in paragraph (4)(B), by striking ''cash prizes'' and inserting ''cash prize purses'';

(10) in subsection (n), by inserting ''for both for-profit and nonprofit entities,'' after ''contract vehicle'';

(11) in subsection (o)(1), by striking ''or providing a prize'' and insert ''a prize competition or providing a cash prize purse''; and

(12) in subsection (p)—

(A) in the heading, by striking ''ANNUAL REPORT'' and inserting ''BIENNIAL REPORT'';

(B) in paragraph (1)—

(i) by striking ''of each year'' and inserting ''of each odd-numbered year''; and

(ii) by striking ''preceding fiscal year'' and inserting ''preceding 2 fiscal years''; and

(C) in paragraph (2)—

(i) in subparagraph (C), by striking ''cash prizes'' both places it occurs and inserting ''cash prize purses''; and

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

''(G) PLAN.—A description of crosscutting topical areas and agency-specific mission needs that may be the strongest opportunities for prize competitions during the upcoming 2 fiscal years.''.

SEC. 105. COORDINATION OF INTERNATIONAL SCIENCE AND TECHNOLOGY PARTNERSHIPS.

(a) SHORT TITLE.—This section may be cited as the ''International Science and Technology Cooperation Act of 2015''.

(b) ESTABLISHMENT.—The Director of the Office of Science and Technology Policy shall establish a body under the National Science and Technology Council (NSTC) with the responsibility to identify and coordinate international science and technology cooperation that can strengthen the United States science and technology enterprise, improve economic and national security, and support United States foreign policy goals.

(c) NSTC BODY LEADERSHIP.—The body established under subsection (b) shall be co-chaired by senior

level officials from the Office of Science and Technology Policy and the Department of State.

(d) RESPONSIBILITIES.—The body established under subsection (b) shall—

(1) plan and coordinate interagency international science and technology cooperative research and training activities and partnerships supported or managed by Federal agencies and work with other National Science and Technology Council committees to help plan and coordinate the international component of national science and technology priorities;

(2) establish Federal priorities and policies for aligning, as appropriate, international science and technology cooperative research and training activities and partnerships supported or managed by Federal agencies with the foreign policy goals of the United States;

(3) identify opportunities for new international science and technology cooperative research and training partnerships that advance both the science and technology and the foreign policy priorities of the United States;

(4) in carrying out paragraph (3), solicit input and recommendations from non-Federal science and

technology stakeholders, including universities, scientific and professional societies, industry, and relevant organizations and institutions; and

(5) identify broad issues that influence the ability of United States scientists and engineers to collaborate with foreign counterparts, including barriers to collaboration and access to scientific information.

(e) REPORT TO CONGRESS.—The Director of the Office of Science and Technology Policy shall transmit a report, to be updated annually, to the Committee on Science, Space, and Technology and the Committee on Foreign Affairs of the House of Representatives, and to the Committee on Commerce, Science, and Transportation and the Committee on Foreign Relations of the Senate. The report shall also be made available to the public on the reporting agency's website. The report shall contain a description of—

(1) the priorities and policies established under subsection (d)(2);

(2) the ongoing and new partnerships established since the last update to the report;

(3) the means by which stakeholder input was received, as well as summary views of stakeholder input; and

(4) the issues influencing the ability of United States scientists and engineers to collaborate with foreign counterparts.

SEC. 106. SCIENTIFIC AND TECHNICAL CONFERENCES.

(a) FINDINGS.—Congress finds the following:

(1) Cooperative research and development activities, including collaboration between domestic and international government, industry, and academic science and engineering organizations, are important to promoting innovation and knowledge creation.

(2) Scientific and technical conferences and trade events support the sharing of information, processes, and data within the scientific and engineering communities.

(3) In hosting and attending scientific and technical conferences and trade events, Federal agencies—

(A) gain greater access to top researchers and to new and potentially transformative ideas;

(B) keep abreast of developments relevant to their respective missions, as is relevant for future program planning;

(C) help disseminate Federal research results;

(D) provide opportunities both for employee professional development and for recruiting new employees;

(E) participate in scientific peer review; and

(F) support the reputation, visibility, and leadership both of the specific agency and of the United States.

(4) For those Federal agencies that provide financial support for external research and development activities, participation in scientific and technical conferences can help ensure that funds are directed toward the most promising ideas, thereby maximizing the Federal investment.

(b) POLICY.—To the extent practicable given budget, security, and other constraints, the National Science Foundation, the National Institute of Standards and Technology, and the Department of Energy, in addition to the National Aeronautics and Space Administration, should support Federal employee and contractor attendance at scientific and technical conferences and trade events as relevant both to employee and contractor duties and to the agency's mission.

(c) OVERSIGHT.—Consistent with other relevant law, the Federal agencies, through appropriate oversight, shall

aim to minimize the costs to the Federal Government related to conference and trade event attendance, through methods such as—

(1) ensuring that related fees collected by the Federal agency help offset total costs to the Federal Government;

(2) developing or maintaining procedures for investigating unexpected increases in related costs; and

(3) strengthening policies and training relevant to conference and trade event planning and participation.

Subtitle B—Reauthorization of the National Nanotechnology Initiative

SEC. 111. SHORT TITLE.

This subtitle may be cited as the ''National Nanotechnology Initiative Amendments Act of 2015''.

SEC. 112. NATIONAL NANOTECHNOLOGY PROGRAM AMENDMENTS.

The 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501 et seq.) is amended—

(1) in section 2—

(A) in subsection (c), by amending paragraph (4) to read as follows:

''(4) develop, and update every 3 years thereafter, a strategic plan to guide the activities described under subsection (b) that specifies near-term and long-term objectives for the Program, the anticipated timeframe for achieving the near-term objectives, and the metrics to be used for assessing progress toward the objectives, and that describes—

''(A) how the Program will move results out of the laboratory and into applications for the benefit of society, including through cooperation and collaborations with nanotechnology research, development, and technology transition initiatives supported by the States; and

''(B) proposed research in areas of national importance in accordance with the requirements of section 116 of the National Nanotechnology Initiative Amendments Act of 2015;'';

(B) in subsection (d)—

(i) by redesignating paragraphs (1) through (5) as paragraphs (2) through (6), respectively;

(ii) by inserting before paragraph (2), as redesignated by clause (i), the following:

''(1) the Program budget, for the previous fiscal year, for each agency that participates in the Program, and for each program component area;''; and

(iii) by amending paragraph (6), as redesignated by clause (i), to read as follows:

''(6) an assessment of how Federal agencies are implementing the plan described in subsection (c)(7) and a description of the amount of Small Business Innovative Research and Small Business Technology Transfer Research funds supporting the plan.''; and

(C) by adding at the end the following new subsection:

''(e) STANDARDS SETTING.—The agencies participating in the Program shall support the activities of committees involved in the development of standards for nanotechnology and may reimburse the travel costs of scientists and engineers who participate in activities of such committees.'';

(2) in section 3—

(A) by amending subsection (b)(1) to read as follows:

''(b) FUNDING.—

''(1) IN GENERAL.—The operation of the National Nanotechnology Coordination Office shall be

supported by funds from each agency participating in the Program.

''(2) PROPORTION.—The portion of such Office's total budget provided by each agency for each fiscal year shall be in the same proportion as the agency's share of the total budget for the Program for the previous fiscal year, as specified in the report required under section 2(d)(1).

''(3) EXCEPTION.—The Director of the National Nanotechnology Coordination Office may establish a minimum contribution or other exception to the requirement in paragraph (2) for participating agencies whose share of the total budget for the Program is below a threshold level, to be set by the Director.''; and

(B) by adding at the end the following new subsection:

''(d) PUBLIC INFORMATION.—

''(1) DATABASE.—

''(A) IN GENERAL.—The National Nanotechnology Coordination Office shall develop and maintain a database accessible by the public of projects funded under at least the Environmental, Health, and Safety program component area, or any successor program component

area, including, to the extent practicable, a description of each project, its source of funding by agency, and its funding history.

''(B) ORGANIZATION.—Projects shall be grouped by major objective as defined by the research plan required under section 113(b) of the National Nanotechnology Initiative Amendments Act of 2015.

''(2) ACCESSIBLE FACILITIES.—

''(A) IN GENERAL.—The National Nanotechnology Coordination Office shall develop, maintain, and publicize information on nanotechnology facilities supported under the Program, and may include information on nanotechnology facilities supported by the States, that are accessible for use by individuals from academic institutions and from industry.

''(B) WEBSITES.—The National Nanotechnology Coordination Office shall maintain active web links to the websites for each of these facilities and shall work with each facility supported under the Program to ensure that each facility publishes on its respective website updated information on the terms and conditions for the use of the facility, a description of the

capabilities of the instruments and equipment available for use at the facility, and a description of the technical support available to assist users of the facility.'';

(3) in section 4—

(A) in subsection (a), by adding at the end the following: ''The co-chairs of the Advisory Panel shall meet the qualifications of Panel membership required in subsection (b) and may be members of the President's Council of Advisors on Science and Technology. The Advisory Panel shall include members having specific qualifications tailored to enable it to carry out the requirements of subsection (c)(6).'';

(B) in subsection (c)—

(i) by striking paragraph (1); and

(ii) by redesignating paragraphs (2) through (7) as paragraphs (1) through (6), respectively; and

(C) by amending subsection (d) to read as follows:

''(d) REPORTS.—The Advisory Panel shall report not less frequently than every 3 years, and, to the extent practicable, 1 year following each of the National Research Council triennial reviews required under section 5, to the

President on its assessments under subsection (c) and its recommendations for ways to improve the Program. The Director of the Office of Science and Technology Policy shall transmit a copy of each report under this subsection to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Science, Space, and Technology of the House of Representatives, and other appropriate committees of the Congress.'';

(4) by amending section 5 to read as follows:

''SEC. 5. TRIENNIAL EXTERNAL REVIEW OF THE NATIONAL NANOTECHNOLOGY PROGRAM.

''(a) IN GENERAL.—The Director of the National Nanotechnology Coordination Office shall enter into an arrangement with the National Research Council of the National Academy of Sciences to conduct a triennial review of the Program. The Director shall ensure that the arrangement with the National Research Council is concluded in order to allow sufficient time for the reporting requirements of subsection (b) to be satisfied. Each triennial review shall include an evaluation of the—

''(1) research priorities and technical content of the Program, including whether the balance of funding among program component areas, as designated according to section 2(c)(2), is appropriate;

''(2) Program's scientific and technological accomplishments and its success in transferring technology to the private sector; and

''(3) adequacy of the Program's activities addressing ethical, legal, environmental, and other appropriate societal concerns, including human health concerns.

''(b) PRIORITY REPORTS.—If the Director of the National Nanotechnology Coordination Office, working with the National Research Council and with input from the Advisory Panel, determines that a more narrowly focused review of the Program is in the best interests of the Program, the Director may enter into such an arrangement with the National Research Council in lieu of a full review as required under subsection (a), but not more often than every second triennial review.

''(c) EVALUATION TO BE TRANSMITTED TO CONGRESS.—The National Research Council shall document the results of each triennial review carried out in accordance with this section in a report that includes any recommendations for changes to the Program's objectives, technical content, or other policy or Program changes. Each report shall be submitted to the Director of the National Nanotechnology Coordination Office, who shall transmit it to the Advisory Panel, the Committee on Com-

merce, Science, and Transportation of the Senate, and the Committee on Science, Space, and Technology of the House of Representatives.''; and

(5) in section 10—

(A) by amending paragraph (2) to read as follows:

''(2) NANOTECHNOLOGY.—The term 'nanotechnology' means the science and technology that will enable one to understand, measure, model, image, manipulate, and manufacture at the nanoscale, aimed at creating materials, devices, and systems with fundamentally new properties or functions.''; and

(B) by adding at the end the following new paragraph:

''(7) NANOSCALE.—The term 'nanoscale' means one or more dimensions of between approximately 1 and 100 nanometers.''.

SEC. 113. SOCIETAL DIMENSIONS OF NANOTECHNOLOGY.

(a) COORDINATOR FOR ENVIRONMENTAL, HEALTH, AND SAFETY RESEARCH.—The Director of the Office of Science and Technology Policy shall designate an associate director of the Office of Science and Technology Policy or other appropriate senior government official as the Coordinator for Environmental, Health, and Safety Re-

search. The Coordinator shall be responsible for oversight of the coordination, planning, and budget prioritization of research and other activities related to environmental, health, safety, and other appropriate societal concerns related to nanotechnology. The responsibilities of the Coordinator shall include—

(1) ensuring that a research plan for the environmental, health, and safety research activities required under subsection (b) is developed, updated, and implemented and that the plan is responsive to the recommendations of the Advisory Panel established under section 4(a) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7503(a)); and

(2) encouraging and monitoring the efforts of the agencies participating in the Program to allocate the level of resources and management attention necessary to ensure that the environmental, health, safety, and other appropriate societal concerns related to nanotechnology are addressed under the Program.

(b) RESEARCH PLAN.—

(1) IN GENERAL.—The Coordinator for Environmental, Health, and Safety Research shall convene and chair a panel comprised of representatives

from the agencies funding research activities under the Environmental, Health, and Safety program component area of the Program, or any successor program component area, and from such other agencies as the Coordinator considers necessary to develop, periodically update, and coordinate the implementation of a research plan for this program component area. Such panel may be a subgroup of the Nanoscale Science, Engineering, and Technology Subcommittee of the National Science and Technology Council. In developing and updating the plan, the panel convened by the Coordinator shall solicit and be responsive to recommendations and advice from—

(A) the Advisory Panel established under section 4(a) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7503(a)); and

(B) the agencies responsible for environmental, health, and safety regulations associated with the production, use, and disposal of nanoscale materials and products.

(2) DEVELOPMENT OF STANDARDS.—The plan required under paragraph (1) shall include a de-

scription of how the Program will help to ensure the development of—

(A) standards related to nomenclature associated with engineered nanoscale materials;

(B) engineered nanoscale standard reference materials for environmental, health, and safety testing; and

(C) standards related to methods and procedures for detecting, measuring, monitoring, sampling, and testing engineered nanoscale materials for environmental, health, and safety impacts.

(3) COMPONENTS OF PLAN.—The plan required under paragraph (1) shall, with respect to activities described in paragraphs (1) and (2)—

(A) specify near-term research objectives and long-term research objectives;

(B) specify milestones associated with each near-term objective and the estimated time and resources required to reach each milestone;

(C) with respect to subparagraphs (A) and (B), describe the role of each agency carrying out or sponsoring research in order to meet the objectives specified under subparagraph (A) and

to achieve the milestones specified under subparagraph (B); and

(D) specify the funding allocated to each major objective of the plan and the source of funding by agency for the current fiscal year.

(4) TRANSMITTAL TO CONGRESS.—Not later than 6 months after the date of enactment of this Act, the plan required under paragraph (1) shall be transmitted to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives.

(5) UPDATING AND APPENDING TO REPORT.—The plan required under paragraph (1) shall be updated at least every 3 years and may be submitted as part of the report required under section 2(c)(4) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501(c)(4)).

SEC. 114. NANOTECHNOLOGY EDUCATION.

(a) UNDERGRADUATE EDUCATION PROGRAMS.—The Program shall support efforts to introduce nanoscale science, engineering, and technology into undergraduate science and engineering education through a variety of interdisciplinary approaches. Activities supported may include—

(1) development of courses of instruction or modules to existing courses;

(2) faculty professional development; and

(3) acquisition of equipment and instrumentation suitable for undergraduate education and research in nanotechnology.

(b) INTERAGENCY COORDINATION OF EDUCATION.—The Committee established under section 2(c) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501(c)) shall coordinate, as appropriate, with the Committee established under section 101 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621) to prioritize, plan, and assess the educational activities supported under the Program.

(c) SOCIETAL DIMENSIONS IN NANOTECHNOLOGY EDUCATION ACTIVITIES.—Activities supported under the Education and Societal Dimensions program component area, or any successor program component area, that involve informal, precollege, or undergraduate nanotechnology education shall include education regarding the environmental, health and safety, and other societal aspects of nanotechnology.

(d) REMOTE ACCESS TO NANOTECHNOLOGY FACILITIES.—

(1) IN GENERAL.—Agencies supporting nanotechnology research facilities as part of the Program shall require the entities that operate such facilities to allow access via the Internet, and support the costs associated with the provision of such access, by secondary school students and teachers, to instruments and equipment within such facilities for educational purposes. The agencies may waive this requirement for cases when particular facilities would be inappropriate for educational purposes or the costs for providing such access would be prohibitive.

(2) PROCEDURES.—The agencies identified in paragraph (1) shall require the entities that operate such nanotechnology research facilities to establish and publish procedures, guidelines, and conditions for the submission and approval of applications for the use of the facilities for the purpose identified in paragraph (1) and shall authorize personnel who operate the facilities to provide necessary technical support to students and teachers.

SEC. 115. TECHNOLOGY TRANSFER.

(a) PROTOTYPING.—

(1) ACCESS TO FACILITIES.—In accordance with section 2(b)(7) of 21st Century Nanotechnology Research and Development Act (15 U.S.C.

7501(b)(7)), the agencies supporting nanotechnology research facilities as part of the Program shall provide access to such facilities to companies for the purpose of assisting the companies in the development of prototypes of nanoscale products, devices, or processes (or products, devices, or processes enabled by nanotechnology) for determining proof of concept. The agencies shall publicize the availability of these facilities and encourage their use by companies as provided for in this section. The agencies may waive this requirement for academic facilities for which the costs of providing such access would be prohibitive.

(2) PROCEDURES.—The agencies identified in paragraph (1)—

(A) shall establish and publish procedures, guidelines, and conditions for the submission and approval of applications for use of nanotechnology facilities;

(B) shall publish descriptions of the capabilities of facilities available for use under this subsection, including the availability of technical support; and

(C) may waive recovery, require full recovery, or require partial recovery of the costs as-

sociated with use of the facilities for projects under this subsection.

(3) SELECTION AND CRITERIA.—

(A) IN GENERAL.—In cases when less than full cost recovery is required pursuant to paragraph (2)(C), projects provided access to nanotechnology facilities in accordance with this subsection shall be selected through a competitive, merit-based process, and the criteria for the selection of such projects shall include at a minimum the readiness of the project for technology demonstration.

(B) SPECIAL CONSIDERATION.—The agencies may give special consideration in selecting projects to applications that are relevant to important national needs or requirements.

(b) COLLABORATION WITH INDUSTRY.—The Program shall coordinate with industry from all industrial sectors that would benefit from applications of nanotechnology by—

(1) enhancing communication of information related to nanotechnology innovation, including information about research, education and training, manufacturing issues, and market-driven needs;

(2) advancing and accelerating the creation of new products and manufacturing processes derived from discovery at the nanoscale by working with industry, including small- and medium-sized manufacturers;

(3) developing innovative methods for transferring nanotechnology products and processes from Federal agencies to industry; and

(4) facilitating industry-led partnerships between the Program and industry sectors, including regional partnerships.

(c) COORDINATION WITH STATE, REGIONAL, AND LOCAL INITIATIVES.—Section 2(b)(5) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501(b)(5)) is amended to read as follows:

''(5) ensuring United States global leadership in the development and application of nanotechnology, including through the coordination and leveraging of Federal investments with nanotechnology research, development, and technology transition initiatives supported by the States and regions across the country;''.

SEC. 116. SIGNATURE INITIATIVES IN AREAS OF NATIONAL IMPORTANCE.

(a) IN GENERAL.—The Program shall include support for nanotechnology research and development activities directed toward topical and application areas that have the potential for significant contributions to national economic competitiveness and for other significant societal benefits. The activities supported shall be designed to advance the development of research discoveries by demonstrating technical solutions to important national challenges. The Advisory Panel shall make recommendations to the Program for candidate research and development areas for support under this section.

(b) CHARACTERISTICS.—

(1) IN GENERAL.—Research and development activities under this section shall—

(A) include projects selected on the basis of applications for support through a competitive, merit-based process;

(B) involve collaborations among researchers in academic institutions and industry, and may involve nonprofit research institutions and Federal laboratories, as appropriate;

(C) when possible, leverage Federal investments through collaboration with related State initiatives; and

(D) include a plan for fostering the transfer of research discoveries and the results of technology demonstration activities to industry for commercial development.

(2) JOINT SOLICITATIONS.—Projects supported under this section shall include projects for which determination of the requirements for applications, review and selection of applications for support, and subsequent funding of projects shall be carried out by a collaboration of no fewer than 2 agencies participating in the Program. In selecting applications for support, agencies may, as appropriate, give special consideration to projects that include cost sharing from non-Federal sources.

(3) INTERDISCIPLINARY RESEARCH CENTERS.—Research and development activities under this section may be supported through interdisciplinary nanotechnology research centers, as authorized by section 2(b)(4) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501(b)(4)), that are organized to investigate basic research questions and carry out technology demonstration activities in areas such as those identified in subsection (a).

(c) REPORT.—Reports required under section 2(d) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501(d)) shall include a description of research and development areas supported in accordance with this section.

SEC. 117. NANOMANUFACTURING RESEARCH.

(a) RESEARCH AREAS.—The Program shall include research on—

(1) the development of instrumentation and tools required for the rapid characterization of nanoscale materials and for monitoring of nanoscale manufacturing processes; and

(2) approaches and techniques for scaling the synthesis of new nanoscale materials to achieve industrial-level production rates.

