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114TH CONGRESS
1ST SESSION

H. R. 1806

AN ACT

To provide for technological innovation through the prioritization of Federal investment in basic research, fundamental scientific discovery, and development 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:

Sec. 1. Short title; table of contents.
Sec. 2. Definitions.

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SEC. 2. DEFINITIONS.

In this Act—

(1) the term ''STEM'' means the subjects of science, technology, engineering, and mathematics;

(2) the term ''STEM education'' means education in the subjects of STEM, including computer science; and

(3) the term ''Committee on STEM Education'' means the Committee on Science, Technology, Engineering, and Mathematics Education established under section 101 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621).

TITLE I—NATIONAL SCIENCE FOUNDATION

SEC. 101. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2016.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $7,597,140,000 for fiscal year 2016.

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

(A) $6,186,300,000 shall be made available to carry out research and related activities, including—

(i) $823,000,000 for the Biological Science Directorate;

(ii) $1,038,000,000 for the Computer and Information Science and Engineering Directorate;

(iii) $1,010,000,000 for the Engineering Directorate;

(iv) $1,200,000,000 for the Geosciences Directorate;

(v) $1,500,000,000 for the Mathematical and Physical Science Directorate;

(vi) $150,000,000 for the Social, Behavioral, and Economics Directorate, of which $50,000,000 shall be for the National Center for Science and Engineering Statistics;

(vii) $38,520,000 for the Office of International Science and Engineering;

(viii) $425,300,000 for Integrative Activities; and

(ix) $1,480,000 for the United States Arctic Commission;

(B) $866,000,000 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) $325,000,000 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; 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 $7,597,140,000 for fiscal year 2017.

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

(A) $6,186,300,000 shall be made available to carry out research and related activities, including—

(i) $823,000,000 for the Biological Science Directorate;

(ii) $1,038,000,000 for the Computer and Information Science and Engineering Directorate;

(iii) $1,010,000,000 for the Engineering Directorate;

(iv) $1,200,000,000 for the Geosciences Directorate;

(v) $1,500,000,000 for the Mathematical and Physical Science Directorate;

(vi) $150,000,000 for the Social, Behavioral, and Economics Directorate, of which $50,000,000 shall be for the National Center for Science and Engineering Statistics;

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(viii) $425,300,000 for Integrative Activities; and

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(B) $866,000,000 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) $325,000,000 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; and

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

SEC. 102. FINDINGS.

Congress finds the following:

(1) Taxpayer-supported research investments administered by the Foundation should serve the national interest.

(2) The Foundation has made major contributions for more than 60 years to strengthen and sustain the Nation's academic research enterprise.

(3) The economic strength and national security of the United States, and the quality of life of all Americans, are grounded in the Nation's scientific and technological capabilities.

(4) Providing support for basic research is an investment in our Nation's future security and economic prosperity.

(5) Congress applauds the Foundation's recognition that wise stewardship of taxpayer dollars is necessary to maintain and ensure the public's trust

for funding of fundamental scientific and engineering research.

(6) Other nations are increasing their public investments in basic research in the physical sciences in order to boost long-term economic growth.

(7) Longstanding United States leadership in supercomputing, genomics, nanoscience, photonics, quantum physics, and other key technological areas is jeopardized if United States investments in basic research in the natural sciences do not keep pace.

(8) Redundant regulations and reporting requirements imposed by Federal agencies on research institutions and researchers increase costs by tens of millions of dollars annually.

(9) The Foundation carries out important functions by supporting basic research in all science and engineering disciplines and in supporting STEM education at all levels.

(10) The research and education activities of the Foundation promote the discovery, integration, dissemination, and application of new knowledge in service to society and prepare future generations of scientists, mathematicians, and engineers who will be necessary to ensure America's leadership in the global marketplace.

(11) Many of the complex problems and challenges facing the Nation increasingly require the collaboration of multiple scientific disciplines. The Foundation should continue to emphasize cross-directorate research collaboration and activities to address these issues and encourage interdisciplinary research.

(12) The Foundation should meet the highest standards of efficiency, transparency, and accountability in its stewardship of public funds.