(b) GREEN NANOTECHNOLOGY.—Interdisciplinary research centers supported under the Program in accordance with section 2(b)(4) of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7501(b)(4)) that are focused on nanomanufacturing research shall include as part of the activities of such centers—

(1) research on methods and approaches to develop environmentally benign nanoscale products and nanoscale manufacturing processes, taking into con-

sideration relevant findings and results of research supported under the Environmental, Health, and Safety program component area, or any successor program component area;

(2) fostering the transfer of the results of such research to industry; and

(3) providing for the education of scientists and engineers through interdisciplinary studies in the principles and techniques for the design and development of environmentally benign nanoscale products and processes.

SEC. 118. DEFINITIONS.

In this subtitle, terms that are defined in section 10 of the 21st Century Nanotechnology Research and Development Act (15 U.S.C. 7509) have the meaning given those terms in that section.

Subtitle C—Engineering Biology

SEC. 121. SHORT TITLE.

This subtitle may be cited as the ''Engineering Biology Research and Development Act of 2015''.

SEC. 122. FINDINGS.

The Congress makes the following findings:

(1) Cellular and molecular processes may be used, mimicked, or redesigned to develop new products, processes, and systems that improve societal

well-being, strengthen national security, and contribute to the economy.

(2) Engineering biology relies on scientists and engineers with a diverse and unique set of skills combining the biological, physical, and information sciences and engineering.

(3) Long-term research and development is necessary to create breakthroughs in engineering biology. Such research and development requires government investment as the benefits are too distant or uncertain for industry to support alone.

(4) The Federal Government can play an important role by facilitating the development of tools and technologies to further advance engineering biology, including multiple user facilities that the Federal Government is uniquely able to support.

(5) Since other countries are investing significant resources in engineering biology, the United States is at risk of losing its competitive lead in this emerging area if it does not invest the necessary resources and have a national strategy.

(6) A National Engineering Biology Initiative can serve to establish new research directions and technology goals, improve interagency coordination and planning processes, drive technology transfer,

and help ensure optimal returns on the Federal investment.

SEC. 123. DEFINITIONS.

In this subtitle—

(1) the term ''Advisory Committee'' means the advisory committee designated under section 125;

(2) the term ''biomanufacturing'' means the manufacturing of products using biological manufacturing technologies;

(3) the term ''engineering biology'' means the science and engineering of cellular and molecular processes to advance fundamental understanding of complex natural systems and to develop new and advance existing products, processes, and systems that will contribute significantly to societal well-being, national security, and the economy;

(4) the term ''Interagency Committee'' means the interagency committee designated under section 124(e); and

(5) the term ''Program'' means the National Engineering Biology Research and Development Program established under section 124.

SEC. 124. NATIONAL ENGINEERING BIOLOGY RESEARCH AND DEVELOPMENT PROGRAM.

(a) IN GENERAL.—The President shall implement a National Engineering Biology Research and Development Program to advance societal well-being, national security, and economic productivity and competitiveness through—

(1) advancing areas of research at the intersection of the biological, physical, and information sciences and engineering;

(2) supporting social science research that advances the field of engineering biology and contributes to the adoption of new products, processes, and technologies;

(3) expanding the number of researchers, educators, and students with engineering biology training;

(4) accelerating the translation and commercialization of engineering biology research and development by the private sector; and

(5) improving the interagency planning and coordination of Federal Government activities related to engineering biology.

(b) PROGRAM ACTIVITIES.—The activities of the Program shall include—

(1) sustained support for engineering biology research and development through—

(A) grants to individual investigators and interdisciplinary teams of investigators;

(B) projects funded under joint solicitations by a collaboration of no fewer than two agencies participating in the Program; and

(C) interdisciplinary research centers that are organized to investigate basic research questions and carry out technology development and demonstration activities;

(2) education and training of undergraduate and graduate students in research at the intersection of biological, physical, and information sciences and engineering;

(3) activities to develop robust mechanisms for tracking and quantifying the outputs and economic benefits of engineering biology; and

(4) activities to accelerate the translation and commercialization of new products, processes, and technologies by—

(A) identifying precompetitive research opportunities;

(B) facilitating public-private partnerships in engineering biology research and development;

(C) connecting researchers, graduate students, and postdoctoral fellows with entrepreneurship education and training opportunities; and

(D) supporting proof of concept activities and the formation of startup companies including through programs such as the Small Business Innovation Research Program and the Small Business Technology Transfer Program.

(c) EXPANDING PARTICIPATION.—The Program shall include, to the maximum extent practicable, outreach to primarily undergraduate and minority-serving institutions about Program opportunities, and shall encourage the development of research collaborations between research-intensive universities and primarily undergraduate and minority-serving institutions.

(d) ETHICAL, LEGAL, ENVIRONMENTAL, AND SOCIETAL ISSUES.—Program activities shall take into account ethical, legal, environmental, and other appropriate societal issues, including the need for safeguards and monitoring systems to protect society against the unintended release of engineered materials produced, by—

(1) supporting research, including in the social sciences, and other activities addressing ethical, legal, environmental, and other appropriate societal

issues related to engineering biology, including integrating research on these topics with the research and development in engineering biology, and ensuring that the results of such research are widely disseminated, including through interdisciplinary engineering biology research centers described in subsection (b)(1)(C); and

(2) ensuring, through the agencies and departments that participate in the Program, that public input and outreach are integrated into the Program by the convening of regular and ongoing public discussions through mechanisms such as citizen panels, consensus conferences, and educational events, as appropriate.

(e) INTERAGENCY COMMITTEE.—The President shall designate an interagency committee on engineering biology, which shall include representatives from the Office of Science and Technology Policy, the National Science Foundation, the Department of Energy, the National Aeronautics and Space Administration, the National Institute of Standards and Technology, the Environmental Protection Agency, and any other agency that the President considers appropriate. The Director of the Office of Science and Technology Policy shall select a chairperson from among the members of the Interagency Committee. The

Interagency Committee shall oversee the planning, management, and coordination of the Program. The Interagency Committee shall—

(1) provide for interagency coordination of Federal engineering biology research, development, and other activities undertaken pursuant to the Program;

(2) establish and periodically update goals and priorities for the Program;

(3) develop, not later than 12 months after the date of enactment of this subtitle, and update every 5 years, a strategic plan to guide the activities of the Program and meet the goals and priorities established under paragraph (2) and describe—

(A) the Program's support for long-term funding for interdisciplinary engineering biology research and development;

(B) the Program's support for education and public outreach activities;

(C) the Program's support for research and other activities on ethical, legal, environmental, and other appropriate societal issues related to engineering biology; and

(D) how the Program will move results out of the laboratory and into application for the

benefit of society and United States competitiveness;

(4) propose an annually coordinated interagency budget for the Program that will ensure the maintenance of a robust engineering biology research and development portfolio and ensure that the balance of funding across the Program is sufficient to meet the goals and priorities established for the Program;

(5) develop a plan to utilize Federal programs, such as the Small Business Innovation Research Program and the Small Business Technology Transfer Program, in support of the goals described in subsection (b)(4); and

(6) in carrying out its responsibilities under this section, take into consideration the recommendations of the Advisory Committee, the results of the workshop convened under section 126, existing reports on related topics, and the views of academic, State, industry, and other appropriate groups.

(f) ANNUAL REPORT.—The Interagency Committee shall prepare an annual report, to be submitted to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later

than 90 days after submission of the President's annual budget request, that includes—

(1) the Program budget for the fiscal year to which such budget request applies, and for the then current fiscal year, including a breakout of spending for each agency participating in the Program, and for the development and acquisition of any research facilities and instrumentation; and

(2) an assessment of how Federal agencies are implementing the plan described in subsection (e)(5), and a description of the amount and number of Small Business Innovation Research and Small Business Technology Transfer awards made in support of the Program.

SEC. 125. ADVISORY COMMITTEE.

(a) IN GENERAL.—The President shall designate an advisory committee on engineering biology research and development with at least 12 members, including representatives of research and academic institutions, industry, and nongovernmental entities, who are qualified to provide advice on the Program.

(b) ASSESSMENT.—The Advisory Committee shall assess—

(1) progress made in implementing the Program;

(2) the need to revise the Program;

(3) the balance of activities and funding across the Program;

(4) whether the Program priorities and goals developed by the Interagency Committee are helping to maintain United States leadership in engineering biology;

(5) the management, coordination, implementation, and activities of the Program; and

(6) whether ethical, legal, environmental, and other appropriate societal issues are adequately addressed by the Program.

(c) REPORTS.—The Advisory Committee shall report within 3 years after the date of enactment of this Act, and thereafter not less frequently than once every 5 years, to the President, the Committee on Science, Space, and Technology of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate, on its findings of the assessment carried out under this section and its recommendations for ways to improve the Program.

(d) FEDERAL ADVISORY COMMITTEE ACT APPLICATION.—Section 14 of the Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Advisory Committee.

SEC. 126. EXTERNAL REVIEW OF ETHICAL, LEGAL, ENVIRONMENTAL, AND SOCIETAL ISSUES.

(a) IN GENERAL.—Not later than 12 months after the date of enactment of this Act, the Director of the National Science Foundation shall enter into an agreement with the National Academies to convene a workshop to review the ethical, legal, environmental, and other appropriate societal issues related to engineering biology research and development. The goals of the workshop shall be to—

(1) assess the current research on such issues;

(2) evaluate the research gaps relating to such issues; and

(3) provide recommendations on how the Program can address the research needs identified.

(b) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the Director of the National Science Foundation shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a summary report containing the findings of the workshop convened under this section.

SEC. 127. AGENCY ACTIVITIES.

(a) NATIONAL SCIENCE FOUNDATION.—As part of the Program, the National Science Foundation shall—

(1) support basic research at the intersection of the biological, physical, and information sciences and engineering through individual grants and through interdisciplinary research centers;

(2) support research on the environmental and social effects of engineering biology;

(3) provide research instrumentation support for engineering biology disciplines; and

(4) award grants, on a competitive basis, to enable institutions to support graduate students and postdoctoral fellows who perform some of their engineering biology research in an industry setting.

(b) DEPARTMENT OF COMMERCE.—As part of the Program, the Director of the National Institute of Standards and Technology shall—

(1) establish a bioscience research program to advance the development of standard reference materials and measurements and to create new data tools, techniques, and processes necessary to advance engineering biology and biomanufacturing;

(2) provide access to user facilities with advanced or unique equipment, services, materials, and other resources to industry, institutions of higher education, nonprofit organizations, and government agencies to perform research and testing; and

(3) provide technical expertise to inform the development of guidelines and safeguards for new products, processes, and systems of engineering biology.

(c) DEPARTMENT OF ENERGY.—As part of the Program, the Secretary of Energy shall—

(1) conduct and support basic research, development, demonstration, and commercial application activities in engineering biology disciplines, including in the areas of synthetic biology, advanced biofuel development, biobased materials, and environmental remediation; and

(2) provide access to user facilities with advanced or unique equipment, services, materials, and other resources, as appropriate, to industry, institutions of higher education, nonprofit organizations, and government agencies to perform research and testing.

(d) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.—As part of the Program, the National Aeronautics and Space Administration shall—

(1) conduct and support basic and applied research in engineering biology fields, including in the field of synthetic biology, and related to Earth and space sciences, aeronautics, space technology, and

space exploration and experimentation, consistent with the priorities established in the National Academies' decadal surveys; and

(2) award grants, on a competitive basis, that enable institutions to support graduate students and postdoctoral fellows who perform some of their engineering biology research in an industry setting.

(e) ENVIRONMENTAL PROTECTION AGENCY.—As part of the Program, the Environmental Protection Agency shall support research on how products, processes, and systems of engineering biology will affect the environment.

TITLE II—STEM EDUCATION AND DIVERSITY

Subtitle A—STEM Education and Workforce

SEC. 201. SENSE OF CONGRESS.

It is the sense of Congress that the National Science and Technology Council's Committee on STEM Education (CoSTEM), established under section 101 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621), has taken important initial steps toward developing and implementing a strategic plan for Federal investments in STEM education, but that more work must be done to solicit and take into account views and experience from stakeholders who help implement or are the beneficiaries

of Federal STEM programs across the Nation. It is further the sense of Congress that science mission agencies such as the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, and the Department of Energy are essential partners in contributing to the goals and implementation of a Federal STEM strategic plan because such agencies have unique scientific and technological facilities as well as highly trained scientists who are eager and able to contribute to improved STEM learning outcomes in their own communities.

SEC. 202. COORDINATION OF FEDERAL STEM EDUCATION.

Section 101 of America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621) is amended—

(1) in subsection (b)(5)—

(A) by redesignating subparagraphs (A) through (D) as subparagraphs (B) through (E), respectively; and

(B) by inserting before subparagraph (B), as so redesigned by subparagraph (A) of this paragraph, the following new subparagraph:

''(A) have as its primary goal to leverage the limited STEM education funding and other assets, including intellectual capital, invested by

Federal STEM agencies for maximum benefit to student learning;'';

(2) by striking the second subsection (b);

(3) by redesignating subsection (c) as subsection (f);

(4) by inserting after subsection (b), the following new subsections:

''(c) COORDINATOR FOR STEM EDUCATION.—The Director of the Office of Science and Technology Policy shall designate an associate director of the Office of Science and Technology Policy as the Coordinator for STEM Education. When an appropriate associate director is not available, the Director may designate another appropriate senior government official as the Coordinator for STEM Education. The Coordinator shall chair the committee established under subsection (a). The Coordinator shall, with the assistance of appropriate senior officials from other Committee on STEM Education agencies, ensure that the requirements of this section are satisfied.

''(d) STAKEHOLDER INPUT.—

''(1) INTERAGENCY CONSOLIDATION.—For all agency proposals to consolidate or transfer budgets or functions for STEM education programs or activities between agencies, at the time of submission of such proposals to Congress, the Director shall re-

port to Congress on activities undertaken by the Office of Science and Technology Policy or by relevant agencies to take into consideration relevant input from the STEM Education Advisory Panel established under subsection (e) and other relevant education stakeholders.

''(2) INTRAAGENCY CONSOLIDATION.—For all agency proposals to internally consolidate or terminate STEM education programs with budgets exceeding $10,000,000, at the time of submission of such proposals to Congress, the head of the relevant agency shall report to Congress on activities to solicit and take into consideration input on such proposals from the STEM Education Advisory Panel established under subsection (e) and other relevant education stakeholders.

''(e) STEM EDUCATION ADVISORY PANEL.—

''(1) IN GENERAL.—The President shall establish or designate a STEM Education Advisory Panel. The cochairs of the Advisory Panel shall meet the qualifications of Panel membership required in paragraph (2) and may be members of the President's Council of Advisors on Science and Technology.

''(2) QUALIFICATIONS.—The Advisory Panel established or designated by the President under this subsection shall consist of members from academic institutions, industry, informal education providers, nonprofit STEM education organizations, foundations, and local and State educational agencies. Members of the Advisory Panel shall be qualified to provide advice on Federal STEM education programs, best practices in STEM education, assessment of STEM education programs, STEM education standards, industry needs for STEM graduates, and public-private STEM education partnerships.

''(3) DUTIES.—The Advisory Panel shall advise the President and the committee established under subsection (a) on implementing the Federal STEM education strategic plan required under subsection (b)(5) and coordinating Federal STEM programs with nongovernmental STEM initiatives and State and local educational agencies.

''(4) REPORT.—The Advisory Panel shall report, not more than 1 year after enactment of the America Competes Reauthorization Act of 2015, on options for evidence-based implementation of the Federal STEM strategic plan required under sub-

section (b)(5), including options for designating certain agencies as coordinating leads for different priority investment areas, timelines for implementation, and specific management, budget, policy, or other steps that agencies must take to effectively implement the strategic plan.

''(5) SUNSET.—The authorization for the Advisory Panel established under this subsection shall expire 3 years after the date of enactment of the America Competes Reauthorization Act of 2015.''; and

(5) in subsection (f), as so redesignated by paragraph (3) of this section—

(A) by inserting ''progress made in implementing'' after ''describing'';

(B) by striking paragraph (3); and

(C) by redesignating paragraphs (4) and (5) as paragraphs (3) and (4), respectively.

SEC. 203. GRAND CHALLENGES IN EDUCATION RESEARCH.

(a) IN GENERAL.—The Director of the National Science Foundation and the Secretary of Education shall collaborate in—

(1) identifying, prioritizing, and developing strategies to address grand challenges in research and development, including assessment, on the

teaching and learning of STEM at the pre-K–12 level, in formal and informal settings, for diverse learning populations, including individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b); and

(2) ensuring the dissemination and promoting the utilization of the results of such research and development.

(b) STAKEHOLDER INPUT.—In identifying the grand challenges under subsection (a), the Director and the Secretary shall—

(1) take into consideration critical research gaps identified in existing reports, including reports by the National Academies, on the teaching and learning of STEM at the pre-K–12 level in formal and informal settings; and

(2) solicit input from a wide range of stakeholders, including officials from State educational agencies and local educational agencies, STEM teachers, STEM education researchers, scientific and engineering societies, STEM faculty at institutions of higher education, informal STEM education providers, businesses with a large STEM workforce, and other stakeholders in the teaching and learning

of STEM at the pre-K–12 level, and may enter into an arrangement with the National Research Council for these purposes.

(c) TOPICS TO CONSIDER.—In identifying the grand challenges under subsection (a), the Director and the Secretary shall, at a minimum, consider research and development on—

(1) scalability, sustainability, and replication of successful STEM activities, programs, and models, in formal and informal environments;

(2) model systems that support improved teaching and learning of STEM across entire local educational agencies and States, including rural areas, and encompassing and integrating the teaching and learning of STEM in formal and informal venues;

(3) implementation of new State mathematics and science standards;

(4) what makes a STEM teacher effective and STEM teacher professional development effective, including development of tools and methodologies to measure STEM teacher effectiveness;

(5) cyber-enabled and other technology tools for teaching and learning, including massive open online courses;

(6) STEM teaching and learning in informal environments, including development of tools and methodologies for assessing STEM teaching and learning in informal environments; and

(7) how integrating engineering with mathematics and science education may—

(A) improve student learning of mathematics and science;

(B) increase student interest and persistence in STEM; or

(C) improve student understanding of engineering design principles and of the built world.

(d) REPORT TO CONGRESS.—Not later than 12 months after the date of enactment of this Act, the Director and the Secretary shall report to Congress with a description of—

(1) the grand challenges identified pursuant to this section;

(2) the role of each agency in supporting research and development activities to address the grand challenges;

(3) the common metrics that will be used to assess progress toward meeting the grand challenges;

(4) plans for periodically updating the grand challenges;

(5) how the agencies will disseminate and promote the utilization of the results of research and development activities carried out under this section to STEM education practitioners, to other Federal agencies that support STEM programs and activities, and to non-Federal funders of STEM education; and

(6) how the agencies will support implementation of best practices identified by the research and development activities.

SEC. 204. NATIONAL RESEARCH COUNCIL REPORT ON STEAM EDUCATION.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) the Science, Technology, Engineering, and Mathematics (STEM) Talent Expansion Program set an important goal of increasing the number of students graduating with associate or baccalaureate degrees in the STEM fields, and this should continue to be a focus of that program;

(2) to further the goal of the STEM Talent Expansion Program, as well as STEM education promotion programs across the Federal Government, innovative approaches are needed to enhance STEM education in the United States;

(3) STEAM, which is the integration of arts and design, broadly defined, into Federal STEM programming, research, and innovation activities, is a method-validated approach to maintaining the competitiveness of the United States in both workforce and innovation and to increasing and broadening students' engagement in the STEM fields;

(4) STEM graduates need more than technical skills to thrive in the 21st century workforce; they also need to be creative, innovative, collaborative, and able to think critically;

(5) STEAM should be recognized as providing value to STEM research and education programs across Federal agencies, without supplanting the focus on the traditional STEM disciplines;

(6) Federal agencies should work cooperatively on interdisciplinary initiatives to support the integration of arts and design into STEM, and current interdisciplinary programs should be strengthened;

(7) Federal agencies should allow for STEAM activities under current and future grant-making and other activities; and

(8) Federal agencies should clarify that, where appropriate, data collection, surveys, and reporting on STEM activities and grant-making should exam-

ine activities that involve cross-disciplinary learning that integrates specialized skills and expertise from both art and science.

(b) NATIONAL RESEARCH COUNCIL WORKSHOP.—The National Science Foundation shall enter into an arrangement with the National Research Council to conduct a workshop on the integration of arts and design with STEM education. The workshop shall include a discussion of—

(1) how the perspectives and experience of artists and designers may contribute to the advancement of science, engineering, and innovation, for example through the development of visualization aids for large experimental and computational data sets;

(2) how arts and design-based education experiences might support formal and informal STEM education at the pre-K–12 level, particularly in fostering creativity and risk taking, and encourage more students to pursue STEM studies, including students from groups historically underrepresented in STEM;

(3) how the teaching of design principles can be better integrated into undergraduate engineering and other STEM curricula, including in the first two years of undergraduate studies, to enhance student

capacity for creativity and innovation and improve student retention, including students from groups historically underrepresented in STEM; and

(4) what additional steps, if any, Federal science agencies should take to promote the inclusion of arts and design principles in their respective STEM programs and activities in order to improve student STEM learning outcomes, increase the recruitment and retention of students into STEM studies and careers, and increase innovation in the United States.

(c) REPORT.—Not later than 18 months after the date of enactment of this Act, the National Research Council shall submit a report to Congress providing a summary description of the discussion and findings from the workshop required under subsection (b).

SEC. 205. ENGAGING FEDERAL SCIENTISTS AND ENGINEERS IN STEM EDUCATION.

The Director of the Office of Science and Technology Policy shall develop guidance for Federal agencies to increase opportunities and training, as appropriate, for Federal scientists and engineers to participate in STEM engagement activities through their respective agencies and in their communities.

Subtitle B—Broadening Participation in STEM

SEC. 211. SHORT TITLE.

This subtitle may be cited as the ''STEM Opportunities Act of 2015''.

SEC. 212. PURPOSE.

(a) IN GENERAL.—The Director of the Office of Science and Technology Policy, acting through the Federal science agencies, shall carry out programs and activities with the purpose of ensuring that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging their entire talent pool.

(b) PURPOSES.—The purposes of this subtitle are as follows:

(1) To promote research on and increase understanding of the participation and trajectories of women and underrepresented minorities in STEM careers at institutions of higher education and Federal science agencies, including Federal laboratories.

(2) To raise awareness within Federal science agencies, including Federal laboratories, and institutions of higher education about cultural and institutional barriers limiting the recruitment, retention, promotion, and other indicators of participation and

achievement of women and underrepresented minorities in academic and Government STEM research careers at all levels.

(3) To identify, disseminate, and implement best practices at Federal science agencies, including Federal laboratories, and at institutions of higher education to remove or reduce cultural and institutional barriers limiting the recruitment, retention, and success of women and underrepresented minorities in academic and Government STEM research careers.

(4) To provide grants to institutions of higher education to recruit, retain, and advance STEM faculty members from underrepresented minority groups and to implement or expand reforms in undergraduate STEM education in order to increase the number of students from underrepresented minority groups receiving degrees in these fields.

SEC. 213. FEDERAL SCIENCE AGENCY POLICIES FOR CAREGIVERS.

(a) OSTP GUIDANCE.—Not later than 6 months after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall provide guidance to Federal science agencies to establish policies that—

(1) apply to all—

(A) intramural and extramural research awards; and

(B) primary investigators who have caregiving responsibilities, including care for a newborn or newly adopted child and care for an immediate family member who is sick or disabled; and

(2) provide—

(A) flexibility in timing for the initiation of approved research awards;

(B) no-cost extensions of research awards;

(C) grant supplements as appropriate to research awards for research technicians or equivalent to sustain research activities; and

(D) any other appropriate accommodations at the discretion of the head of each agency.

(b) UNIFORMITY OF GUIDANCE.—In providing such guidance, the Director of the Office of Science and Technology Policy shall encourage uniformity and consistency in the policies across all agencies.

(c) ESTABLISHMENT OF POLICIES.—Consistent with the guidance provided under this section, Federal science agencies shall maintain or develop and implement policies

for caregivers and shall broadly disseminate such policies to current and potential grantees.

(d) DATA ON USAGE.—Federal science agencies shall—

(1) collect data on the usage of the policies under subsection (c), by gender, at both institutions of higher education and Federal laboratories; and

(2) report such data on an annual basis to the Director of the Office of Science and Technology Policy in such form as required by the Director.

SEC. 214. COLLECTION AND REPORTING OF DATA ON FEDERAL RESEARCH GRANTS.

(a) COLLECTION OF DATA.—

(1) IN GENERAL.—Each Federal science agency shall collect standardized record-level annual information on demographics, primary field, award type, budget request, funding outcome, and awarded budget for all applications for merit-reviewed research and development grants to institutions of higher education and Federal laboratories supported by that agency.

(2) UNIFORMITY AND STANDARDIZATION.—The Director of the Office of Science and Technology Policy shall establish a policy to ensure uniformity

and standardization of the data collection required under paragraph (1).

(3) RECORD-LEVEL DATA.—

(A) REQUIREMENT.—On an annual basis, beginning with the deadline under subparagraph (C), each Federal science agency shall submit to the Director of the National Science Foundation record-level data collected under paragraph (1) in the form required by such Director.

(B) PREVIOUS DATA.—As part of the first submission under subparagraph (A), each Federal science agency, to the extent practicable, shall also submit comparable record-level data for the 5 years preceding the deadline under subparagraph (C).

(C) DEADLINE.—The deadline under this paragraph is 2 years after the date of enactment of this Act.

(b) REPORTING OF DATA.—The Director of the National Science Foundation shall publish statistical summary data collected under this section, disaggregated and cross-tabulated by race, ethnicity, gender, age, and years since completion of doctoral degree, including in conjunction with the National Science Foundation's report re-

quired by section 37 of the Science and Technology Equal Opportunities Act (42 U.S.C. 1885d; Public Law 96–516).

SEC. 215. POLICIES FOR REVIEW OF FEDERAL RESEARCH GRANTS.

(a) IN GENERAL.—The Director of the Office of Science and Technology Policy, in collaboration with the Director of the National Science Foundation, shall identify information and best practices useful for educating program officers and members of standing peer review committees at Federal science agencies about—

(1) research on implicit bias based on gender, race, or ethnicity; and

(2) methods to minimize the effect of such bias in the review of extramural and intramural Federal research grants.

(b) GUIDANCE TO ALL FEDERAL SCIENCE AGENCIES.—The Director of the Office of Science and Technology Policy shall disseminate the information and best practices identified in subsection (a) to all Federal science agencies and provide guidance as necessary on policies to implement such practices within each agency.

(c) ESTABLISHMENT OF POLICIES.—Consistent with the guidance provided in subsection (b), Federal science agencies shall maintain or develop and implement policies

and practices to minimize the effects of implicit bias in the review of extramural and intramural Federal research grants.

(d) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall report to Congress on what steps all Federal science agencies have taken to implement policies and practices to minimize the effects of bias in the review of extramural and intramural Federal research grants.

SEC. 216. COLLECTION OF DATA ON DEMOGRAPHICS OF FACULTY.

(a) COLLECTION OF DATA.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act, and at least every 5 years thereafter, the Director of the National Science Foundation shall carry out a survey to collect institution-level data on the demographics of STEM faculty, by broad fields of STEM, at different types of institutions of higher education.

(2) CONSIDERATIONS.—To the extent practicable, the Director of the National Science Foundation shall consider, by gender, race, ethnicity, citizenship status, age, and years since completion of doctoral degree—

(A) the number and percentage of faculty;

(B) the number and percentage of faculty at each rank;

(C) the number and percentage of faculty who are in nontenure-track positions, including teaching and research;

(D) the number and percentage of faculty who are reviewed for promotion, including tenure, and the percentage of that number who are promoted, including being awarded tenure;

(E) faculty years in rank;

(F) the number and percentage of faculty to leave tenure-track positions;

(G) the number and percentage of faculty hired, by rank; and

(H) the number and percentage of faculty in leadership positions.

(b) EXISTING SURVEYS.—The Director of the National Science Foundation—

(1) may carry out the requirements under subsection (a) by collaborating with statistical centers at other Federal agencies to modify or expand, as necessary, existing Federal surveys of higher education; or

(2) may award a grant or contract to an institution of higher education or other nonprofit organization to design and carry out the requirements under subsection (a).

(c) REPORTING DATA.—The Director of the National Science Foundation shall publish statistical summary data collected under this section, including as part of the National Science Foundation's report required by section 37 of the Science and Technology Equal Opportunities Act (42 U.S.C. 1885d; Public Law 96–516).

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $3,000,000 for each of fiscal years 2016 through 2018 to develop and carry out the initial survey required in subsection (a).

SEC. 217. CULTURAL AND INSTITUTIONAL BARRIERS TO EXPANDING THE ACADEMIC AND FEDERAL STEM WORKFORCE.

(a) BEST PRACTICES AT INSTITUTIONS OF HIGHER EDUCATION.—

(1) DEVELOPMENT OF GUIDANCE.—Not later than 6 months after the date of enactment of this Act, the Director of the National Science Foundation shall develop written guidance for institutions of higher education on the best practices for—

(A) conducting periodic campus culture surveys of STEM departments, with a particular focus on identifying any cultural or institutional barriers to or successful enablers for the recruitment, retention, promotion, and other indicators of participation and achievement, of women and underrepresented minorities in STEM degree programs and academic STEM careers; and

(B) providing educational opportunities, including workshops as described in subsection (c), for STEM faculty and administrators to learn about current research on implicit bias in recruitment, evaluation, and promotion of faculty in STEM and recruitment and evaluation of undergraduate and graduate students in STEM degree programs.

(2) EXISTING GUIDANCE.—In developing the guidance in paragraph (1), the Director of the National Science Foundation shall utilize guidance already developed by the National Aeronautics and Space Administration, the Department of Energy, and the Department of Education.

(3) DISSEMINATION OF GUIDANCE.—The Director of the National Science Foundation shall broadly

disseminate the guidance developed in paragraph (1) to institutions of higher education that receive Federal research funding.

(4) REPORTS TO THE NATIONAL SCIENCE FOUNDATION.—The Director of the National Science Foundation shall develop a policy that—

(A) applies to, at a minimum, the institutions classified under the Indiana University Center for Postsecondary Research Carnegie Classification on January 1, 2015, as a doctorate-granting university with a very high level of research activity; and

(B) requires each institution identified in subparagraph (A), not later than 3 years after the date of enactment of this Act, to report to the Director of the National Science Foundation on activities and policies developed and implemented based on the guidance provided in paragraph (1).

(b) BEST PRACTICES AT FEDERAL LABORATORIES.—

(1) DEVELOPMENT OF GUIDANCE.—Not later than 6 months after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall develop written guidance for Fed-

eral laboratories to develop and implement practices and policies to—

(A) conduct periodic laboratorywide culture surveys of research personnel at all levels, with a particular focus on identifying any cultural or institutional barriers to the recruitment, retention, and success of women and underrepresented minorities in STEM careers at Federal laboratories; and

(B) provide educational opportunities, including workshops as described in subsection (c), for STEM research personnel to learn about current research in implicit bias in recruitment, evaluation, and promotion of research personnel at Federal laboratories.

(2) ESTABLISHMENT OF POLICIES.—Consistent with the guidance provided in paragraph (1), Federal science agencies with Federal laboratories shall maintain or develop and implement policies for their respective Federal laboratories.

(c) WORKSHOPS TO ADDRESS CULTURAL BARRIERS TO EXPANDING THE ACADEMIC AND FEDERAL STEM WORKFORCE.—

(1) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Director

of the National Science Foundation shall recommend a uniform policy for Federal science agencies to carry out a program of workshops that educate STEM department chairs at institutions of higher education, senior managers at Federal laboratories, and other federally funded researchers about methods that minimize the effects of implicit bias in the career advancement, including hiring, tenure, promotion, and selection for any honor based in part on the recipient's research record, of academic and Federal STEM researchers.

(2) INTERAGENCY COORDINATION.—The Director of the National Science Foundation shall ensure that workshops supported under this subsection are coordinated across Federal science agencies and jointly supported as appropriate.

(3) MINIMIZING COSTS.—To the extent practicable, workshops shall be held in conjunction with national or regional STEM disciplinary meetings to minimize costs associated with participant travel.

(4) PRIORITY FIELDS FOR ACADEMIC PARTICIPANTS.—In considering the participation of STEM department chairs and other academic researchers, the Director of the National Science Foundation shall prioritize workshops for the broad fields of

STEM in which the national rate of representation of women among tenured or tenure-track faculty or non-faculty researchers at doctorate-granting institutions of higher education is less than 25 percent, according to the most recent data available from the National Center for Science and Engineering Statistics.

(5) ORGANIZATIONS ELIGIBLE TO CARRY OUT WORKSHOPS.—Federal science agencies may carry out the program of workshops under this subsection by making grants to eligible organizations. In addition to any other organizations made eligible by the Federal science agencies, the following organizations are eligible for grants under this subsection:

(A) Nonprofit scientific and professional societies and organizations that represent one or more STEM disciplines.

(B) Nonprofit organizations that have the primary mission of advancing the participation of women or underrepresented minorities in STEM.

(6) CHARACTERISTICS OF WORKSHOPS.—The workshops shall have the following characteristics:

(A) Invitees to workshops shall include at least—

(i) the chairs of departments in the relevant STEM discipline or disciplines from at least the top 50 institutions of higher education, as determined by the amount of Federal research and development funds obligated to each institution of higher education in the prior year based on data available from the National Science Foundation; and

(ii) in the case of Federal laboratories, individuals with personnel management responsibilities comparable to those of an institution of higher education department chair.

(B) Activities at the workshops shall include research presentations and interactive discussions or other activities that increase the awareness of the existence of implicit bias in recruitment, hiring, tenure review, promotion, and other forms of formal recognition of individual achievement for faculty and other federally funded STEM researchers and shall provide strategies to overcome such bias.

(C) Research presentations and other workshop programs, as appropriate, shall in-

clude a discussion of the unique challenges faced by underrepresented subgroups, including minority women, minority men, and first generation minority graduates in research.

(D) Workshop programs shall include information on best practices for mentoring undergraduate and graduate women and underrepresented minority students.

(7) DATA ON WORKSHOPS.—Any proposal for funding by an organization seeking to carry out a workshop under this subsection shall include a description of how such organization will—

(A) collect data on the rates of attendance by invitees in workshops, including information on the home institution and department of attendees, and the rank of faculty attendees;

(B) conduct attitudinal surveys on workshop attendees before and after the workshops; and

(C) collect follow-up data on any relevant institutional policy or practice changes reported by attendees not later than 1 year after attendance in such a workshop.

(8) REPORT TO NSF.—Organizations receiving funding to carry out workshops under this sub-

section shall report the data required in paragraph (7) to the Director of the National Science Foundation in such form as required by such Director.

(d) REPORT TO CONGRESS.—Not later than 4 years after the date of enactment of this Act, the Director of the National Science Foundation shall submit a report to Congress that includes—

(1) a summary and analysis of the types and frequency of activities and policies developed and carried out under subsection (a) based on the reports submitted under paragraph (4) of such subsection; and

(2) a description and evaluation of the status and effectiveness of the program of workshops required under subsection (c), including a summary of any data reported under paragraph (8) of such subsection.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $2,000,000 for each of fiscal years 2016 through 2020 to carry out this section.

SEC. 218. RESEARCH AND DISSEMINATION AT THE NATIONAL SCIENCE FOUNDATION.

(a) IN GENERAL.—The Director of the National Science Foundation shall award research grants and carry

out dissemination activities consistent with the purposes of this subtitle, including—

(1) research grants to analyze the record-level data collected under section 214 and section 216, consistent with policies to ensure the privacy of individuals identifiable by such data;

(2) research grants to study best practices for work-life accommodation;

(3) research grants to study the impact of policies and practices that are implemented under this subtitle or that are otherwise consistent with the purposes of this subtitle;

(4) collaboration with other Federal science agencies and professional associations to exchange best practices, harmonize work-life accommodation policies and practices, and overcome common barriers to work-life accommodation; and

(5) collaboration with institutions of higher education in order to clarify and catalyze the adoption of a coherent and consistent set of work-life accommodation policies and practices.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $5,000,000 for each of fiscal years 2016 through 2020 to carry out this section.

SEC. 219. REPORT TO CONGRESS.

Not later than 4 years after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall submit a report to Congress that includes—

(1) a description and evaluation of the status and usage of caregiver policies at all Federal science agencies, including any recommendations for revising or expanding such policies;

(2) a description of any significant updates to the policies for review of Federal research grants required under section 215, and any evidence of the impact of such policies on the review or awarding of Federal research grants; and

(3) a description and evaluation of the status of Federal laboratory policies and practices required under section 217(b), including any recommendations for revising or expanding such policies.

SEC. 220. NATIONAL SCIENCE FOUNDATION SUPPORT FOR INCREASING DIVERSITY AMONG STEM FACULTY AT INSTITUTIONS OF HIGHER EDUCATION.

(a) GRANTS.—The Director of the National Science Foundation shall award grants to institutions of higher education (or consortia thereof) for the development of innovative reform efforts designed to increase the recruit-

ment, retention, and advancement of individuals from underrepresented minority groups in academic STEM careers.

(b) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed, competitive basis.

(c) USE OF FUNDS.—Activities supported by grants under this section may include—

(1) institutional assessment activities, such as data analyses and policy review, in order to identify and address specific issues in the recruitment, retention, and advancement of faculty members from underrepresented minority groups;

(2) implementation of institution-wide improvements in workload distribution, such that faculty members from underrepresented minority groups are not disadvantaged in the amount of time available to focus on research, publishing papers, and engaging in other activities required to achieve tenure status and run a productive research program;

(3) development and implementation of training courses for administrators and search committee members to ensure that candidates from underrepresented minority groups are not subject to implicit biases in the search and hiring process;

(4) development and hosting of intra- or inter-institutional workshops to propagate best practices in recruiting, retaining, and advancing faculty members from underrepresented minority groups;

(5) professional development opportunities for faculty members from underrepresented minority groups;

(6) activities aimed at making undergraduate STEM students from underrepresented minority groups aware of opportunities for academic careers in STEM fields;

(7) activities to identify and engage exceptional graduate students from underrepresented minority groups at various stages of their studies and to encourage them to enter academic careers; and

(8) other activities consistent with subsection (a), as determined by the Director of the National Science Foundation.

(d) SELECTION PROCESS.—

(1) APPLICATION.—An institution of higher education (or consortia thereof) seeking funding under this section shall submit an application to the Director of the National Science Foundation at such time, in such manner, and containing such information and assurances as such Director may require.

The application shall include, at a minimum, a description of—

(A) the reform effort that is being proposed for implementation by the institution of higher education;

(B) any available evidence of specific difficulties in the recruitment, retention, and advancement of faculty members from underrepresented minority groups in STEM academic careers within the institution of higher education submitting an application, and how the proposed reform effort would address such issues;

(C) how the institution of higher education submitting an application plans to sustain the proposed reform effort beyond the duration of the grant; and

(D) how the success and effectiveness of the proposed reform effort will be evaluated and assessed in order to contribute to the national knowledge base about models for catalyzing institutional change.

(2) REVIEW OF APPLICATIONS.—In selecting grant recipients under this section, the Director of

the National Science Foundation shall consider, at a minimum—

(A) the likelihood of success in undertaking the proposed reform effort at the institution of higher education submitting the application, including the extent to which the administrators of the institution are committed to making the proposed reform effort a priority;

(B) the degree to which the proposed reform effort will contribute to change in institutional culture and policy such that greater value is placed on the recruitment, retention, and advancement of faculty members from underrepresented minority groups;

(C) the likelihood that the institution of higher education will sustain or expand the proposed reform effort beyond the period of the grant; and

(D) the degree to which evaluation and assessment plans are included in the design of the proposed reform effort.

(3) GRANT DISTRIBUTION.—The Director of the National Science Foundation shall ensure, to the extent practicable, that grants awarded under this

section are made to a variety of types of institutions of higher education.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $10,000,000 for each of fiscal years 2016 through 2020 to carry out this section.

SEC. 221. NATIONAL SCIENCE FOUNDATION SUPPORT FOR BROADENING PARTICIPATION IN UNDERGRADUATE STEM EDUCATION.

(a) GRANTS.—The Director of the National Science Foundation shall award grants to institutions of higher education (or consortia thereof) to implement or expand research-based reforms in undergraduate STEM education for the purpose of recruiting and retaining students from minority groups who are underrepresented in STEM fields, with a priority focus on natural science and engineering fields.

(b) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed, competitive basis.

(c) USE OF FUNDS.—Activities supported by grants under this section may include—

(1) implementation or expansion of innovative, research-based approaches to broaden participation

of underrepresented minority groups in STEM fields;

(2) implementation or expansion of bridge, cohort, tutoring, or mentoring programs designed to enhance the recruitment and retention of students from underrepresented minority groups in STEM fields;

(3) implementation or expansion of outreach programs linking institutions of higher education and K–12 school systems in order to heighten awareness among pre-college students from underrepresented minority groups of opportunities in college-level STEM fields and STEM careers;

(4) implementation or expansion of faculty development programs focused on improving retention of undergraduate STEM students from underrepresented minority groups;

(5) implementation or expansion of mechanisms designed to recognize and reward faculty members who demonstrate a commitment to increasing the participation of students from underrepresented minority groups in STEM fields;

(6) expansion of successful reforms aimed at increasing the number of STEM students from underrepresented minority groups beyond a single course

or group of courses to achieve reform within an entire academic unit, or expansion of successful reform efforts beyond a single academic unit to other STEM academic units within an institution of higher education;

(7) expansion of opportunities for students from underrepresented minority groups to conduct STEM research in industry, at Federal laboratories, and at international research institutions or research sites;

(8) provision of stipends for students from underrepresented minority groups participating in research;

(9) development of research collaborations between research-intensive universities and primarily undergraduate minority-serving institutions;

(10) support for graduate students and postdoctoral fellows from underrepresented minority groups to participate in instructional or assessment activities at primarily undergraduate institutions, including primarily undergraduate minority-serving institutions and two-year institutions of higher education; and

(11) other activities consistent with subsection (a), as determined by the Director of the National Science Foundation.