(13) The Foundation is charged with the responsibilities—

(A) to develop and encourage the pursuit of a national policy for the promotion of basic research and education in the sciences;

(B) to initiate, support, and conduct basic scientific research and to appraise the impact of research on industrial development and the general welfare;

(C) to initiate, support, and conduct scientific research activities in connection with matters relating to the national defense, at the request of the Secretary of Defense;

(D) to award scholarships and graduate fellowships in the sciences;

(E) to foster the interchange of scientific information among scientists and across scientific disciplines;

(F) to evaluate scientific research programs undertaken by agencies of the Federal Government, and to correlate the Foundation's scientific research with that undertaken by individuals and by public and private research groups;

(G) to communicate effectively to American citizens the relevance of public investments in scientific discovery and technological innovation to the Nation's security, prosperity, and welfare; and

(H) to establish such special commissions as the Board considers necessary.

(14) The emerging global economic, scientific, and technical environment challenges long standing assumptions about domestic and international policy, requiring the Foundation to play a more proactive role in sustaining the competitive advantage of the United States through superior research capabilities.

SEC. 103. POLICY OBJECTIVES.

In allocating resources made available under this title, the Foundation shall have the following policy objectives:

(1) To renew and maintain the Nation's international leadership in science and technology by—

(A) increasing the national investment in basic scientific research and increasing interdisciplinary investment in strategic areas vital to the national interest;

(B) balancing the Nation's research portfolio among the life sciences, mathematics, the physical sciences, computer and information science, geosciences, engineering, and social, behavioral, and economic sciences, all of which are important for the continued development of enabling technologies necessary for sustained economic competitiveness;

(C) encouraging investments in potentially transformative scientific research to benefit our Nation and its citizens;

(D) expanding the pool of scientists and engineers in the United States, including among segments of the population that have been historically underrepresented in STEM fields; and

(E) modernizing the Nation's research infrastructure and establishing and maintaining cooperative international relationships with premier research institutions.

(2) To increase overall workforce skills by—

(A) improving the quality of STEM education and tools provided both inside and outside of the classroom, including in kindergarten through grade 12; and

(B) expanding STEM training opportunities at institutions of higher education.

(3) To strengthen innovation by expanding the focus of competitiveness and innovation at the regional and local level.

SEC. 104. DEFINITIONS.

In this title:

(1) BOARD.—The term ''Board'' means the National Science Board.

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

(3) FOUNDATION.—The term ''Foundation'' means the National Science Foundation established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

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

(5) STATE.—The term ''State'' means one of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or any other territory or possession of the United States.

(6) UNITED STATES.—The term ''United States'' means the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.

SEC. 105. ACCOUNTABILITY AND TRANSPARENCY.

It is the sense of Congress that—

(1) sustained, predictable Federal funding is essential to United States leadership in science and technology;

(2) building understanding of and confidence in investments in basic research are essential to public support for sustained, predictable Federal funding; and

(3) the Foundation should commit itself fully to transparency and accountability and to clear, consistent public communication regarding the national interest for each Foundation-awarded grant and cooperative agreement.

SEC. 106. GREATER ACCOUNTABILITY IN FEDERAL FUNDING FOR RESEARCH.

(a) STANDARD FOR AWARD OF GRANTS.—The Foundation shall award Federal funding for basic research and education in the sciences through a new research grant or cooperative agreement only if an affirmative determination is made by the Foundation under subsection (b) and written justification relating thereto is published under subsection (c).

(b) DETERMINATION.—A determination referred to in subsection (a) is a justification by the responsible Foundation official as to how the research grant or cooperative agreement promotes the progress of science in the United States, consistent with the Foundation mission as established in the National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.), and further—

(1) is worthy of Federal funding; and

(2) is in the national interest, as indicated by having the potential to achieve—

(A) increased economic competitiveness in the United States;

(B) advancement of the health and welfare of the American public;

(C) development of an American STEM workforce that is globally competitive;

(D) increased public scientific literacy and public engagement with science and technology in the United States;

(E) increased partnerships between academia and industry in the United States;

(F) support for the national defense of the United States; or

(G) promotion of the progress of science in the United States.

(c) WRITTEN JUSTIFICATION.—Public announcement of each award of Federal funding described in subsection (a) shall include a written justification from the responsible Foundation official as to how a grant or cooperative agreement meets the requirements of subsection (b).

(d) IMPLEMENTATION.—A determination under subsection (b) shall be made after a research grant or cooperative agreement proposal has satisfied the Foundation's reviews for Merit and Broader Impacts. Nothing in this

section shall be construed as altering the Foundation's intellectual merit or broader impacts criteria for evaluating grant applications.

SEC. 107. OBLIGATION OF MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION FUNDS.

No funds may be obligated for a fiscal year for a construction project for the Foundation that has not commenced before the date of enactment of this Act until 30 days after the report required with respect to each such fiscal year under section 14(a)(2) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–4(a)(2)) is transmitted to the Congress.

SEC. 108. MANAGEMENT AND OVERSIGHT OF LARGE FACILITIES.

(a) LARGE FACILITIES OFFICE.—The Director shall maintain a Large Facilities Office within the Office of the Director. The functions of the Large Facilities Office shall be to support the research directorates in the development, implementation, and assessment of major multi-user 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 multi-user 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;

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

(4) assessing projects during preconstruction and construction phases for cost and schedule risk.

(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 multi-user research facilities. The duties of this official shall include—

(1) oversight of the development, construction, and operation of major multi-user 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 multi-user research facilities; and

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

(c) POLICIES FOR LARGE FACILITY COSTS.—

(1) IN GENERAL.—The Director shall ensure that the Foundation's policies for developing and managing major multi-user research facility construction costs are consistent with the best practices described in the March 2009 Government Accountability Office Report GAO–09–3SP, or any successor report thereto.

(2) REPORT.—Not later than 12 months after the date of enactment of this Act, the Director shall submit to Congress the results of a study and a report reforming the Foundation's policies on financial management of major multi-user research facilities, including a description of any aspects of the policies that diverge from the best practices recommended in Government Accountability Office Report GAO–09–3SP and the Uniform Guidance in 2 CFR Part 200.

(3) MANAGEMENT FEES.—

(A) DEFINITION.—In this paragraph, the term ''management fee'' means a portion of an award made by the Foundation for the purpose of covering ordinary and necessary business expenses necessary to maintain operational stability which are not otherwise allowable under Cost Principles Uniform Guidance in 2 CFR part 200, Subpart E, or any successor regulation thereto.

(B) LIMITATION.—The Foundation may provide management fees under an award only if the awardee has demonstrated that it has limited or no other financial resources available for covering the expenses for which the management fees are sought.

(C) FINANCIAL INFORMATION.—The Foundation shall require award applicants to provide income and financial information covering a period of no less than 3 prior years (or in the case of an entity established less than 3 years prior to the entity's application date, the period beginning on the date of establishment and ending on the application date), including cash on hand and net asset information, in support of a request for management fees. The

Foundation shall also require awardees seeking subsequent management fees to report to the Foundation, prior to the consideration of such a request, any sources of non-Federal funds received in excess of $100,000. This reporting shall apply to the period following any initial management fee award and for the consideration of any subsequent fee.

(D) EXPENSE REPORTING.—The Foundation shall require awardees to track and report to the Foundation annually all expenses reimbursed or otherwise paid for with management fee funds, in accordance with Federal accounting practices as established in Government Accountability Office Report GAO–12–331G, or any successor report thereto.

(E) REVIEW.—The Inspector General of the Foundation may audit or review any Foundation award for compliance with this subsection.

(F) PROHIBITED USES.—An awardee may not use management fees for—

(i) costs allowable under Cost Principles Uniform Guidance in 2 CFR part

200, Subpart E, or any successor regulation thereto;

(ii) alcoholic beverages;

(iii) tickets to concerts, or sporting and other entertainment events;

(iv) vacation or other travel for non-business purposes;

(v) charitable contributions;

(vi) social or sporting club memberships;

(vii) meals or social activities for non-business purposes;

(viii) luxury or personal items;

(ix) lobbying, as described in the Uniform Guidance at 2 CFR 200.450 or FAR 31.205–22; or

(x) any other purpose the Foundation determines is inappropriate.

(G) REVIEW.—The Foundation shall review management fee usage under each Foundation award on at least an annual basis for compliance with this paragraph and the Foundation's Large Facilities Manual.

(4) 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 multi-user research facility construction costs, including a description of any aspects of the policies that diverge from the best practices recommended in Government Accountability Office Report GAO–09–3SP, or any successor report thereto, and the Uniform Guidance in 2 CFR part 200.

SEC. 109. WHISTLEBLOWER EDUCATION.

(a) IN GENERAL.—The Foundation shall be subject to section 4712 of title 41, United States Code.