(d) SELECTION PROCESS.—

(1) APPLICATION.—An institution of higher education (or consortium thereof) seeking a grant under this section shall submit an application to the Director of the National Science Foundation at such time, in such manner, and containing such information and assurances as such Director may require. The application shall include, at a minimum—

(A) a description of the proposed reform effort;

(B) a description of the research findings that will serve as the basis for the proposed reform effort or, in the case of applications that propose an expansion of a previously implemented reform, a description of the previously implemented reform effort, including data about the recruitment, retention, and academic achievement of students from underrepresented minority groups;

(C) evidence of an institutional commitment to, and support for, the proposed reform effort, including a long-term commitment to implement successful strategies from the current reform beyond the academic unit or units included in the grant proposal;

(D) a description of existing or planned institutional policies and practices regarding faculty hiring, promotion, tenure, and teaching assignment that reward faculty contributions to improving the education of students from underrepresented minority groups in STEM; and

(E) how the success and effectiveness of the proposed reform effort will be evaluated and assessed in order to contribute to the national knowledge base about models for catalyzing institutional change.

(2) REVIEW OF APPLICATIONS.—In selecting grant recipients under this section, the Director of the National Science Foundation shall consider, at a minimum—

(A) the likelihood of success of the proposed reform effort at the institution submitting the application, including the extent to which the faculty, staff, and administrators of the institution are committed to making the proposed institutional reform a priority of the participating academic unit or units;

(B) the degree to which the proposed reform effort will contribute to change in institu-

tional culture and policy such that greater value is placed on faculty engagement in the retention of students from underrepresented minority groups;

(C) the likelihood that the institution will sustain or expand the proposed reform effort beyond the period of the grant; and

(D) the degree to which evaluation and assessment plans are included in the design of the proposed reform effort.

(3) PRIORITY.—For applications that include an expansion of existing reforms beyond a single academic unit, the Director of the National Science Foundation shall give priority to applications for which a senior institutional administrator, such as a dean or other administrator of equal or higher rank, serves as the principal investigator.

(4) GRANT DISTRIBUTION.—The Director of the National Science Foundation shall ensure, to the extent practicable, that grants awarded under this section are made to a variety of types of institutions of higher education, including two-year and minority-serving institutions of higher education.

(e) EDUCATION RESEARCH.—

(1) IN GENERAL.—All grants made under this section shall include an education research component that will support the design and implementation of a system for data collection and evaluation of proposed reform efforts in order to build the knowledge base on promising models for increasing recruitment and retention of students from underrepresented minority groups in STEM education at the undergraduate level across a diverse set of institutions.

(2) DISSEMINATION.—The Director of the National Science Foundation shall coordinate with relevant Federal agencies in disseminating the results of the research under this subsection to ensure that best practices in broadening participation in STEM education at the undergraduate level are made readily available to all institutions of higher education, other Federal agencies that support STEM programs, non-Federal funders of STEM education, and the general public.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director of the National Science Foundation $15,000,000 for each of fiscal years 2016 through 2020 to carry out this section.

SEC. 222. DEFINITIONS.

(a) THIS SUBTITLE.—In this subtitle:

(1) FEDERAL LABORATORY.—The term ''Federal laboratory'' has the meaning given such term in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703).

(2) FEDERAL SCIENCE AGENCY.—The term ''Federal science agency'' means any Federal agency with at least $100,000,000 in research and development expenditures in fiscal year 2014.

(3) 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)).

(4) STEM.—The term ''STEM'' means science, technology, engineering, and mathematics, including other academic subjects that build on these disciplines such as computer science.

(b) NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 2002.—Section 4 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n note) is amended—

(1) by redesignating paragraph (16) as paragraph (17); and

(2) by inserting after paragraph (15) the following new paragraph:

''(16) STEM.—The term 'STEM' means science, technology, engineering, and mathematics, including other academic subjects that build on these disciplines such as computer science.''.

TITLE III—NATIONAL SCIENCE FOUNDATION

Subtitle A—General Provisions

SEC. 301. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2016.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $7,723,550,000 for fiscal year 2016.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $6,186,300,000 shall be made available for research and related activities;

(B) $962,570,000 shall be made available for education and human resources;

(C) $200,310,000 shall be made available for major research equipment and facilities construction;

(D) $354,840,000 shall be made available for agency operations and award management;

(E) $4,370,000 shall be made available for the Office of the National Science Board, in-

cluding salaries and compensation for members of the Board and staff appointed under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863), travel and training costs for members of the Board and such staff, general and Board operating expenses, representational expenses for the Board, honorary awards made by the Board, Board reports (other than the report entitled ''Science and Engineering Indicators''), and contracts; and

(F) $15,160,000 shall be made available for the Office of Inspector General.

(b) FISCAL YEAR 2017.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $8,099,010,000 for fiscal year 2017.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $6,495,620,000 shall be made available for research and related activities;

(B) $1,010,700,000 shall be made available for education and human resources;

(C) $200,000,000 shall be made available for major research equipment and facilities construction;

(D) $372,580,000 shall be made available for agency operations and award management;

(E) $4,500,000 shall be made available for the Office of the National Science Board, including salaries and compensation for members of the Board and staff appointed under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863), travel and training costs for members of the Board and such staff, general and Board operating expenses, representational expenses for the Board, honorary awards made by the Board, Board reports (other than the report entitled ''Science and Engineering Indicators''), and contracts; and

(F) $15,610,000 shall be made available for the Office of Inspector General.

(c) FISCAL YEAR 2018.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $8,493,560,000 for fiscal year 2018.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $6,820,400,000 shall be made available for research and related activities;

(B) $1,061,230,000 shall be made available for education and human resources;

(C) $200,000,000 shall be made available for major research equipment and facilities construction;

(D) $391,210,000 shall be made available for agency operations and award management;

(E) $4,640,000 shall be made available for the Office of the National Science Board, including salaries and compensation for members of the Board and staff appointed under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863), travel and training costs for members of the Board and such staff, general and Board operating expenses, representational expenses for the Board, honorary awards made by the Board, Board reports (other than the report entitled ''Science and Engineering Indicators''), and contracts; and

(F) $16,080,000 shall be made available for the Office of Inspector General.

(d) FISCAL YEAR 2019.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $8,907,820,000 for fiscal year 2019.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $7,161,420,000 shall be made available for research and related activities;

(B) $1,114,300,000 shall be made available for education and human resources;

(C) $200,000,000 shall be made available for major research equipment and facilities construction;

(D) $410,770,000 shall be made available for agency operations and award management;

(E) $4,780,000 shall be made available for the Office of the National Science Board, including salaries and compensation for members of the Board and staff appointed under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863), travel and training costs for members of the Board and such staff, general and Board operating expenses, representational expenses for the Board, honorary awards made by the Board, Board reports (other than the report entitled ''Science and Engineering Indicators''), and contracts; and

(F) $16,570,000 shall be made available for the Office of Inspector General.

(e) FISCAL YEAR 2020.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $9,342,790,000 for fiscal year 2020.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) $7,519,490,000 shall be made available for research and related activities;

(B) $1,170,010,000 shall be made available for education and human resources;

(C) $200,000,000 shall be made available for major research equipment and facilities construction;

(D) $431,310,000 shall be made available for agency operations and award management;

(E) $4,920,000 shall be made available for the Office of the National Science Board, including salaries and compensation for members of the Board and staff appointed under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863), travel and training costs for members of the Board and such staff, general and Board operating expenses, representational expenses for the Board, honorary awards made by the Board, Board reports

(other than the report entitled ''Science and Engineering Indicators''), and contracts; and

(F) $17,060,000 shall be made available for the Office of Inspector General.

SEC. 302. FINDINGS AND SENSE OF CONGRESS ON SUPPORT FOR ALL FIELDS OF SCIENCE AND ENGINEERING.

(a) FINDINGS.—Congress finds that the Foundation's investments in social, behavioral, and economic research have addressed challenges, including—

(1) in medicine, matching organ donors to patients, leading to a dramatic growth in paired kidney transplants;

(2) in policing, implementing predictive models that help to yield significant reductions in crime;

(3) in resource allocation, developing the theories underlying the Federal Communications Commission spectrum auction, which has generated over $60,000,000,000 in revenue;

(4) in disaster preparation and recovery, identifying barriers to effective disaster evacuation strategies;

(5) in national defense, assisting United States troops in cross-cultural communication and in identifying threats; and

(6) in areas such as economics, education, cybersecurity, transportation, and national defense, supporting informed decisionmaking in foreign and domestic policy.

(b) SENSE OF CONGRESS.—It is the sense of Congress that in order to achieve its mission ''to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense'' the Foundation must continue to support unfettered, competitive, merit-reviewed basic research across all fields of science and engineering, including the social, behavioral, and economic sciences.

SEC. 303. NATIONAL SCIENCE FOUNDATION MERIT REVIEW.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) the Foundation's Intellectual Merit and Broader Impacts criteria remain appropriate for evaluating grant proposals, as concluded by the 2011 National Science Board Task Force on Merit Review;

(2) evaluating proposals on the basis of the Foundation's Intellectual Merit and Broader Impacts criteria ensures that—

(A) proposals funded by the Foundation are of high quality and advance scientific knowledge; and

(B) the Foundation's overall funding portfolio addresses societal needs through research findings or through related activities; and

(3) as evidenced by the Foundation's contributions to scientific advancement, economic development, human health, and national security, its peer review and merit review processes have successfully identified and funded scientifically and societally relevant research, remain the gold standard for the world, and must be preserved.

(b) CRITERIA.—The Foundation shall maintain the Intellectual Merit and Broader Impacts criteria as the basis for evaluating grant proposals in the merit review process.

SEC. 304. MANAGEMENT AND OVERSIGHT OF LARGE FACILITIES.

(a) LARGE FACILITIES OFFICE.—The Director shall maintain a Large Facilities Office within the Foundation. The functions of the Large Facilities Office shall be to support the research directorates in the development and implementation of major research facilities, including by—

(1) serving as the Foundation's primary resource for all policy or process issues related to the development and implementation of major research facilities;

(2) serving as a Foundation-wide resource on project management, including providing expert assistance on nonscientific and nontechnical aspects of project planning, budgeting, implementation, management, and oversight; and

(3) coordinating and collaborating with research directorates to share best management practices and lessons learned from prior projects.

(b) OVERSIGHT OF LARGE FACILITIES.—The Director shall appoint a senior agency official within the Office of the Director whose primary responsibility is oversight of major research facilities. The duties of this official shall include—

(1) oversight of the development, construction, and operation of major research facilities across the Foundation;

(2) in collaboration with the directors of the research directorates and other senior agency officials as appropriate, ensuring that the requirements of section 14(a) of the National Science Foundation Authorization Act of 2002 are satisfied;

(3) serving as a liaison to the National Science Board for approval and oversight of major research facilities; and

(4) periodically reviewing and updating as necessary Foundation policies and guidelines for the development and construction of major research facilities.

(c) POLICIES FOR COSTING LARGE FACILITIES.—

(1) IN GENERAL.—The Director shall ensure that the Foundation's policies for developing and managing major research facility construction costs are consistent with the best practices described in the March 2009 General Accountability Office Report GAO–09–3SP.

(2) REPORT.—Not later than 12 months after the date of enactment of this Act, the Director shall submit to Congress a report describing the Foundation's policies for developing and managing major research facility construction costs, including a description of any aspects of the policies that diverge from the best practices recommended in General Accountability Office Report GAO–09–3SP.

SEC. 305. SUPPORT FOR POTENTIALLY TRANSFORMATIVE RESEARCH.

(a) IN GENERAL.—The Director shall establish and periodically update grant solicitation, merit review, and funding policies and mechanisms designed to identify and provide support for high-risk, high-reward basic research proposals.

(b) POLICIES AND MECHANISMS.—Such policies and mechanisms may include—

(1) development of solicitations specifically for high-risk, high-reward basic research;

(2) establishment of review panels for the primary purpose of selecting high-risk, high-reward proposals;

(3) development of guidance to standard review panels to encourage the identification and consideration of high-risk, high-reward proposals; and

(4) support for workshops and other conferences with the primary purpose of identifying new opportunities for high-risk, high-reward basic research, especially at interdisciplinary interfaces.

(c) DEFINITION.—For purposes of this section, the term ''high-risk, high-reward basic research'' means research driven by ideas that have the potential to radically change our understanding of an important existing scientific or engineering concept, or leading to the creation

of a new paradigm or field of science or engineering, and that is characterized by its challenge to current understanding or its pathway to new frontiers.

SEC. 306. STRENGTHENING INSTITUTIONAL RESEARCH PARTNERSHIPS.

(a) IN GENERAL.—For any Foundation research grant, in an amount greater than $5,000,000, to be carried out through a partnership that includes one or more minority-serving institutions or predominantly undergraduate institutions and one or more institutions described in subsection (b), the Director shall award funds directly, according to the budget justification described in the grant proposal, to at least two of the institutions of higher education in the partnership, including at least one minority-serving institution or one predominantly undergraduate institution, to ensure a strong and equitable partnership.

(b) INSTITUTIONS.—The institutions referred to in subsection (a) are institutions of higher education that are among the 100 institutions receiving, over the 3-year period immediately preceding the awarding of grants, the highest amount of research funding from the Foundation.

(c) REPORT.—Not later than 2 years after the date of enactment of this Act, the Director shall provide a report to Congress on institutional research partnerships

identified in subsection (a) funded in the 2 previous fiscal years and make any recommendations for how such partnerships can continue to be strengthened.

SEC. 307. INNOVATION CORPS.

(a) SENSE OF CONGRESS.—It is the sense of Congress that—

(1) the National Science Foundation's Innovation Corps (I–Corps) was established to foster a national innovation ecosystem by encouraging institutions, scientists, engineers, and entrepreneurs to identify and explore the innovation and commercial potential of Foundation-funded research well beyond the laboratory;

(2) the Foundation's I–Corps includes investments in entrepreneurship and commercialization education, training, and mentoring, ultimately leading to the practical deployment of technologies, products, processes, and services that improve the Nation's competitiveness, promote economic growth, and benefit society; and

(3) by building networks of entrepreneurs, educators, mentors, institutions, and collaborations, and supporting specialized education and training, I–Corps is at the leading edge of a strong, lasting foundation for an American innovation ecosystem.

(b) PROGRAM.—

(1) IN GENERAL.—The Director shall carry out a program to award grants for entrepreneurship and commercialization education to Foundation-funded researchers to increase the economic and social impact of federally funded research.

(2) PURPOSES.—The purpose of the program shall be to increase the capacity of STEM researchers and students to successfully engage in entrepreneurial activities and to help transition the results of federally funded research into the marketplace by—

(A) identifying STEM research that can lead to the practical deployment of technologies, products, processes, and services that improve the Nation's economic competitiveness;

(B) bringing STEM researchers and students together with entrepreneurs, venture capitalists, and other industry representatives experienced in commercialization of new technologies;

(C) supporting entrepreneurship and commercialization education and training for faculty, students, postdoctoral fellows, and other STEM researchers; and

(D) promoting the development of regional and national networks of entrepreneurs, venture capitalists, and other industry representatives who can serve as mentors to researchers and students at Foundation-funded institutions across the country.

(3) ADDITIONAL USE OF FUNDS.—Grants awarded under this subsection may be used to help support—

(A) prototype and proof-of-concept development for the funded project; and

(B) additional activities needed to build a national infrastructure for STEM entrepreneurship.

(4) OTHER FEDERAL AGENCIES.—The Director may establish agreements with other Federal agencies that fund scientific research to make researchers funded by those agencies eligible to participate in the Foundation's Innovation Corps program.

SEC. 308. DEFINITIONS.

For purposes of this title:

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

(2) FOUNDATION.—The term ''Foundation'' means the National Science Foundation.

(3) 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)).

(4) STEM.—The term ''STEM'' means science, technology, engineering, and mathematics, including other academic subjects that build on these disciplines such as computer science.

Subtitle B—STEM Education

SEC. 321. NATIONAL SCIENCE BOARD REPORT ON CONSOLIDATION OF STEM EDUCATION ACTIVITIES AT THE FOUNDATION.

(a) IN GENERAL.—The National Science Board shall review and evaluate the appropriateness of the Foundation's portfolio of STEM education programs and activities at the pre-K–12 and undergraduate levels, including informal education, taking into account the mission of the Foundation and the 2013 Federal STEM Education 5-Year Strategic Plan.

(b) REPORT.—Not later than 1 year after the date of enactment of this Act, the National Science Board shall submit to Congress a report summarizing their findings and including—

(1) an analysis of how well the Foundation's portfolio of STEM education programs is contributing to the mission of the Foundation;

(2) an analysis of how well STEM education programs and activities are coordinated and best practices are shared across the Foundation;

(3) an analysis of how well the Foundation's portfolio of STEM education programs is aligned with and contributes to priority STEM education investment areas described in the 2013 Federal STEM Education 5-Year Strategic Plan;

(4) any Board recommendations regarding internal reorganization, including consolidation, of the Foundation's STEM education programs and activities, taking into account both the mission of the Foundation and the 2013 Federal STEM Education 5-Year Strategic Plan;

(5) any Board recommendations regarding the Foundation's role in helping to implement the Federal STEM Education 5-Year Strategic Plan, including opportunities for the Foundation to more effectively partner and collaborate with other Federal agencies; and

(6) any additional Board recommendations regarding specific management, policy, budget, or

other steps the Foundation should take to increase effectiveness and accountability across its portfolio of STEM education programs and activities.

SEC. 322. MODELS FOR GRADUATE STUDENT SUPPORT.

(a) IN GENERAL.—The Director shall enter into an agreement with the National Research Council to convene a workshop or roundtable to examine models of Federal support for STEM graduate students, including the Foundation's Graduate Research Fellowship program and comparable fellowship programs at other agencies, traineeship programs, and the research assistant model.

(b) PURPOSE.—The purpose of the workshop or roundtable shall be to compare and evaluate the extent to which each of these models helps to prepare graduate students for diverse careers utilizing STEM degrees, including at diverse types of institutions of higher education, in industry, and at government agencies and research laboratories, and to make recommendations regarding—

(1) how current Federal programs and models, including programs and models at the Foundation, can be improved;

(2) the appropriateness of the current distribution of funding among the different models at the Foundation and across the agencies; and

(3) the appropriateness of creating a new education and training program for graduate students distinct from programs that provide direct financial support, including the grants authorized in section 527 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–15).

(c) CRITERIA.—At a minimum, in comparing programs and models, the workshop or roundtable participants shall consider the capacity of such programs or models to provide students with knowledge and skills—

(1) to become independent, creative, successful researchers;

(2) to participate in large interdisciplinary research projects, including in an international context;

(3) to adhere to the highest standards for research ethics;

(4) to become high-quality teachers utilizing the most currently available evidence-based pedagogy;

(5) in oral and written communication, to both technical and nontechnical audiences;

(6) in innovation, entrepreneurship, and business ethics; and

(7) in program management.

(d) GRADUATE STUDENT INPUT.—The participants in the workshop or roundtable shall include current or recent STEM graduate students.

(e) REPORT.—Not later than 1 year after the date of enactment of this Act, the National Research Council shall submit to Congress a summary report of the findings and recommendations of the workshop or roundtable convened under this section.

SEC. 323. UNDERGRADUATE STEM EDUCATION REFORM.

Section 17 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–6) is amended to read as follows:

"SEC. 17. UNDERGRADUATE STEM EDUCATION REFORM.

''(a) IN GENERAL.—The Director, through the Directorate for Education and Human Resources, shall award grants, on a competitive, merit-reviewed basis, to institutions of higher education (or to consortia thereof) and to other eligible nonprofit organizations to reform undergraduate STEM education for the purpose of increasing the number and quality of students studying toward and completing baccalaureate degrees in STEM and improving the STEM learning outcomes for all undergraduate students.

''(b) INTERDIRECTORATE WORKING GROUP ON UNDERGRADUATE STEM EDUCATION.—In carrying out the

requirements of this section, the Directorate for Education and Human Resources shall collaborate and coordinate with the Research Directorates, including through the establishment of an interdirectorate working group on undergraduate STEM education reform, in order to identify and implement new and expanded opportunities for collaboration between STEM disciplinary researchers and education researchers on the reform of undergraduate STEM education.

''(c) GRANTS.—Research and development supported by grants under this section may encompass a single discipline, multiple disciplines, or interdisciplinary education at the undergraduate level, and may include—

''(1) research foundational to the improvement of teaching, learning, and retention;

''(2) development, implementation, and assessment of innovative, research-based approaches to transforming teaching, learning, and retention; and

''(3) scaling of successful efforts on learning and learning environments, broadening participation, workforce preparation, employing emerging technologies, or other reforms in STEM education, including expansion of successful STEM reform efforts beyond a single course or group of courses to achieve reform within an entire academic unit, or ex-

pansion of successful reform efforts beyond a single academic unit to other STEM academic units within an institution or to comparable academic units at other institutions.

''(d) SELECTION PROCESS.—

''(1) APPLICATIONS.—An institution of higher education or other eligible nonprofit organization seeking a grant under this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. In addition to a description of the proposed research, development, or scaling effort, including a description of the research findings that will serve as the basis for the proposed effort, applications shall include, at a minimum—

''(A) evidence of institutional support for, and commitment to, the proposed effort, including long-term commitment to implement and scale successful strategies resulting from the current effort;

''(B) a description of existing or planned institutional policies and practices regarding faculty hiring, promotion, tenure, and teaching assignment that reward faculty contributions to undergraduate STEM education; and

''(C) a description of the plans for assessment and evaluation of the effort, including evidence of participation by individuals with experience in assessment and evaluation of teaching and learning programs.