(b) EDUCATION AND TRAINING.—The Foundation shall provide education and training for Foundation managers and staff on the requirements of such section 4712, and provide information on the law to all grantees, contractors, and employees of such grantees and contractors.

SEC. 110. GRADUATE STUDENT SUPPORT.

(a) SENSE OF CONGRESS.—It is the sense of Congress that the essential elements of the NSF Research Traineeship Program, formerly the Integrative Graduate Education and Research Traineeship program, (or any successor thereto) should be maintained, including—

(1) collaborative research that transcends traditional disciplinary boundaries to solve large and

complex research problems of significant scientific and societal importance; and

(2) providing students the opportunity to become leaders in the science and engineering of the future.

(b) MODELS FOR SUPPORT.—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.

(c) 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).

(d) 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.

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

(f) 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. 111. PERMISSIBLE SUPPORT.

A grant made by the Education and Human Resources Directorate to support informal education may be used—

(1) to support the participation of underrepresented students in nonprofit competitions, out-of-school activities, and field experiences related to STEM subjects (such as robotics, science research, invention, mathematics, and technology competitions), including—

(A) the purchase of parts and supplies needed to participate in such competitions; and

(B) incentives and stipends for teachers and instructional leaders who are involved in

assisting students and preparing students for such competitions, if such activities fall outside the regular duties and responsibilities of such teachers and instructional leaders; and

(2) to broaden underrepresented secondary school students' access to, and interest in, careers that require academic preparation in STEM subjects.

SEC. 112. EXPANDING STEM OPPORTUNITIES.

(a) IN GENERAL.—Within the Directorate for Education and Human Resources (or any successor thereto), under existing programs targeting broadening participation, the Director shall provide grants on a merit-reviewed, competitive basis for research on programming that engages underrepresented students in grades kindergarten through 8 in STEM.

(b) USE OF FUNDS.—

(1) IN GENERAL.—Grants awarded under this section shall be used for research to advance the engagement of underrepresented students in grades kindergarten through 8 in STEM through the development and implementation of innovative before-school, after-school, out-of-school, or summer activities, including programs (if applicable to the target population) provided in a single-gender environment,

that are designed to encourage interest, engagement, and skills development of underrepresented students in STEM. Such research shall be conducted in learning environments that actively provide programming to underrepresented students in grades kindergarten through 8 in STEM.

(2) PERMITTED ACTIVITIES.—Such activities may include—

(A) the development and implementation of programming described in subsection (a) for the purpose of research;

(B) the use of a variety of engagement methods, including cooperative and hands-on learning;

(C) exposure of underrepresented youth to role models in the fields of STEM, including researchers in the National Laboratories, and nearpeer mentors;

(D) training of informal learning educators and youth-serving professionals using evidence-based methods consistent with the target student population being served;

(E) education of students on the relevance and significance of STEM careers, provision of academic advice and assistance, and activities

designed to help students make real-world connections to STEM content activities;

(F) the attendance of underrepresented youth at events, competitions, and academic programs to provide content expertise and encourage career exposure in STEM;

(G) activities designed to engage parents of underrepresented youth;

(H) innovative strategies to engage underrepresented youth, such as using leadership skill outcome measures to encourage youth with the confidence to pursue STEM coursework and academic study;

(I) coordination with STEM-rich environments, including other nonprofit, nongovernmental organizations, classroom and out-of-classroom settings, institutions of higher education, vocational facilities, corporations, museums, National Laboratories, or science centers;

(J) the acquisition of instructional materials or technology-based tools to conduct applicable grant activity;

(K) efforts to effectively expand, broaden, or scale-up existing activities or programs;

(L) creating State and regional workshops to train K–12 teachers in science and technology project-based learning to provide instruction in how to initiate robotics and other STEM competition team development programs; and

(M) encouraging and supporting efforts led by institutions of higher education, businesses, and local public and private educational agencies to establish collaborative efforts to provide K–12 students residing in areas with unemployment rates that exceed the national average by 1 percent or more.

(c) APPLICATION.—An applicant seeking funding under the section shall submit an application at such time, in such manner, and containing such information as may be required. The application shall include, at a minimum, the following:

(1) A description of the target audience to be served by the program.

(2) A description of the process for recruitment and selection of students, as appropriate.

(3) A description of how such research activity may inform programming that engages underrepresented students in grades kindergarten through 8 in STEM.

(4) A description of how such research activity may inform programming that promotes student academic achievement in STEM.