''(2) REVIEW OF APPLICATIONS.—In selecting grant recipients for funding under this section, the Director shall consider, as appropriate to the scale of the proposed effort—

''(A) the likelihood of success in undertaking the proposed effort at the institution submitting the application, including the extent to which the faculty, staff, and administrators of the institution are committed to making undergraduate STEM education reform a priority of the participating academic unit or units;

''(B) the degree to which the proposed effort will contribute to change in institutional culture and policy such that a greater value is placed on faculty engagement in undergraduate education;

''(C) the likelihood that the institution will sustain or expand the effort beyond the period of the grant; and

''(D) the degree to which the proposed effort will contribute to the systematic accumulation of knowledge on STEM education.

''(3) PRIORITY.—The Director shall give priority to proposals focused on the first 2 years of undergraduate education, including STEM education at 2-year institutions of higher education.

''(4) GRANT DISTRIBUTION.—The Director shall ensure, to the extent practicable, that grants awarded under this section are made to a variety of types of institutions of higher education.''.

SEC. 324. ADVANCED MANUFACTURING EDUCATION.

Section 506(b) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–1(b)) is amended to read as follows:

''(b) ADVANCED MANUFACTURING EDUCATION.—The Director shall award grants, on a competitive, merit reviewed basis, to community colleges for the development and implementation of innovative advanced manufacturing education reforms to ensure an adequate and well-trained advanced manufacturing workforce. Activities supported by grants under this subsection may include—

''(1) the development or expansion of educational materials, courses, curricula, strategies, and methods that will lead to improved advanced manu-

facturing degree or certification programs, including the integration of industry standards and workplace competencies into the curriculum;

''(2) the development and implementation of faculty professional development programs that enhance a faculty member's capabilities and teaching skills in advanced manufacturing, including efforts to understand current advanced manufacturing technologies and practices;

''(3) the establishment of centers that provide models and leadership in advanced manufacturing education and serve as regional or national clearinghouses for educational materials and methods, including in rural areas;

''(4) activities to enhance the recruitment and retention of students into certification and degree programs in advanced manufacturing, including the provision of improved mentoring and internship opportunities;

''(5) the establishment of partnerships with private sector entities to ensure the development of an advanced manufacturing workforce with the skills necessary to meet regional economic needs; and

''(6) other activities as determined appropriate by the Director.''.

SEC. 325. STEM EDUCATION PARTNERSHIPS.

Section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n) is amended—

(1) in the section heading, by striking ''**MATHEMATICS AND SCIENCE**'' and inserting ''**STEM**'';

(2) by striking ''mathematics and science'' each place it appears in subsections (a) and (b) and inserting ''STEM'';

(3) by striking ''mathematics or science'' each place it appears in subsection (a)(3) and (4)(A) and inserting ''STEM'';

(4) by striking ''mathematics, science, or engineering'' in subsection (a)(2)(B) and inserting ''STEM'';

(5) by striking ''mathematics, science, and technology'' in subsection (a)(3)(B)(ii)(II) and (8) and inserting ''STEM'';

(6) by striking ''professional mathematicians, scientists, and engineers'' in subsection (a)(3)(F) and inserting ''STEM professionals'';

(7) by striking ''mathematicians, scientists, and engineers'' in subsection (a)(3)(J) and (M) and inserting ''STEM professionals'';

(8) by striking ''scientists, technologists, engineers, or mathematicians'' in subsection (a)(8) and inserting ''STEM professionals'';

(9) by striking ''science, technology, engineering, and mathematics'' each place it appears in subsection (a)(3)(K) and (10) and inserting ''STEM'';

(10) by striking ''science, technology, engineering, or mathematics'' in subsection (a)(10)(A)(ii)(II) and inserting ''STEM'';

(11) by striking ''science, mathematics, engineering, and technology'' each place it appears in subsection (a)(5) and inserting ''STEM'';

(12) by striking ''science, mathematics, engineering, or technology'' in subsection (a)(5) and inserting ''STEM'';

(13) by striking ''mathematics, science, engineering, and technology'' in subsection (b)(1) and (2) and inserting ''STEM''; and

(14) by striking subsection (d).

SEC. 326. NOYCE SCHOLARSHIP PROGRAM AMENDMENTS.

Section 10A of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1a) is amended—

(1) in subsection (a)(2)(B), by inserting ''or bachelor's'' after ''master's'';

(2) in subsection (c)—

(A) by striking ''and'' at the end of paragraph (2)(B);

(B) in paragraph (3), by—

(i) inserting ''for teachers with master's degrees in their field'' after ''Teaching Fellowships''; and

(ii) by striking the period at the end of subparagraph (B) and inserting ''; and''; and

(C) by adding at the end the following new paragraph:

''(4) in the case of National Science Foundation Master Teaching Fellowships for teachers with bachelor's degrees in their field—

''(A) offering academic courses leading to a master's degree and leadership training to prepare individuals to become master teachers in elementary and secondary schools; and

''(B) offering programs both during and after matriculation in the program for which the fellowship is received to enable fellows to become highly effective mathematics and science teachers, including mentoring, training, induction, and professional development activities, to fulfill the service requirements of this section, including the requirements of sub-

section (e), and to exchange ideas with others in their fields.'';

(3) in subsection (e), by striking ''subsection (g)'' and inserting ''subsection (h)''; and

(4) by adding after subsection (f) the following new subsection:

''(g) SUPPORT FOR MASTER TEACHING FELLOWS WHILE ENROLLED IN A MASTER'S DEGREE PROGRAM.—A National Science Foundation Master Teacher Fellow may receive a maximum of 1 year of fellowship support while enrolled in a master's degree program as described in subsection (c)(4)(A), except that if such fellow is enrolled in a part-time program, such amount shall be prorated according to the length of the program.''.

SEC. 327. INFORMAL STEM EDUCATION.

(a) GRANTS.—The Director, through the Directorate for Education and Human Resources, shall continue to award competitive, merit-reviewed grants to support—

(1) research and development of innovative out-of-school STEM learning and emerging STEM learning environments in order to improve STEM learning outcomes and engagement in STEM; and

(2) research that advances the field of informal STEM education.

(b) USES OF FUNDS.—Activities supported by grants under this section may encompass a single STEM discipline, multiple STEM disciplines, or integrative STEM initiatives and shall include—

(1) research and development that improves our understanding of learning and engagement in informal environments, including the role of informal environments in broadening participation in STEM; and

(2) design and testing of innovative STEM learning models, programs, and other resources for informal learning environments to improve STEM learning outcomes and increase engagement for K–12 students, K–12 teachers, and the general public, including design and testing of the scalability of models, programs, and other resources.

SEC. 328. RESEARCH AND DEVELOPMENT TO SUPPORT IMPROVED K–12 LEARNING.

(a) IN GENERAL.—The Director, acting through the Directorate for Education and Human Resources, shall award competitive, merit-reviewed grants to support research and development on alignment, implementation, impact, and ongoing improvement of standards and equivalent learning expectations used by States in mathematics,

science, and, as appropriate, other State-based STEM standards.

(b) RESEARCH AREAS.—In making awards under this section, the Director shall consider proposals for research and development, including, as appropriate, large-scale research and development, of—

(1) resources, including virtual resources such as web portals, for content, professional development, and research results;

(2) teacher education and professional development;

(3) learning progressions;

(4) assessments;

(5) metrics for evaluating the impact of standards; and

(6) other areas of research and development that are likely to contribute to the alignment, implementation, impact, and ongoing improvement of standards in STEM subjects.

TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

SEC. 401. SHORT TITLE.

This title may be cited as the ''National Institute of Standards and Technology Authorization Act of 2015''.

SEC. 402. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2016.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,119,700,000 for the National Institute of Standards and Technology for fiscal year 2016.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized by paragraph (1)—

(A) $754,700,000 shall be authorized for scientific and technical research and services laboratory activities;

(B) $59,000,000 shall be authorized for the construction and maintenance of facilities; and

(C) $306,000,000 shall be authorized for industrial technology services activities, of which—

(i) $141,000,000 shall be authorized for the Hollings Manufacturing Extension Partnership under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) and the program under section 26 of such Act (15 U.S.C. 278l), of which not more than $20,000,000 shall be for the competitive

grant program under section 25(f) of such Act; and

(ii) $150,000,000 shall be authorized for the Network for Manufacturing Innovation Program established under section 34 of such Act (15 U.S.C. 278s).

(b) FISCAL YEAR 2017.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,484,390,000 for the National Institute of Standards and Technology for fiscal year 2017.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized by paragraph (1)—

(A) $792,440,000 shall be authorized for scientific and technical research and services laboratory activities;

(B) $61,950,000 shall be authorized for the construction and maintenance of facilities; and

(C) $320,000,000 shall be authorized for industrial technology services activities, of which—

(i) $160,000,000 shall be authorized for the Hollings Manufacturing Extension Partnership under section 25 of the Na-

tional Institute of Standards and Technology Act (15 U.S.C. 278k) and the program under section 26 of such Act (15 U.S.C. 278l), of which not more than $20,000,000 shall be for the competitive grant program under section 25(f) of such Act; and

(ii) $150,000,000 shall be authorized for the Network for Manufacturing Innovation Program established under section 34 of such Act (15 U.S.C. 278s).

(c) FISCAL YEAR 2018.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,517,100,000 for the National Institute of Standards and Technology for fiscal year 2018.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized by paragraph (1)—

(A) $832,060,000 shall be authorized for scientific and technical research and services laboratory activities;

(B) $65,050,000 shall be authorized for the construction and maintenance of facilities; and

(C) $310,000,000 shall be authorized for industrial technology services activities, of which—

(i) $160,000,000 shall be authorized for the Hollings Manufacturing Extension Partnership under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) and the program under section 26 of such Act (15 U.S.C. 278l), of which not more than $20,000,000 shall be for the competitive grant program under section 25(f) of such Act; and

(ii) $150,000,000 shall be authorized for the Network for Manufacturing Innovation Program established under section 34 of such Act (15 U.S.C. 278s).

(d) FISCAL YEAR 2019.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,561,960,000 for the National Institute of Standards and Technology for fiscal year 2019.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized by paragraph (1)—

(A) $873,660,000 shall be authorized for scientific and technical research and services laboratory activities;

(B) $68,300,000 shall be authorized for the construction and maintenance of facilities; and

(C) $310,000,000 shall be authorized for industrial technology services activities, of which—

(i) $160,000,000 shall be authorized for the Hollings Manufacturing Extension Partnership under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) and the program under section 26 of such Act (15 U.S.C. 278l), of which not more than $20,000,000 shall be for the competitive grant program under section 25(f) of such Act; and

(ii) $150,000,000 shall be authorized for the Network for Manufacturing Innovation Program established under section 34 of such Act (15 U.S.C. 278s).

(e) FISCAL YEAR 2020.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,609,060,000 for the National Institute of Standards and Technology for fiscal year 2020.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized by paragraph (1)—

(A) $917,340,000 shall be authorized for scientific and technical research and services laboratory activities;

(B) $71,710,000 shall be authorized for the construction and maintenance of facilities; and

(C) $310,000,000 shall be authorized for industrial technology services activities, of which—

(i) $160,000,000 shall be authorized for the Hollings Manufacturing Extension Partnership under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) and the program under section 26 of such Act (15 U.S.C. 278l), of which not more than $20,000,000 shall be for the competitive grant program under section 25(f) of such Act; and

(ii) $150,000,000 shall be authorized for the Network for Manufacturing Innovation Program established under section 34 of such Act (15 U.S.C. 278s).

SEC. 403. HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.

Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended to read as follows:

"SEC. 25. HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.

''(a) ESTABLISHMENT AND PURPOSE.—

''(1) IN GENERAL.—The Secretary, through the Director shall provide assistance for the creation and support of regional manufacturing extension centers for the transfer of manufacturing technology and best business practices. These centers shall be known as the 'Hollings Manufacturing Extension Centers' (in this Act referred to as the 'Centers'). The program under this section shall be known as the 'Hollings Manufacturing Extension Partnership'.

''(2) AFFILIATIONS.—Such Centers shall be affiliated with any United States-based public or nonprofit institution or organization, or group thereof,

that applies for and is awarded financial assistance under this section.

''(3) OBJECTIVE.—The objective of the program is to enhance productivity, competitiveness, and technological performance in United States manufacturing through—

''(A) the transfer of manufacturing technology and techniques to Centers and, through them, to manufacturing companies throughout the United States;

''(B) the participation of individuals from industry, institutions of higher education, State governments, other Federal agencies, and, when appropriate, the Institute in cooperative technology transfer activities;

''(C) efforts to make new manufacturing technology and processes usable by United States-based small- and medium-sized companies;

''(D) the active dissemination of scientific, engineering, technical, and management information about manufacturing to industrial firms, including small- and medium-sized manufacturing companies;

''(E) the development of new partnerships, networks, and services that will assist small- and medium-sized manufacturing companies expand into new markets, including global markets;

''(F) the utilization, when appropriate, of the expertise and capability that exists in Federal laboratories other than the Institute; and

''(G) the provision to community colleges and area career and technical education schools of information about the job skills needed in small- and medium-sized manufacturing businesses in the regions they serve.

''(b) ACTIVITIES.—The activities of the Centers shall include—

''(1) the establishment of automated manufacturing systems and other advanced production technologies, based on research by the Institute and other entities, for the purpose of demonstrations and technology transfer;

''(2) assistance to Federal agencies in supporting United States-based manufacturing by identifying and providing technical assistance to small- and medium-sized manufacturers to help them meet Federal agency procurement and acquisition needs;

''(3) the active transfer and dissemination of research findings and Center expertise to a wide range of companies and enterprises, particularly small- and medium-sized manufacturers; and

''(4) the facilitation of collaborations and partnerships between small- and medium-sized manufacturing companies and community colleges and area career and technical education schools to help such colleges and schools better understand the specific needs of manufacturers and to help manufacturers better understand the skill sets that students learn in the programs offered by such colleges and schools.

''(c) FINANCIAL ASSISTANCE AND REQUIREMENTS.—

''(1) FINANCIAL SUPPORT.—The Secretary may provide financial support to any Center created under subsection (a) for an initial period of 5 years, which may be renewed for an additional 5-year period. The Secretary may provide to a Center up to 50 percent of the capital and annual operating and maintenance funds required to create and maintain such Center.

''(2) REGULATIONS.—The Secretary shall implement, review, and update the sections of the Code

of Federal Regulations related to this section at least once every 5 years.

''(3) APPLICATION.—

''(A) IN GENERAL.—Any public or nonprofit institution, or consortium thereof, may submit to the Secretary an application for financial support under this section, in accordance with the procedures established by the Secretary.

''(B) COST-SHARING.—In order to receive assistance under this section, an applicant for financial assistance under subparagraph (A) shall provide adequate assurances that non-Federal assets obtained from the applicant and the applicant's partnering organizations will be used as a funding source to meet not less than 50 percent of the costs incurred. For purposes of the preceding sentence, the costs incurred means the costs incurred in connection with the activities undertaken to improve the management, productivity, competitiveness, and technological performance of small- and medium-sized manufacturing companies.

''(C) AGREEMENTS WITH OTHER ENTITIES.—In meeting the 50-percent requirement,

it is anticipated that a Center will enter into agreements with other entities such as private industry, institutions of higher education, and State governments to accomplish programmatic objectives and access new and existing resources that will further the impact of the Federal investment made on behalf of small- and medium-sized manufacturing companies.

''(D) LEGAL RIGHTS.—Each applicant under subparagraph (A) shall submit a proposal for the allocation of the legal rights associated with any invention that may result from the proposed Center's activities.

''(4) MERIT REVIEW.—The Secretary shall subject each such application to merit review. In making a decision whether to approve such application and provide financial support under this section, the Secretary shall consider, at a minimum, the following:

''(A) The merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors.

''(B) The quality of service to be provided.

''(C) Geographical diversity and extent of service area.

''(D) The percentage of funding and amount of in-kind commitment from other sources.

''(5) EVALUATION.—

''(A) IN GENERAL.—Each Center that receives financial assistance under this section shall be evaluated during its third year of operation by an evaluation panel appointed by the Secretary.

''(B) COMPOSITION.—Each such evaluation panel shall be composed of independent experts, none of whom shall be connected with the involved Center, and Federal officials.

''(C) CHAIR.—An official of the Institute shall chair the panel.

''(D) PERFORMANCE MEASUREMENT.—Each evaluation panel shall measure the involved Center's performance against the objectives specified in this section.

''(E) POSITIVE EVALUATION.—If the evaluation is positive, the Secretary may provide continued funding through the fifth year.

''(F) CORRECTIVE ACTION PLAN.—The Secretary may not provide funding for the remaining years of a Center's operation unless the evaluation is positive. A Center that has not received a positive evaluation by the evaluation panel shall be notified by the panel of the deficiencies in its performance and shall be placed on a corrective action plan and provided the opportunity to address deficiencies unless immediate action is necessary to protect the public interest. The program shall re-evaluate the Center within one year and if the Center has not addressed the deficiencies identified by the panel, or shown a significant improvement in its performance, the Director shall conduct a new competition or may close the Center.

''(G) ADDITIONAL FINANCIAL SUPPORT.—After the fifth year, a Center may receive additional financial support under this section if it has received a positive evaluation through an independent review, under procedures established by the Institute.

''(H) RECOMPETITION.—If a Center has received financial support for 10 consecutive years, the Director shall conduct a new com-

petition. An existing Center may submit an application as part of the new competition.

''(I) RECOMPETITION PLAN.—Not later than 180 days after the date of enactment of the America Competes Reauthorization Act of 2015, the Director shall submit a plan to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate detailing how the program will implement the new competitions required under subparagraph (H). The Director shall consult with the MEP Advisory Board established under subsection (f) in the development and implementation of the plan.

''(6) OVERSIGHT BOARD.—

''(A) IN GENERAL.—Each Center that receives financial assistance under this section shall establish an oversight board that is broadly representative of regional stakeholders with a majority of board members drawn from local small- and medium-sized manufacturing firms.

''(B) BYLAWS AND CONFLICT OF INTEREST.—Each board under subparagraph (A) shall adopt and submit to the Director bylaws

to govern the operation of the board, including a conflict of interest policy to ensure relevant relationships are disclosed and proper recusal procedures are in place.

''(C) LIMITATION.—Board members may not serve simultaneously on more than one Center's oversight board or serve as a contractor providing services to a Center.

''(7) PROTECTION OF CONFIDENTIAL INFORMATION.—The Secretary shall ensure that the following are not publically disclosed:

''(A) Confidential information on the business operations of—

''(i) a participant under the program; or

''(ii) a client of a Center.

''(B) Trade secrets possessed by any client of a Center.

''(8) PATENT RIGHTS.—The provisions of chapter 18 of title 35, United States Code, shall apply, to the extent not inconsistent with this section, to the promotion of technology from research by Centers under this section except for contracts for such specific technology extension or transfer services as may be specified by statute or by the Director.

''(d) REPORTING AND AUDITING REQUIREMENTS.—The Director shall establish procedures regarding Center financial reporting and auditing to ensure that awards are used for the purposes specified in this section and are in accordance with sound accounting practices.

''(e) ACCEPTANCE OF FUNDS.—

''(1) IN GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Hollings Manufacturing Extension Partnership, the Secretary and Director also may accept funds from other Federal departments and agencies and, under section 2(c)(7), from the private sector for the purpose of strengthening United States manufacturing.

''(2) ALLOCATION OF FUNDS.—

''(A) FUNDS ACCEPTED FROM OTHER FEDERAL DEPARTMENTS OR AGENCIES.—The Director shall determine whether funds accepted from other Federal departments or agencies shall be counted in the calculation of the Federal share of capital and annual operating and maintenance costs under subsection (c).

''(B) FUNDS ACCEPTED FROM THE PRIVATE SECTOR.—Funds accepted from the private sector under section 2(c)(7), if allocated to

a Center, may not be considered in the calculation of the Federal share under subsection (c) of this section.

''(f) MEP ADVISORY BOARD.—

''(1) ESTABLISHMENT.—There is established within the Institute a Manufacturing Extension Partnership Advisory Board (in this subsection referred to as the 'MEP Advisory Board').

''(2) MEMBERSHIP.—

''(A) IN GENERAL.—The MEP Advisory Board shall consist of not fewer than 10 members broadly representative of stakeholders, to be appointed by the Director. At least 2 members shall be employed by or on an advisory board for the Centers, at least 1 member shall represent a community college, and at least 5 other members shall be from United States small businesses in the manufacturing sector. No member shall be an employee of the Federal Government.

''(B) TERM.—Except as provided in subparagraph (C) or (D), the term of office of each member of the MEP Advisory Board shall be 3 years.

''(C) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

''(D) SERVING CONSECUTIVE TERMS.—Any person who has completed two consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the one-year period following the expiration of the second such term.

''(3) MEETINGS.—The MEP Advisory Board shall meet not less than 2 times annually and shall provide to the Director—

''(A) advice on Hollings Manufacturing Extension Partnership programs, plans, and policies;

''(B) assessments of the soundness of Hollings Manufacturing Extension Partnership plans and strategies; and

''(C) assessments of current performance against Hollings Manufacturing Extension Partnership program plans.

''(4) FEDERAL ADVISORY COMMITTEE ACT APPLICABILITY.—

"(A) IN GENERAL.—In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.

"(B) EXCEPTION.—Section 14 of the Federal Advisory Committee Act shall not apply to the MEP Advisory Board.

"(5) REPORT.—The MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to Congress within 30 days after the submission to Congress of the President's annual budget request in each year. Such report shall address the status of the program established pursuant to this section and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23.

"(g) COMPETITIVE GRANT PROGRAM.—

"(1) ESTABLISHMENT.—The Director shall establish, within the Hollings Manufacturing Extension Partnership, a program of competitive awards among participants described in paragraph (2) for the purposes described in paragraph (3).

''(2) PARTICIPANTS.—Participants receiving awards under this subsection shall be the Centers, or a consortium of such Centers.

''(3) PURPOSE.—The purpose of the program under this subsection is to add capabilities to the Hollings Manufacturing Extension Partnership, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership, the MEP Advisory Board, and small- and medium-sized manufacturers.

''(4) THEMES.—One or more themes for the competition may be identified, which may vary from year to year, depending on the needs of manufacturers and the success of previous competitions. These themes may include—

''(A) supply chain integration and quality management;

''(B) the creation of partnerships to encourage the development of a workforce with the skills necessary to meet the needs of a region, including the creation of apprenticeship opportunities and the adoption of universally recognized credential programs, as appropriate;

''(C) energy efficiency, including efficient building technologies and environmentally friendly materials, products, and processes;

''(D) enhancing the competitiveness of small- and medium-sized manufacturers in the global marketplace;

''(E) the transfer of technology based on the technological needs of manufacturers and available technologies from institutions of higher education, laboratories, and other technology producing entities; and

''(F) areas that extend beyond traditional areas of manufacturing extension activities, including projects related to construction industry modernization.

''(5) REIMBURSEMENT.—Centers may be reimbursed for costs incurred under the program under this subsection.

''(6) APPLICATIONS.—Applications for awards under this subsection shall be submitted in such manner, at such time, and containing such information as the Director shall require, in consultation with the MEP Advisory Board.

''(7) SELECTION.—Awards under this subsection shall be peer reviewed and competitively

awarded. The Director shall endeavor to have broad geographic diversity among selected proposals. The Director shall select proposals to receive awards that will—

''(A) utilize innovative or collaborative approaches to solving the problem described in the competition;

''(B) improve the competitiveness of industries in the region in which the Center or Centers are located; and

''(C) contribute to the long-term economic stability of that region, including the creation of jobs or training employees.

''(8) PROGRAM CONTRIBUTION.—Recipients of awards under this subsection shall not be required to provide a matching contribution.

''(9) DURATION.—Awards under this subsection shall last no longer than 5 years.

''(h) INNOVATIVE SERVICES INITIATIVE.—

''(1) ESTABLISHMENT.—The Director, in coordination with the Advanced Manufacturing Office of the Department of Energy, shall establish, within the Hollings Manufacturing Extension Partnership, an innovative services initiative to assist small- and medium-sized manufacturers in—

''(A) reducing their energy usage, greenhouse gas emissions, and environmental waste to improve profitability;

''(B) accelerating the domestic commercialization of new product technologies, including components for renewable energy and energy efficiency systems; and

''(C) identifying and diversifying to new markets, including support for transitioning to the production of components for renewable energy and energy efficiency systems.

''(2) MARKET DEMAND.—The Director may not undertake any activity to accelerate the domestic commercialization of a new product technology under this subsection unless an analysis of market demand for the new product technology has been conducted.

''(i) EXPORT ASSISTANCE TO SMALL- AND MEDIUM-SIZED MANUFACTURERS.—

''(1) IN GENERAL.—The Director shall—

''(A) evaluate obstacles that are unique to small- and medium-sized manufacturers that prevent such manufacturers from effectively competing in the global market;

''(B) implement a comprehensive export assistance initiative through the Centers to help small- and medium-sized manufacturers address such obstacles; and

''(C) to the maximum extent practicable, ensure that the activities carried out under this subsection are coordinated with, and do not duplicate the efforts of, other export assistance programs within the Federal Government.

''(2) REQUIREMENTS.—The initiative shall include—

''(A) export assistance counseling;

''(B) the development of partnerships that will provide small- and medium-sized manufacturers with greater access to and knowledge of global markets; and

''(C) improved communication between the Centers to assist such manufacturers in implementing appropriate, targeted solutions to such obstacles.

''(j) DEFINITIONS.—In this section:

''(1) AREA CAREER AND TECHNICAL EDUCATION SCHOOL.—The term 'area career and technical education school' has the meaning given such term in section 3 of the Carl D. Perkins Career and

Technical Education Improvement Act of 2006 (20 U.S.C. 2302).

''(2) COMMUNITY COLLEGE.—The term 'community college' means an institution of higher education (as defined under section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))) at which the highest degree that is predominately awarded to students is an associate's degree.''.

SEC. 404. NATIONAL ACADEMIES REVIEW.

Not later than 6 months after the date of enactment of this Act, the Director of the National Institute of Standards and Technology shall enter into a contract with the National Academies to conduct a single, comprehensive review of the Institute's laboratory programs. The review shall—

(1) assess the technical merits and scientific caliber of the research conducted at the laboratories;

(2) examine the strengths and weaknesses of the 2010 laboratory reorganization on the Institute's ability to fulfill its mission;

(3) evaluate how cross-cutting research and development activities are planned, coordinated, and executed across the laboratories; and

(4) assess how the laboratories are engaging industry, including the incorporation of industry need,

into the research goals and objectives of the Institute.

SEC. 405. IMPROVING NIST COLLABORATION WITH OTHER AGENCIES.

Section 8 of the National Bureau of Standards Authorization Act for Fiscal Year 1983 (15 U.S.C. 275b) is amended—

(1) in the section heading, by inserting ''AND WITH'' after ''PERFORMED FOR''; and

(2) by adding at the end the following: ''The Secretary may accept, apply for, use, and spend Federal, State, and non-governmental acquisition and assistance funds to further the mission of the Institute without regard to the source or the period of availability of these funds as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement.''.

SEC. 406. MISCELLANEOUS PROVISIONS.

(a) FUNCTIONS AND ACTIVITIES.—Section 15 of the of the National Institute of Standards and Technology Act (15 U.S.C. 278e) is amended—

(1) by striking ''of the Government; and'' and inserting ''of the Government;'';

(2) by striking ''transportation services for employees of the Institute'' and inserting ''transportation services for employees, associates, or fellows of the Institute''; and

(3) by striking ''Code.'' and inserting ''Code; and (i) the protection of Institute buildings and other plant facilities, equipment, and property, and of employees, associates, visitors, or other persons located therein or associated therewith, notwithstanding any other provision of law.''.

(b) POST-DOCTORAL FELLOWSHIP PROGRAM.—Section 19 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–2) is amended to read as follows:

''SEC. 19. POST-DOCTORAL FELLOWSHIP PROGRAM.

''The Director, in conjunction with the National Academy of Sciences, shall establish and conduct a post-doctoral fellowship program that shall include not less than 20 new fellows per fiscal year. In evaluating applications for fellowships under this section, the Director shall give consideration to the goal of promoting the participation of underrepresented minorities in research areas supported by the Institute.''.

TITLE V—INNOVATION

SEC. 501. OFFICE OF INNOVATION AND ENTREPRENEURSHIP.

Section 25 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3720) is amended—

(1) in subsection (a) by inserting ''with a Director and full-time staff'' after ''Office of Innovation and Entrepreneurship'';

(2) in subsection (b)—

(A) by amending paragraph (3) to read as follows:

''(3) providing access to relevant data, research, and technical assistance on innovation and commercialization, including best practices for university-based incubators and accelerators;'';

(B) by redesignating paragraphs (4) and (5) as paragraphs (6) and (7), respectively; and

(C) by inserting the following after paragraph (3):

''(4) overseeing the implementation of the loan guarantee programs and the Regional Innovation Program established under sections 26 and 27, respectively;

''(5) developing, within 180 days after the date of enactment of the America Competes Reauthoriza-

tion Act of 2015, and updating at least every 5 years, a strategic plan to guide the activities of the Office of Innovation and Entrepreneurship that shall—

''(A) specify and prioritize near-term and long-term goals, objectives, and policies to accelerate innovation and advance the commercialization of research and development, including federally funded research and development, set forth the anticipated time for achieving the objectives, and identify metrics for use in assessing progress toward such objectives;

''(B) describe how the Department of Commerce is working in conjunction with other Federal agencies to foster innovation and commercialization across the United States; and

''(C) provide a summary of the activities, including the development of metrics to evaluate regional innovation strategies undertaken through the Regional Innovation Research and Information Program established under section 27(e);'';

(3) by amending subsection (c) to read as follows:

''(c) ADVISORY COMMITTEE.—

''(1) ESTABLISHMENT.—The Secretary shall establish or designate an advisory committee, which shall meet at least twice each fiscal year, to provide advice to the Secretary on carrying out the duties and responsibilities of the Office of Innovation and Entrepreneurship.

''(2) REPORT TO CONGRESS.—The advisory committee shall prepare a report, to be submitted to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate every 3 years. The first report shall be submitted not later than 1 year after the date of enactment of the America Competes Reauthorization Act of 2015 and shall include—

''(A) an assessment of the strategic plan developed under subsection (b)(5) and the progress made in implementing the plan and the duties of the Office of Innovation and Entrepreneurship;

''(B) an assessment of how the Office of Innovation and Entrepreneurship is working with other Federal agencies to meet the goals and duties of the office; and

''(C) any recommendations for how the Office of Innovation and Entrepreneurship could be improved.''; and

(4) by adding at the end the following:

''(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary $5,000,000 for each of fiscal years 2016 through 2020 to carry out this section.''.

SEC. 502. FEDERAL LOAN GUARANTEES FOR INNOVATIVE TECHNOLOGIES IN MANUFACTURING.

Section 26(t) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3721(t)) is amended by striking ''fiscal years 2011 through 2013'' and inserting ''fiscal years 2016 through 2020''.

SEC. 503. INNOVATION VOUCHER PILOT PROGRAM.

Section 25 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3720) as amended by section 501 of this Act, is further amended by adding at the end the following:

''(e) INNOVATION VOUCHER PILOT PROGRAM.—

''(1) IN GENERAL.—The Secretary, acting through the Office of Innovation and Entrepreneurship and in conjunction with the States, shall establish an innovation voucher pilot program to accelerate innovative activities and enhance the competi-

tiveness of small- and medium-sized manufacturers in the United States. The pilot program shall—

''(A) foster collaborations between small- and medium-sized manufacturers and research institutions; and

''(B) enable small- and medium-sized manufacturers to access technical expertise and capabilities that will lead to the development of innovative products or manufacturing processes, including through—

''(i) research and development, including proof of concept, technical development, and compliance testing activities;

''(ii) early-stage product development, including engineering design services; and

''(iii) technology transfer and related activities.

''(2) AWARD SIZE.—The Secretary shall competitively award vouchers worth up to $20,000 to small- and medium-sized manufacturers for use at eligible research institutions to acquire the services described in paragraph (1)(B).

''(3) STREAMLINED PROCEDURES.—The Secretary shall streamline and simplify the application,

administrative, and reporting procedures for vouchers administered under the program.

''(4) REGULATIONS.—Prior to awarding any vouchers under the program, the Secretary shall promulgate regulations—

''(A) establishing criteria for the selection of recipients of awards under this subsection;

''(B) establishing procedures regarding financial reporting and auditing—

''(i) to ensure that awards are used for the purposes of the program; and

''(ii) that are in accordance with sound accounting practices; and

''(C) describing any other policies, procedures, or information necessary to implement this subsection, including those intended to streamline and simplify the program in accordance with paragraph (3).

''(5) TRANSFER AUTHORITY.—The Secretary may transfer funds appropriated to the Department of Commerce to other Federal agencies for the performance of services authorized under this subsection.

''(6) ADMINISTRATIVE COSTS.—All of the amounts appropriated to carry out this subsection

for a fiscal year shall be used for vouchers awarded under this subsection, except that the Secretary may set aside a percentage of such amounts for eligible research institutions performing the services described in paragraph (1)(B) to defray administrative costs associated with the services. The Secretary shall establish a single, fixed percentage for such purposes that will apply to all eligible research institutions.

''(7) OUTREACH.—The Secretary may use centers established under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) to provide information about the program established under this subsection and to conduct outreach to potential applicants, as appropriate.

''(8) REPORTS TO CONGRESS.—

''(A) PLAN.—Not later than 180 days after the date of enactment of the America Competes Reauthorization Act of 2015, the Secretary shall transmit to Congress a plan that will serve as a guide for the activities of the program. The plan shall include a description of the specific objectives of the program and the metrics that will be used in assessing progress toward those objectives.

''(B) OUTCOMES.—Not later than 3 years after the date of enactment of the America Competes Reauthorization Act of 2015, the Secretary shall transmit to Congress a report containing—

''(i) a summary of the activities carried out under this subsection;

''(ii) an assessment of the impact of such activities on the innovative capacity of small- and medium-sized manufacturers receiving assistance under the pilot program; and

''(iii) any recommendations for administrative and legislative action that could optimize the effectiveness of the pilot program.

''(9) COORDINATION AND NONDUPLICATION.—To the maximum extent practicable, the Secretary shall ensure that the activities carried out under this subsection are coordinated with, and do not duplicate the efforts of, other programs within the Federal Government.

''(10) ELIGIBLE RESEARCH INSTITUTIONS DEFINED.—For the purposes of this subsection, the term 'eligible research institution' means—

"(A) an institution of higher education, as such term is defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a));

"(B) a Federal laboratory;

"(C) a federally funded research and development center; or

"(D) a Hollings Manufacturing Extension Center established under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k).

"(11) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out the pilot program in this subsection $5,000,000 for each of fiscal years 2016 through 2020.".

SEC. 504. FEDERAL ACCELERATION OF STATE TECHNOLOGY COMMERCIALIZATION PILOT PROGRAM.

The Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.) is amended by adding at the end the following:

"SEC. 28. FEDERAL ACCELERATION OF STATE TECHNOLOGY COMMERCIALIZATION PILOT PROGRAM.

''(a) AUTHORITY.—

''(1) ESTABLISHMENT.—The Secretary shall establish a Federal Acceleration of State Technology Commercialization Pilot Program or FAST Commercialization Pilot Program to award grants to States, or consortia thereof, for the purposes described in paragraph (2). Awards under this section shall be made through a competitive, merit-based process.

''(2) PURPOSE.—The purpose of the program under this section is to advance United States productivity and global competitiveness by accelerating commercialization of innovative technology by leveraging Federal support for State commercialization efforts. The program shall provide matching funds to a State, or consortium thereof, for the acceleration of commercialization activities and the promotion of small manufacturing enterprises in the United States.

''(b) APPLICATION.—Applications for awards under this section shall be submitted in such a manner, at such a time, and containing such information as the Secretary shall require, including—

''(1) a description of the current state of technology commercialization in the State or States, including successes and barriers to commercialization; and

''(2) a description of the State's or consortium's plan for increasing commercialization of new technologies, products, processes, and services.

''(c) SELECTION CRITERIA.—The Secretary shall establish criteria for the selection of awardees, which shall consider at a minimum a review of efforts during the fiscal year prior to submitting an application to—

''(1) promote manufacturing; and

''(2) commercialize new technologies, products, processes, and services, including activities to translate federally funded research and technologies to small manufacturing enterprises.

''(d) MATCHING REQUIREMENT.—A State or consortium receiving a grant under this section shall provide non-Federal cash contributions in an amount equal to 50 percent of the total cost of the project for which the grant is provided.

''(e) COORDINATION AND NONDUPLICATION.—In carrying out the program under this section, the Secretary shall ensure that grants made under the program are coordinated with, and do not duplicate, the efforts of other

commercialization programs within the Federal Government.

''(f) EVALUATION.—

''(1) IN GENERAL.—Not later than 3 years after the date of enactment of the America Competes Reauthorization Act of 2015, the Secretary shall enter into a contract with an independent entity, such as the National Academy of Sciences, to conduct an evaluation of the program established under subsection (a).

''(2) REQUIREMENTS.—The evaluation shall—

''(A) assess whether the program is achieving its goals;

''(B) include any recommendations for how the program may be improved; and

''(C) include a recommendation as to whether the program should be continued or terminated.

''(g) DEFINITIONS.—In this section—

''(1) the term 'State' has the meaning given that term in section 3 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3122); and

''(2) the term 'commercialization' has the meaning given that term in section 9(e)(10) of the Small Business Act (15 U.S.C. 638(e)(10)).

''(h) DURATION.—Each award shall be for a 5-year period.

''(i) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary $50,000,000 for each of fiscal years 2016 through 2018 to carry out this section.''.

TITLE VI—DEPARTMENT OF ENERGY

Subtitle A—Office of Science

SEC. 601. SHORT TITLE.

This subtitle may be cited as the ''Department of Energy Office of Science Authorization Act of 2015''.

SEC. 602. DEFINITIONS.

Except as otherwise provided, in this subtitle:

(1) DEPARTMENT.—The term ''Department'' means the Department of Energy.

(2) DIRECTOR.—The term ''Director'' means the Director of the Office of Science.

(3) OFFICE OF SCIENCE.—The term ''Office of Science'' means the Department of Energy Office of Science.

(4) UNDER SECRETARY.—The term ''Under Secretary'' means the Under Secretary for Science and Energy.

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

SEC. 603. MISSION OF THE OFFICE OF SCIENCE.

Section 209 of the Department of Energy Organization Act (42 U.S.C. 7139) is amended by adding at the end the following:

''(c) MISSION.—The mission of the Office of Science shall be the delivery of scientific discoveries, capabilities, and major scientific tools to transform the understanding of nature and to advance the energy, economic, and national security of the United States.

''(d) DUTIES.—In support of this mission, the Director shall carry out programs, including those in basic energy sciences, biological and environmental research, advanced scientific computing research, fusion energy sciences, high energy physics, and nuclear physics, through activities focused on—

''(1) Science for Discovery to unravel nature's mysteries through activities which range from the study of subatomic particles, atoms, and molecules that make up the materials of our everyday world to

the study of DNA, proteins, cells, and entire biological systems;

''(2) Science for National Need by—

''(A) advancing a clean energy agenda through research on energy production, storage, transmission, efficiency, and use; and

''(B) advancing our understanding of the Earth and its climate through research in atmospheric and environmental sciences and climate change; and

''(3) National Scientific User Facilities to deliver the 21st century tools of science, engineering, and technology and provide the Nation's researchers with the most advanced tools of modern science including accelerators, colliders, supercomputers, light sources and neutron sources, and facilities for studying complex molecular systems and the nanoworld.

''(e) SUPPORTING ACTIVITIES.—The activities described in subsection (d) shall include providing for relevant facilities and infrastructure, programmatic analysis, interagency coordination, and workforce development and outreach activities.

''(f) USER FACILITIES.—

''(1) IN GENERAL.—The Director shall carry out the construction, operation, and maintenance of

user facilities, including underground research facilities, to support the activities described in subsection (d). As practicable, these facilities shall serve the needs of the Department, industry, the academic community, and other relevant entities for the purposes of advancing the missions of the Department.

''(2) COORDINATION WITH OTHER FEDERAL AGENCIES.—The Director may form partnerships to enhance the utilization of and ensure access to user facilities, including underground research facilities, by other Federal agencies.

''(g) OTHER AUTHORIZED ACTIVITIES.—In addition to the activities authorized under the Department of Energy Office of Science Authorization Act of 2015, the Office of Science shall carry out other such activities as it is authorized or required to carry out by law.

''(h) COORDINATION AND JOINT ACTIVITIES WITH OTHER DEPARTMENT OF ENERGY PROGRAMS.—The Under Secretary shall ensure the coordination of activities under the Department of Energy Office of Science Authorization Act of 2015 with the other activities of the Department, and shall support joint activities among the programs of the Department.

''(i) DOMESTIC MANUFACTURING CAPABILITY FOR OFFICE OF SCIENCE FACILITIES REPORT.—Not later

than one year after the date of enactment of the Department of Energy Office of Science Authorization Act of 2015, the Secretary shall transmit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate. The report shall—

''(1) assess the current ability of domestic manufacturers to meet the procurement requirements for major ongoing projects funded by the Office of Science, including a calculation of the percentage of equipment acquired from domestic manufacturers for this purpose; and

''(2) identify steps that can be taken by the Federal Government and by private industry to increase the capability of domestic manufacturers to meet procurement requirements of the Office of Science for major projects.''.

SEC. 604. BASIC ENERGY SCIENCES PROGRAM.

(a) PROGRAM.—As part of the activities authorized under the amendment made by section 603, the Director shall carry out a program in basic energy sciences, including materials sciences and engineering, chemical sciences, physical biosciences, and geosciences, for the purpose of providing the scientific foundations for new energy technologies and addressing scientific grand challenges.

(b) BASIC ENERGY SCIENCES USER FACILITIES.—

(1) IN GENERAL.—The Director shall carry out a subprogram to support and oversee the construction, operation, and maintenance of national user facilities that support the program under this section. As practicable, these facilities shall serve the needs of the Department, industry, the academic community, and other relevant entities to create and examine new materials and chemical processes for the purposes of advancing new energy technologies and improving the competitiveness of the United States. These facilities shall include—

(A) x-ray light sources;

(B) neutron sources;

(C) nanoscale science research centers; and

(D) other facilities the Director considers appropriate, consistent with section 209(f) of the Department of Energy Organization Act (42 U.S.C. 7139(f)).

(2) FACILITY RESEARCH AND DEVELOPMENT.—The Director shall carry out research and development on advanced accelerator and storage ring technologies relevant to the Basic Energy Sciences user facilities, in consultation with the Office of Science's

High Energy Physics and Nuclear Physics programs.

(3) FACILITY CONSTRUCTION AND UPGRADES.—Consistent with the Office of Science's project management practices, the Director shall support construction of—

(A) an upgrade of the Advanced Photon Source to optimize and enhance beam brightness;

(B) a Second Target Station at the Spallation Neutron Source to double user capacity and expand the suite of instruments to meet new scientific challenges;

(C) the Linac Coherent Light Source II to expand the x-ray wavelength range, incorporate high repetition rate operation for soft and medium energy x-rays, and increase user capacity of the Linac Coherent Light Source; and

(D) an upgrade to the Advanced Light Source to improve brightness and performance.

(c) ENERGY FRONTIER RESEARCH CENTERS.—

(1) IN GENERAL.—The Director shall carry out a program to provide awards, on a competitive, merit-reviewed basis, to multi-institutional collaborations or other appropriate entities to conduct funda-

mental and use-inspired energy research to accelerate scientific breakthroughs related to needs identified in—

(A) the Grand Challenges report of the Department's Basic Energy Sciences Advisory Committee;

(B) the report of the Department's Basic Energy Sciences Advisory Committee entitled ''From Quanta to the Continuum: Opportunities for Mesoscale Science'';

(C) the Basic Energy Sciences Basic Research Needs workshop report; or

(D) other relevant reports identified by the Director.

(2) COLLABORATIONS.—A collaboration receiving an award under this subsection may include multiple types of institutions and private sector entities.

(3) SELECTION AND DURATION.—

(A) IN GENERAL.—A collaboration under this subsection shall be selected for a period of 5 years. An Energy Frontier Research Center already in existence and supported by the Director on the date of enactment of this Act may continue to receive support for a period of 5

years beginning on the date of establishment of that center.

(B) REAPPLICATION.—After the end of the period described in subparagraph (A), an awardee may reapply for selection for a second period of 5 years on a competitive, merit-reviewed basis.

(C) TERMINATION.—Consistent with the existing authorities of the Department, the Director may terminate an underperforming center for cause during the performance period.

(4) NO FUNDING FOR CONSTRUCTION.—No funding provided pursuant to this subsection may be used for the construction of new buildings or facilities.

SEC. 605. BIOLOGICAL AND ENVIRONMENTAL RESEARCH.

(a) IN GENERAL.—As part of the activities authorized under section 209 of the Department of Energy Organization Act (42 U.S.C. 7139), and coordinated with the activities authorized under section 604 and section 606, the Director shall carry out a program of research and development in the areas of biological systems science and climate and environmental science, including subsurface science, to support the energy and environmental missions of the Department.

(b) BIOLOGICAL SYSTEMS SCIENCE ACTIVITIES.—

(1) ACTIVITIES.—As part of the activities authorized under subsection (a), the Director shall carry out research and development activities in fundamental, structural, computational, and systems biology to increase systems-level understanding of the complex biological systems, which shall include activities to—

(A) accelerate breakthroughs and new knowledge that will enable cost-effective sustainable production of—

(i) biomass-based liquid transportation fuels;

(ii) bioenergy; and

(iii) biobased materials;

(B) improve understanding of the global carbon cycle, including processes for removing carbon dioxide from the atmosphere, through photosynthesis and other biological processes, for sequestration and storage; and

(C) understand the biological mechanisms used to transform, immobilize, or remove contaminants from subsurface environments.

(2) BIOENERGY RESEARCH CENTERS.—

(A) IN GENERAL.—In carrying out activities under paragraph (1), the Director shall support at least 3 bioenergy research centers to accelerate advanced research and development of biomass-based liquid transportation fuels, bioenergy, or biobased materials that are produced from a variety of regionally diverse feedstocks.

(B) SELECTION AND DURATION.—A center established under subparagraph (A) shall be selected on a competitive, merit-reviewed basis for a period of 5 years beginning on the date of establishment of that center. A center already in existence on the date of enactment of this Act may continue to receive support for a period of 5 years beginning on the date of establishment of that center.

(C) RENEWAL.—After the end of the period described in subparagraph (B), an awardee may apply for a second period of 5 years on a merit-reviewed basis.

(D) TERMINATION.—Consistent with the existing authorities of the Department, the Director may terminate an underperforming center for cause during the performance period.

(3) LOW DOSE RADIATION RESEARCH PROGRAM.—

(A) IN GENERAL.—The Director shall carry out a research program on low dose radiation. The purpose of the program is to enhance the scientific understanding of and reduce uncertainties associated with the effects of exposure to low dose radiation in order to inform improved risk management methods.

(B) DEFINITION.—In this paragraph, the term ''low dose radiation'' means a radiation dose of less than 100 millisieverts.

(C) STUDY.—Not later than 60 days after the date of enactment of this Act, the Director shall enter into an agreement with the National Academies to conduct a study assessing the current status and development of a long-term strategy for low dose radiation research. The study shall be conducted in coordination with Federal agencies that perform ionizing radiation effects research.

(D) CONTENTS.—The study performed under subparagraph (C) shall—

(i) identify current scientific challenges for understanding the long-term effects of ionizing radiation;

(ii) assess the status of current low dose radiation research in the United States and internationally;

(iii) formulate overall scientific goals for the future of low-dose radiation research in the United States;

(iv) recommend a long-term strategic and prioritized research agenda to address scientific research goals for overcoming the identified scientific challenges in coordination with other research efforts;

(v) define the essential components of a research program that would address this research agenda within the universities and the National Laboratories; and

(vi) assess the cost-benefit effectiveness of such a program.

(E) 5-YEAR RESEARCH PLAN.—Not later than 90 days after the completion of the assessment performed under subparagraph (C), the Secretary shall deliver 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 five-year research plan that responds to the assessment's findings and recommendations and identifies and prioritizes research needs.

(4) REPEAL.—Section 977 of the Energy Policy Act of 2005 (42 U.S.C. 16317) is repealed.

(c) CLIMATE AND ENVIRONMENTAL SCIENCE ACTIVITIES.—

(1) IN GENERAL.—As part of the activities authorized under subsection (a), and in coordination with activities carried out under subsection (b), the Director shall carry out climate and environmental science research, which shall include activities to—

(A) understand, observe, and model the response of Earth's atmosphere and biosphere to increased concentrations of greenhouse gas emissions and any associated changes in climate;

(B) understand the processes for immobilization, or removal of, and understand the movement of, energy production-derived contaminants such as radionuclides and heavy metals, and understand the process of sequestration

and transformation of carbon dioxide in subsurface environments; and

(C) inform potential mitigation and adaptation options for increased concentrations of greenhouse gas emissions and any associated changes in climate.

(2) SUBSURFACE BIOGEOCHEMICAL RESEARCH.—

(A) IN GENERAL.—As part of the activities described in paragraph (1), the Director shall carry out research to advance a fundamental understanding of coupled physical, chemical, and biological processes for controlling the movement of sequestered carbon and subsurface environmental contaminants.

(B) COORDINATION.—

(i) DIRECTOR.—The Director shall carry out activities under this paragraph in accordance with priorities established by the Under Secretary to support and accelerate the decontamination of relevant facilities managed by the Department.

(ii) UNDER SECRETARY.—The Under Secretary shall ensure the coordination of activities of the Department, including ac-

tivities under this paragraph, to support and accelerate the decontamination of relevant facilities managed by the Department.

(3) CLIMATE AND EARTH MODELING.—As part of the activities described in paragraph (1), the Director, in collaboration with the Advanced Scientific Computing Research program described in section 606, shall carry out research to develop, evaluate, and use high-resolution regional climate, global climate, and Earth models to inform decisions on reducing the impacts of a changing climate. Such modeling shall include, among other critical elements, greenhouse gas emissions, land use, and interaction among human and Earth systems.

SEC. 606. ADVANCED SCIENTIFIC COMPUTING RESEARCH PROGRAM.

(a) IN GENERAL.—As part of the activities authorized under section 209 of the Department of Energy Organization Act (42 U.S.C. 7139), the Director shall carry out a research, development, demonstration, and commercial application program to advance computational and networking capabilities for data-driven discovery and to analyze, model, simulate, and predict complex phenomena

relevant to the development of new energy technologies and the competitiveness of the United States.

(b) COORDINATION.—The Under Secretary shall ensure the coordination of the activities of the Department, including activities under this section, to determine and meet the computational and networking research and facility needs of the Office of Science and all other relevant energy technology and energy efficiency programs within the Department.

(c) RESEARCH TO SUPPORT ENERGY APPLICATIONS.—

(1) IN GENERAL.—As part of the activities authorized under subsection (a), the program shall support research in high-performance computing and networking relevant to energy applications including modeling, simulation, and advanced data analytics for basic and applied energy research programs carried out by the Secretary.

(2) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall transmit to the Congress a plan to integrate and leverage the expertise and capabilities of the program described in subsection (a), as well as other relevant computational and networking research programs and resources supported by the Federal Government,

to advance the missions of the Department's applied energy and energy efficiency programs.

(d) APPLIED MATHEMATICS AND SOFTWARE DEVELOPMENT FOR HIGH-END COMPUTING SYSTEMS.—The Director shall carry out activities to develop, test, and support mathematics, models, and algorithms for complex systems, as well as programming environments, tools, languages, and operating systems for high-end computing systems (as defined in section 2 of the Department of Energy High-End Computing Revitalization Act of 2004 (15 U.S.C. 5541)).

(e) EXASCALE COMPUTING PROGRAM.—Section 3 of the Department of Energy High-End Computing Revitalization Act of 2004 (15 U.S.C. 5542) is amended—

(1) in subsection (a)—

(A) in paragraph (1), by striking ''program'' and inserting ''coordinated program across the Department'';

(B) by striking ''and'' at the end of paragraph (1);

(C) by striking the period at the end of paragraph (2) and inserting ''; and''; and

(D) by adding at the end the following new paragraph:

''(3) partner with universities, National Laboratories, and industry to ensure the broadest possible application of the technology developed in this program to other challenges in science, engineering, medicine, and industry.'';

(2) in subsection (b)(2), by striking ''vector'' and all that follows through ''architectures'' and inserting ''computer technologies that show promise of substantial reductions in power requirements and substantial gains in parallelism of multicore processors, concurrency, memory and storage, bandwidth, and reliability''; and

(3) by striking subsection (d) and inserting the following:

''(d) EXASCALE COMPUTING PROGRAM.—

''(1) IN GENERAL.—The Secretary shall conduct a coordinated research program to develop exascale computing systems to advance the missions of the Department.

''(2) EXECUTION.—The Secretary shall, through competitive merit review, establish two or more National Laboratory-industry-university partnerships to conduct integrated research, development, and engineering of multiple exascale architectures, and—

''(A) conduct mission-related co-design activities in developing such exascale platforms;

''(B) develop those advancements in hardware and software technology required to fully realize the potential of an exascale production system in addressing Department target applications and solving scientific problems involving predictive modeling and simulation and large-scale data analytics and management; and

''(C) explore the use of exascale computing technologies to advance a broad range of science and engineering.

''(3) ADMINISTRATION.—In carrying out this program, the Secretary shall—

''(A) provide, on a competitive, merit-reviewed basis, access for researchers in United States industry, institutions of higher education, National Laboratories, and other Federal agencies to these exascale systems, as appropriate; and

''(B) conduct outreach programs to increase the readiness for the use of such platforms by domestic industries, including manufacturers.

''(4) REPORTS.—

"(A) INTEGRATED STRATEGY AND PROGRAM MANAGEMENT PLAN.—The Secretary shall submit to Congress, not later than 90 days after the date of enactment of the Department of Energy Office of Science Authorization Act of 2015, a report outlining an integrated strategy and program management plan, including target dates for prototypical and production exascale platforms, interim milestones to reaching these targets, functional requirements, roles and responsibilities of National Laboratories and industry, acquisition strategy, and estimated resources required, to achieve this exascale system capability. The report shall include the Secretary's plan for Departmental organization to manage and execute the Exascale Computing Program, including definition of the roles and responsibilities within the Department to ensure an integrated program across the Department. The report shall also include a plan for ensuring balance and prioritizing across ASCR subprograms in a flat or slow-growth budget environment.

"(B) STATUS REPORTS.—At the time of the budget submission of the Department for

each fiscal year, the Secretary shall submit a report to Congress that describes the status of milestones and costs in achieving the objectives of the exascale computing program.

''(C) EXASCALE MERIT REPORT.—At least 18 months prior to the initiation of construction or installation of any exascale-class computing facility, the Secretary shall transmit a plan to the Congress detailing—

''(i) the proposed facility's cost projections and capabilities to significantly accelerate the development of new energy technologies;

''(ii) technical risks and challenges that must be overcome to achieve successful completion and operation of the facility; and

''(iii) an independent assessment of the scientific and technological advances expected from such a facility relative to those expected from a comparable investment in expanded research and applications at terascale-class and petascale-class computing facilities, including an evaluation of where investments should be made

in the system software and algorithms to enable these advances.''.

(f) DEFINITIONS.—Section 2 of the Department of Energy High-End Computing Revitalization Act of 2004 (15 U.S.C. 5541) is amended by striking paragraphs (1) through (5) and inserting the following:

''(1) CO-DESIGN.—The term 'co-design' means the joint development of application algorithms, models, and codes with computer technology architectures and operating systems to maximize effective use of high-end computing systems.

''(2) DEPARTMENT.—The term 'Department' means the Department of Energy.

''(3) EXASCALE.—The term 'exascale' means computing system performance at or near 10 to the 18th power floating point operations per second.

''(4) HIGH-END COMPUTING SYSTEM.—The term 'high-end computing system' means a computing system with performance that substantially exceeds that of systems that are commonly available for advanced scientific and engineering applications.

''(5) LEADERSHIP SYSTEM.—The term 'Leadership System' means a high-end computing system that is among the most advanced in the world in

terms of performance in solving scientific and engineering problems.

''(6) INSTITUTION OF HIGHER EDUCATION.—The term 'institution of higher education' has the meaning given the term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).

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

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

''(9) SOFTWARE TECHNOLOGY.—The term 'software technology' includes optimal algorithms, programming environments, tools, languages, and operating systems for high-end computing systems.''.

SEC. 607. FUSION ENERGY RESEARCH.

(a) PROGRAM.—As part of the activities authorized under section 209 of the Department of Energy Organization Act (42 U.S.C. 7139) and section 972 of the Energy Policy Act of 2005 (42 U.S.C. 16312), the Director shall carry out a fusion energy sciences research and enabling technology development program to effectively address the scientific and engineering challenges to building a cost-competitive fusion power plant and to establish a competi-

tive fusion power industry in the United States. As part of this program, the Director shall carry out research activities to expand the fundamental understandings of plasmas and matter at very high temperatures and densities for fusion applications and for other plasma science applications.

(b) TOKAMAK RESEARCH AND DEVELOPMENT.—

(1) IN GENERAL.—As part of the program described in subsection (a), the Director shall support research and development activities and facility operations to—

(A) optimize the tokamak approach to fusion energy; and

(B) determine the viability of the tokamak approach to fusion energy to lead to a commercial fusion power plant.

(2) ITER.—

(A) RESPONSIBILITIES.—The Director shall coordinate and carry out the responsibilities of the United States with respect to the ITER international fusion project pursuant to the Agreement on the Establishment of the International Fusion Energy Organization for the Joint Implementation of the ITER Project.

(B) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to Congress a report providing an assessment of—

(i) the most recent schedule for ITER that has been approved by the ITER Council; and

(ii) progress of the ITER Council and the ITER Director-General toward implementation of the recommendations of the Third Biennial International Organization Management Assessment Report.

(C) FAIRNESS IN COMPETITION FOR SOLICITATIONS FOR INTERNATIONAL PROJECT ACTIVITIES.—Section 33 of the Atomic Energy Act of 1954 (42 U.S.C. 2053) is amended by adding at the end the following: ''For purposes of this section, with respect to international research projects, the term 'private facilities or laboratories' shall refer to facilities or laboratories located in the United States.''.

(D) SENSE OF CONGRESS.—It is the sense of Congress that the United States should support a robust, diverse program in addition to meeting its commitments to ITER. It is further

the sense of Congress that developing the scientific basis for fusion, providing research results key to the success of ITER, and training the next generation of fusion scientists are of critical importance to the United States and should in no way be diminished by participation of the United States in the ITER project.

(c) INERTIAL FUSION ENERGY RESEARCH AND DEVELOPMENT PROGRAM.—The Secretary 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.

(d) ALTERNATIVE AND ENABLING CONCEPTS.—

(1) IN GENERAL.—As part of the program described in subsection (a), the Director shall support research and development activities and facility operations at United States universities, national laboratories, and private facilities for a portfolio of alternative and enabling fusion energy concepts that may provide solutions to significant challenges to the establishment of a commercial magnetic fusion power plant, prioritized based on the ability of the United States to play a leadership role in the international fusion research community. Fusion energy concepts

and activities explored under this paragraph may include—

(A) high magnetic field approaches facilitated by high temperature superconductors;

(B) advanced stellarator concepts;

(C) non-tokamak confinement configurations operating at low magnetic fields;

(D) magnetized target fusion energy concepts;

(E) liquid metals to address issues associated with fusion plasma interactions with the inner wall of the encasing device;

(F) immersion blankets for heat management and fuel breeding;

(G) advanced scientific computing activities: and

(H) other promising fusion energy concepts identified by the Director.

(2) COORDINATION WITH ARPA–E.—The Under Secretary and the Director shall coordinate with the Director of the Advanced Research Projects Agency–Energy (in this paragraph referred to as ''ARPA–E'') to—

(A) assess the potential for any fusion energy project supported by ARPA–E to rep-

resent a promising approach to a commercially viable fusion power plant;

(B) 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 Science; and

(C) avoid unintentional duplication of activities.

(e) FUSION MATERIALS RESEARCH AND DEVELOPMENT.—As part of the activities authorized in section 978 of the Energy Policy Act of 2005 (42 U.S.C. 16318), the Director, in coordination with the Assistant Secretary for Nuclear Energy of the Department, shall carry out research and development activities to identify, characterize, and create materials that can endure the neutron, plasma, and heat fluxes expected in a commercial fusion power plant. As part of the activities authorized under subsection (g), the Secretary shall—

(1) provide an assessment of the need for a facility or facilities that can examine and test potential fusion and next generation fission reactor materials and other enabling technologies relevant to the development of commercial fusion power plants; and

(2) provide an assessment of whether a single new facility that substantially addresses magnetic

fusion, inertial fusion, and next generation fission materials research needs is feasible, in conjunction with the expected capabilities of facilities operational at the time of this assessment.

(f) GENERAL PLASMA SCIENCE AND APPLICATIONS.—Not later than 2 years after the date of enactment of this Act, the Secretary shall provide to Congress an assessment of opportunities in which the United States can provide world-leading contributions to advancing plasma science and non-fusion energy applications, and identify opportunities for partnering with other Federal agencies both within and outside of the Department of Energy.

(g) IDENTIFICATION OF PRIORITIES.—

(1) REPORT.—Not later than 2 years after the date of enactment of this Act, the Secretary shall transmit to Congress a report on the Department's proposed fusion energy research and development activities over the following 10 years under at least 3 realistic budget scenarios, including a scenario based on 3 percent annual growth in the non-ITER portion of the budget for fusion energy research and development activities. The report shall—

(A) identify specific areas of fusion energy research and enabling technology development in which the United States can and should es-

tablish or solidify a lead in the global fusion energy development effort;

(B) identify priorities for initiation of facility construction and facility decommissioning under each of those scenarios;

(C) provide a roadmap addressing critical scientific challenges to ensure that within 10 years after the date of enactment of this Act there is sufficient basis to justify and motivate the initiation of an applied fusion energy development program; and

(D) assess the ability of the United States fusion workforce to carry out the activities identified in subparagraphs (A) through (C), including the adequacy of college and university programs to train the leaders and workers of the next generation of fusion energy researchers.

(2) PROCESS.—In order to develop the report required under paragraph (1), the Secretary shall leverage best practices and lessons learned from the process used to develop the most recent report of the Particle Physics Project Prioritization Panel of the High Energy Physics Advisory Panel. No member of the Fusion Energy Sciences Advisory Committee shall be excluded from participating in developing or

voting on final approval of the report required under paragraph (1).

SEC. 608. HIGH ENERGY PHYSICS PROGRAM.

(a) IN GENERAL.—As part of the activities authorized under section 209 of the Department of Energy Organization Act (42 U.S.C. 7139), the Director shall carry out a research program on the elementary constituents of matter and energy and the nature of space and time.

(b) ENERGY FRONTIER RESEARCH.—As part of the program described in subsection (a), the Director shall carry out research using high energy accelerators and advanced detectors to create and study interactions of novel particles and investigate fundamental forces.

(c) NEUTRINO RESEARCH.—As part of the program described in subsection (a), the Director shall carry out research activities on rare decay processes and the nature of the neutrino, which may include collaborations with the National Science Foundation or international collaborations on relevant research projects.

(d) DARK ENERGY AND DARK MATTER RESEARCH.—As part of the program described in subsection (a), the Director shall carry out research activities on the nature of dark energy and dark matter. These activities shall be consistent with the research priorities identified

by the High Energy Physics Advisory Panel or the National Academy of Sciences, and may include—

(1) collaborations with the National Aeronautics and Space Administration, the National Science Foundation, or international collaborations on relevant research projects; and

(2) the development of space-based, land-based, and underground facilities and experiments.

(e) FACILITY CONSTRUCTION AND MAJOR ITEMS OF EQUIPMENT.—Consistent with the Office of Science's project management practices, the Director shall support construction or fabrication of—

(1) an international Long-Baseline Neutrino Facility based in the United States;

(2) the Muon to Electron Conversion Experiment;

(3) Second Generation Dark Matter experiments;

(4) the Dark Energy Spectroscopic Instrument;

(5) the Large Synoptic Survey Telescope camera;

(6) upgrades to components of the Large Hadron Collider; and

(7) other high priority projects recommended in the most recent report of the Particle Physics

Project Prioritization Panel of the High Energy Physics Advisory Panel.

(f) ACCELERATOR RESEARCH AND DEVELOPMENT.—As part of the program described in subsection (a), the Director shall carry out research and development in advanced accelerator concepts and technologies, including laser technologies, to reduce the necessary scope and cost for the next generation of particle accelerators, in coordination with the Office of Science's Basic Energy Sciences and Nuclear Physics programs.

(g) INTERNATIONAL COLLABORATION.—The Director, as practicable and in coordination with other appropriate Federal agencies as necessary, shall ensure the access of United States researchers to the most advanced accelerator facilities and research capabilities in the world, including the Large Hadron Collider.

SEC. 609. NUCLEAR PHYSICS PROGRAM.

(a) PROGRAM.—As part of the activities authorized under section 209 of the Department of Energy Organization Act (42 U.S.C. 7139), the Director shall carry out a research program, and support relevant facilities, to discover and understand various forms of nuclear matter.

(b) FACILITY CONSTRUCTION.—

(1) IN GENERAL.—Consistent with the Office of Science's project management practices, the Director

shall continue to support the construction of the Facility for Rare Isotope Beams.

(2) REPEAL.—Section 981 of the Energy Policy Act of 2005 (42 U.S.C. 16321) is repealed.

(c) ISOTOPE DEVELOPMENT AND PRODUCTION FOR RESEARCH APPLICATIONS.—

(1) IN GENERAL.—The Director shall carry out a program for the production of isotopes that the Director determines are needed for research and applications, including—

(A) the development of techniques to produce isotopes; and

(B) support for infrastructure required for isotope research and production.

(2) COORDINATION.—In making the determination described in paragraph (1), the Secretary shall—

(A) ensure that isotope production activities do not compete with private industry unless critical national interests necessitate the Federal Government's involvement; and

(B) consider any relevant recommendations made by Federal advisory committees, the National Academies, and interagency working groups in which the Department participates.

SEC. 610. SCIENCE LABORATORIES INFRASTRUCTURE PROGRAM.

(a) PROGRAM.—The Director shall carry out a program to improve the safety, efficiency, and mission readiness of infrastructure at Office of Science laboratories. The program shall include projects to—

(1) renovate or replace space that does not meet research needs;

(2) replace facilities that are no longer cost effective to renovate or operate;

(3) modernize utility systems to prevent failures and ensure efficiency;

(4) remove excess facilities to allow safe and efficient operations; and

(5) construct modern facilities to conduct advanced research in controlled environmental conditions.

(b) APPROACH.—In carrying out this section, the Director shall utilize all available approaches and mechanisms, including capital line items, minor construction projects, energy savings performance contracts, utility energy service contracts, alternative financing, and expense funding, as appropriate.

(c) DEFINITION.—The term ''Office of Science laboratory'' means a subset of National Laboratories as defined in section 2(3) of the Energy Policy Act of 2005

(42 U.S.C. 15801) consisting of subparagraphs (A), (B), (C), (D), (F), (K), (L), (M), (P), and (Q).

SEC. 611. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary for the activities of the Office of Science—

(1) $5,339,794,000 for fiscal year 2016;

(2) $5,606,783,700 for fiscal year 2017;

(3) $5,887,122,885 for fiscal year 2018;

(4) $6,181,479,029 for fiscal year 2019; and

(5) $6,490,552,981 for fiscal year 2020.

Subtitle B—ARPA–E

SEC. 621. SHORT TITLE.

This subtitle may be cited as the ''ARPA–E Reauthorization Act of 2015''.

SEC. 622. ARPA–E AMENDMENTS.

Section 5012 of the America COMPETES Act (42 U.S.C. 16538) is amended—

(1) by redesignating subsection (n) as subsection (o) and inserting after subsection (m) the following new subsection:

''(n) PROTECTION OF PROPRIETARY INFORMATION.—The following categories of information collected by the Advanced Research Projects Agency-Energy from recipients of financial assistance awards shall be considered privileged and confidential and not subject to disclo-

sure pursuant to section 552 of title 5, United States Code:

''(1) Plans for commercialization of technologies developed under the award, including business plans, technology to market plans, market studies, and cost and performance models.

''(2) Investments provided to an awardee from third parties, such as venture capital, hedge fund, or private equity firms, including amounts and percentage of ownership of the awardee provided in return for such investments.

''(3) Additional financial support that the awardee plans to invest or has invested into the technology developed under the award, or that the awardee is seeking from third parties.

''(4) Revenue from the licensing or sale of new products or services resulting from the research conducted under the award.''; and

(2) in paragraph (2) of subsection (o), as so redesignated by paragraph (1) of this section, by—

(A) striking ''and'' at the end of subparagraph (D);

(B) striking the period at the end of subparagraph (E) and inserting a semicolon; and

(C) adding at the end the following:

"(F) $325,000,000 for fiscal year 2016;

"(G) $341,250,000 for fiscal year 2017;

"(H) $358,312,500 for fiscal year 2018;

"(I) $376,228,125 for fiscal year 2019; and

"(J) $395,039,531 for fiscal year 2020.".

Subtitle C—Energy Innovation

SEC. 641. ENERGY INNOVATION HUBS.

(a) AUTHORIZATION OF PROGRAM.—

(1) IN GENERAL.—The Secretary of Energy shall carry out a program to enhance the Nation's economic, environmental, and energy security by making awards to consortia for establishing and operating Energy Innovation Hubs to conduct and support, whenever practicable at one centralized location, multidisciplinary, collaborative research, development, demonstration, and commercial application of advanced energy technologies.

(2) TECHNOLOGY DEVELOPMENT FOCUS.—The Secretary shall designate for each Hub a unique advanced energy technology focus.

(3) COORDINATION.—The Secretary shall ensure the coordination of, and avoid unnecessary duplication of, the activities of Hubs with those of other Department of Energy research entities, in-

cluding the National Laboratories, the Advanced Research Projects Agency-Energy, Energy Frontier Research Centers, and within industry.

(b) CONSORTIA.—

(1) ELIGIBILITY.—To be eligible to receive an award under this section for the establishment and operation of a Hub, a consortium shall—

(A) be composed of no fewer than 2 qualifying entities; and

(B) operate subject to an agreement entered into by its members that documents—

(i) the proposed partnership agreement, including the governance and management structure of the Hub;

(ii) measures to enable cost-effective implementation of the program under this section;

(iii) a proposed budget, including financial contributions from non-Federal sources;

(iv) a plan for managing intellectual property rights; and

(v) an accounting structure that enables the Secretary to ensure that the con-

sortium has complied with the requirements of this section.

(2) APPLICATION.—A consortium seeking to establish and operate a Hub under this section, acting through a prime applicant, shall transmit to the Secretary an application at such time, in such form, and accompanied by such information as the Secretary shall require, including a detailed description of the elements of the consortium agreement required under paragraph (1)(B). If the consortium members will not be located at one centralized location, such application shall include a communications plan that ensures close coordination and integration of the Hub's activities.

(c) SELECTION AND SCHEDULE.—The Secretary shall select consortia for awards for the establishment and operation of Hubs through competitive selection processes. In selecting consortia, the Secretary shall consider the information a consortium must disclose according to subsection (b), as well as any existing facilities a consortium will provide for Hub activities. Awards made to a Hub shall be for a period not to exceed 5 years, after which the award may be renewed, subject to a rigorous merit review. A Hub already in existence on the date of enactment of this Act may continue to receive support for a

period of 5 years beginning on the date of establishment of that Hub.

(d) HUB OPERATIONS.—

(1) IN GENERAL.—Each Hub shall conduct or provide for multidisciplinary, collaborative research, development, demonstration, and, where appropriate, commercial application of advanced energy technologies within the technology development focus designated under subsection (a)(2). Each Hub shall—

(A) encourage collaboration and communication among the member qualifying entities of the consortium and awardees by conducting activities whenever practicable at one centralized location;

(B) develop and publish on the Department of Energy's website proposed plans and programs;

(C) submit an annual report to the Secretary summarizing the Hub's activities, including detailing organizational expenditures, and describing each project undertaken by the Hub; and

(D) monitor project implementation and coordination.

(2) CONFLICTS OF INTEREST.—

(A) PROCEDURES.—Hubs shall maintain conflict of interest procedures, consistent with those of the Department of Energy, to ensure that employees and consortia designees for Hub activities who are in decisionmaking capacities disclose all material conflicts of interest.

(B) DISQUALIFICATION AND REVOCATION.—The Secretary may disqualify an application or revoke funds distributed to a Hub if the Secretary discovers a failure to comply with conflict of interest procedures established under subparagraph (A).

(3) PROHIBITION ON CONSTRUCTION.—

(A) IN GENERAL.—No funds provided pursuant to this section may be used for construction of new buildings or facilities for Hubs. Construction of new buildings or facilities shall not be considered as part of the non-Federal share of a Hub cost-sharing agreement.

(B) TEST BED AND RENOVATION EXCEPTION.—Nothing in this subsection shall prohibit the use of funds provided pursuant to this section, or non-Federal cost share funds, for research or for the construction of a test bed or

renovations to existing buildings or facilities for the purposes of research if the Secretary determines that the test bed or renovations are limited to a scope and scale necessary for the research to be conducted.

(e) TERMINATION.—Consistent with the existing authorities of the Department, the Secretary may terminate an underperforming Hub for cause during the performance period.

(f) DEFINITIONS.—For purposes of this section:

(1) ADVANCED ENERGY TECHNOLOGY.—The term ''advanced energy technology'' means—

(A) an innovative technology—

(i) that produces energy from solar, wind, geothermal, biomass, tidal, wave, ocean, or other renewable energy resources;

(ii) that produces nuclear energy;

(iii) for carbon capture and sequestration;

(iv) that enables advanced vehicles, vehicle components, and related technologies that result in significant energy savings;

(v) that generates, transmits, distributes, utilizes, or stores energy more effi-

ciently than conventional technologies, including through Smart Grid technologies; or

(vi) that enhances the energy independence and security of the United States by enabling improved or expanded supply and production of domestic energy resources, including coal, oil, and natural gas;

(B) research, development, demonstration, and commercial application activities necessary to ensure the long-term, secure, and sustainable supply of energy critical elements; or

(C) another innovative energy technology area identified by the Secretary.

(2) ENERGY CRITICAL ELEMENT.—The term ''energy critical element'' means any of a class of chemical elements that have a high risk of a supply disruption and are critical to one or more new, energy-related technologies such that a shortage of such element would significantly inhibit large-scale deployment of technologies that produce, transmit, store, or conserve energy.

(3) HUB.—The term ''Hub'' means an Energy Innovation Hub established or operating in accord-

ance with this section, including any Energy Innovation Hub existing as of the date of enactment of this Act.

(4) QUALIFYING ENTITY.—The term ''qualifying entity'' means—

(A) an institution of higher education;

(B) an appropriate State or Federal entity, including the Department of Energy Federally Funded Research and Development Centers;

(C) a nongovernmental organization with expertise in advanced energy technology research, development, demonstration, or commercial application; or

(D) any other relevant entity the Secretary considers appropriate.

SEC. 642. PARTICIPATION IN THE INNOVATION CORPS PROGRAM.

(a) AGREEMENT.—The Secretary of Energy shall enter into an agreement with the Director of the National Science Foundation to enable researchers funded by the Department of Energy to participate in the Innovation Corps program authorized by section 307.

(b) AUTHORIZATION.—The Secretary of Energy may also establish a Department of Energy Innovation Corps program, modeled after the National Science Foundation

Innovation Corps program, to incorporate experts from the Department of Energy National Laboratories in the training curriculum of the program.

SEC. 643. TECHNOLOGY TRANSFER.

(a) REPORT.—Not later than 1 year after the date of enactment of this Act, and annually thereafter, the Secretary of Energy shall transmit 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 which shall include—

(1) an assessment of the Department's current ability to carry out the goals of section 1001 of the Energy Policy Act of 2005 (42 U.S.C. 16391), including an assessment of the role and effectiveness of the Director of the Office of Technology Transitions; and

(2) recommended departmental policy changes and legislative changes to section 1001 of the Energy Policy Act of 2005 (42 U.S.C. 16391) to improve the Department's ability to successfully transfer new energy technologies to the private sector.

(b) AMENDMENTS.—Section 1001 of the Energy Policy Act of 2005 (42 U.S.C. 16391) is amended—

(1) in subsection (e), by striking ''for commercial purposes'' and inserting ''of any sort for com-

mercial purposes, including energy technologies not currently supported by the Department of Energy'';

(2) by redesignating subsections (f) and (g) as subsections (h) and (i), respectively; and

(3) by inserting after subsection (e) the following new subsections:

''(f) AGREEMENTS FOR COMMERCIALIZING TECHNOLOGY PILOT PROGRAM.—

''(1) IN GENERAL.—The Secretary shall carry out the Agreements for Commercializing Technology pilot program of the Department, as announced by the Secretary on December 8, 2011, in accordance with this subsection.

''(2) TERMS.—Each agreement entered into pursuant to the pilot program referred to in paragraph (1) shall provide to the contractor of the applicable National Laboratory, to the maximum extent determined to be appropriate by the Secretary, increased authority to negotiate contract terms, such as intellectual property rights, payment structures, performance guarantees, and multiparty collaborations.

''(3) ELIGIBILITY.—

''(A) IN GENERAL.—Any director of a National Laboratory may enter into an agreement

pursuant to the pilot program referred to in paragraph (1).

"(B) AGREEMENTS WITH NON-FEDERAL ENTITIES.—To carry out subparagraph (A) and subject to subparagraph (C), the Secretary shall permit the directors of the National Laboratories to execute agreements with a non-Federal entity, including a non-Federal entity already receiving Federal funding that will be used to support activities under agreements executed pursuant to subparagraph (A), provided that such funding is solely used to carry out the purposes of the Federal award.

"(C) RESTRICTION.—The requirements of chapter 18 of title 35, United States Code (commonly known as the 'Bayh-Dole Act') shall apply if—

"(i) the agreement is a funding agreement (as that term is defined in section 201 of that title); and

"(ii) at least 1 of the parties to the funding agreement is eligible to receive rights under that chapter.

"(4) SUBMISSION TO SECRETARY.—Each affected director of a National Laboratory shall sub-

mit to the Secretary, with respect to each agreement entered into under this subsection—

"(A) a summary of information relating to the relevant project;

"(B) the total estimated costs of the project;

"(C) estimated commencement and completion dates of the project; and

"(D) other documentation determined to be appropriate by the Secretary.

"(5) CERTIFICATION.—The Secretary shall require the contractor of the affected National Laboratory to certify that each activity carried out under a project for which an agreement is entered into under this subsection—

"(A) is not in direct competition with the private sector; and

"(B) does not present, or minimizes, any apparent conflict of interest, and avoids or neutralizes any actual conflict of interest, as a result of the agreement under this subsection.

"(6) EXTENSION.—The pilot program referred to in paragraph (1) shall be extended until October 31, 2017.

"(7) REPORTS.—

"(A) OVERALL ASSESSMENT.—Not later than 60 days after the date described in paragraph (6), the Secretary, in coordination with directors of the National Laboratories, 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—

"(i) assesses the overall effectiveness of the pilot program referred to in paragraph (1);

"(ii) identifies opportunities to improve the effectiveness of the pilot program;

"(iii) assesses the potential for program activities to interfere with the responsibilities of the National Laboratories to the Department; and

"(iv) provides a recommendation regarding the future of the pilot program.

"(B) TRANSPARENCY.—The Secretary, in coordination with directors of the National Laboratories, 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 an annual report that accounts for all incidences of, and provides a justification for, non-Federal entities using funds derived from a Federal contract or award to carry out agreements pursuant to this subsection.

''(g) INCLUSION OF TECHNOLOGY MATURATION IN AUTHORIZED TECHNOLOGY TRANSFER ACTIVITIES.—The Secretary shall permit the directors of the National Laboratories to use funds authorized to support technology transfer, following the standard practices of the Department, to carry out technology maturation activities to identify and improve potential commercial application opportunities and demonstrate applications of research and technologies arising from National Laboratory activities.''.

(c) DELEGATION OF AUTHORITY FOR TECHNOLOGY TRANSFER AGREEMENTS.—

(1) AUTHORITY.—The Secretary of Energy shall delegate to directors of the National Laboratories signature authority for any technology transfer agreement with a total cost of not more than $500,000, including both National Laboratory contributions and the project recipient cost share contribution, if such an agreement falls within the scope

of a strategic plan for the National Laboratory that has been approved by the Department.

(2) AGREEMENTS INCLUDED.—The agreements to which this subsection applies include—

(A) Cooperative Research and Development Agreements; and

(B) non-Federal Work for Others Agreements.

(3) AVAILABILITY OF RECORDS.—

(A) Not later than 7 days after the date on which the director of a National Laboratory enters into an agreement under this subsection, such director shall submit to the Secretary of Energy for monitoring and review all records of the National Laboratory relating to the agreement.

(B) Not later than 30 days after the date on which the director of a specific National Laboratory enters into an agreement under this subsection, the Secretary may terminate the agreement and the authority of any director of such National Laboratory to enter into agreements under this subsection if—

(i) all records of the National Laboratory relating to the agreement have not

been transmitted to the Secretary in accordance with subparagraph (A); or

(ii) the Secretary determines that this agreement is inconsistent with the mission of the Department.

(4) LIMITATION.—This subsection does not apply to any agreement with a majority foreign-owned company.

(5) SUNSET.—

(A) IN GENERAL.—This subsection shall apply only during the 4-year period beginning on the date of enactment of this Act.

(B) ASSESSMENT.—Not later than the date that is 180 days prior to the last day of the period described in subparagraph (A), 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 an assessment of the effectiveness of the authority provided to the directors of the National Laboratories under this subsection to accelerate the development of new technologies, and an assessment of any incidences of potential misuse of this authority in the opinion of the Secretary.

SEC. 644. FUNDING COMPETITIVENESS FOR INSTITUTIONS OF HIGHER EDUCATION AND OTHER NON-PROFIT INSTITUTIONS.

Section 988(b) of the Energy Policy Act of 2005 (42 U.S.C. 16352(b)) is amended—

(1) in paragraph (1), by striking ''Except as provided in paragraphs (2) and (3)'' and inserting ''Except as provided in paragraphs (2), (3), and (4)''; and

(2) by adding at the end the following:

''(4) EXEMPTION FOR INSTITUTIONS OF HIGHER EDUCATION AND OTHER NONPROFIT INSTITUTIONS.—

''(A) IN GENERAL.—Paragraph (1) shall not apply to a research or development activity performed by an institution of higher education or nonprofit institution (as defined in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703)).

''(B) TERMINATION DATE.—The exemption under subparagraph (A) shall apply during the 6-year period beginning on the date of enactment of this paragraph.''.

SEC. 645. UNDER SECRETARY FOR SCIENCE AND ENERGY.

(a) IN GENERAL.—Section 202(b) of the Department of Energy Organization Act (42 U.S.C. 7132(b)) is amended—

(1) by striking ''Under Secretary for Science'' each place it appears and inserting ''Under Secretary for Science and Energy''; and

(2) in paragraph (4)—

(A) in subparagraph (F), by striking ''and'' at the end;

(B) in subparagraph (G), by striking the period at the end and inserting a semicolon; and

(C) by inserting after subparagraph (G) the following:

''(H) establish appropriate linkages between offices under the jurisdiction of the Under Secretary; and

''(I) perform such functions and duties as the Secretary shall prescribe, consistent with this section.''.

(b) CONFORMING AMENDMENTS.—

(1) Section 3164(b)(1) of the Department of Energy Science Education Enhancement Act (42 U.S.C. 7381a(b)(1)) is amended by striking ''Under

Secretary for Science'' and inserting ''Under Secretary for Science and Energy''.

(2) Section 641(h)(2) of the United States Energy Storage Competitiveness Act of 2007 (42 U.S.C. 17231(h)(2)) is amended by striking ''Under Secretary for Science'' and inserting ''Under Secretary for Science and Energy''.

SEC. 646. SPECIAL HIRING AUTHORITY FOR SCIENTIFIC, ENGINEERING, AND PROJECT MANAGEMENT PERSONNEL.

(a) IN GENERAL.—The Under Secretary shall have the authority to—

(1) make appointments of scientific, engineering, and professional personnel, without regard to civil service laws, to assist the Department in meeting specific project or research needs;

(2) fix the basic pay of any employee appointed under this section at a rate to be determined by the Under Secretary at rates not in excess of the Executive Schedule (EX–II) without regard to the civil service laws; and

(3) pay any employee appointed under this section payments in addition to basic pay, except that the total amount of additional payments paid to an employee under this subsection for any 12-month pe-

riod shall not exceed the least of the following amounts:

(A) $25,000.

(B) The amount equal to 25 percent of the annual rate of basic pay of that employee.

(C) The amount of the limitation that is applicable for a calendar year under section 5307(a)(1) of title 5, United States Code.

(b) TERM.—

(1) IN GENERAL.—The term of any employee appointed under this section shall not exceed 3 years.

(2) TERMINATION.—The Under Secretary shall have the authority to terminate any employee appointed under this section at any time based on performance or changing project or research needs of the Department.

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