(5) An evaluation plan that includes, at a minimum, the use of outcome-oriented measures to determine the impact and efficacy of activities being researched.

(d) AWARDS.—In awarding grants under this section, the Director shall give priority to applicants which, for the purpose of grant activity, include or partner with a nonprofit, nongovernmental organization that has extensive experience and expertise in increasing the participation of underrepresented students in STEM.

(e) ACCOUNTABILITY AND DISSEMINATION.—

(1) EVALUATION REQUIRED.—Not later than 5 years after the date of enactment of this Act, the Director shall evaluate the grants provided under this section. In addition to evaluating the effectiveness of the grant activities, such evaluation shall—

(A) use a common set of benchmarks and assessment tools to identify best practices and materials developed or demonstrated by the research; and

(B) to the extent practicable, combine the research resulting from the grant activity with

the current research on serving underrepresented students in grades kindergarten through 8.

(2) REPORT ON EVALUATIONS.—Not later than 180 days after the completion of the evaluation under paragraph (1), the Director shall submit to Congress and make widely available to the public a report that includes—

(A) the results of the evaluation; and

(B) any recommendations for administrative and legislative action that could optimize the effectiveness of the program.

(f) COORDINATION.—In carrying out this section, the Director shall consult, cooperate, and coordinate, to enhance program effectiveness and to avoid duplication, with the programs and policies of other relevant Federal agencies.

SEC. 113. REVIEW OF EDUCATION PROGRAMS.

(a) IN GENERAL.—The Director shall review the education programs of the Foundation that are in operation as of the date of enactment of this Act to determine—

(1) whether any of such programs duplicate target groups, services provided, fields of focus, or objectives; and

(2) how those programs are being evaluated and assessed for outcome-oriented effectiveness.

(b) REPORT.—Not later than 1 year after the date of enactment of this Act, and annually thereafter as part of the annual budget submission to Congress, the Director shall complete a report on the review carried out under this section and shall submit the report to the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives, and to the Committee on Commerce, Science, and Transportation, the Committee on Health, Education, Labor, and Pensions, and the Committee on Appropriations of the Senate, and shall make the report widely available to the public.

SEC. 114. RECOMPETITION OF AWARDS.

(a) FINDINGS.—The Congress finds that—

(1) the merit-reviewed competition of grant and award proposals is a hallmark of the Foundation grant and award making process;

(2) the majority of Foundation-funded multi-user research facilities have transitioned to 5-year cooperative agreements, and every 5 years the program officer responsible for the facility makes a recommendation to the National Science Board as to

the renewal, recompetition, or termination of support for the facility; and

(3) requiring the recompetition of expiring awards is based on the conviction that competition is most likely to ensure the effective stewardship of Foundation funds for supporting research and education.

(b) RECOMPETITION.—The Director shall ensure that the system for recompetition of Maintenance and Operations of facilities, equipment and instrumentation is fair, consistent, and transparent and is applied in a manner that renews grants and awards in a timely manner. The Director shall periodically evaluate whether the criteria of the system are being applied in a manner that is transparent, reliable, and valid.

SEC. 115. SENSE OF THE CONGRESS REGARDING INDUSTRY INVESTMENT IN STEM EDUCATION.

It is the sense of Congress that—

(1) in order to bolster the STEM workforce pipeline, many industry sectors are becoming involved in K–12 initiatives and supporting undergraduate and graduate work in STEM subject areas and fields;

(2) partnerships with education providers, STEM focused competitions, and other opportunities

have become important aspects of private sector efforts to strengthen the STEM workforce;

(3) understanding the work that private sector organizations are undertaking in STEM fields should inform the Federal Government's role in STEM education; and

(4) successful private sector STEM initiatives, as reflected by measurements of relevant outcomes, should be encouraged and supported by the Foundation.

SEC. 116. MISREPRESENTATION OF RESEARCH RESULTS.

(a) PROHIBITION.—The findings and conclusions of any article authored by a principal investigator receiving a research grant from the Foundation, using the results of the research conducted under the grant, that is published in a peer-reviewed publication, otherwise made publicly available, or incorporated in an application for a research grant or grant extension from the Foundation may not contain any falsification, fabrication, or plagiarism, as established in the Foundation's Research Misconduct regulation (45 CFR 689).

(b) PUBLICATION.—The Director shall make publicly available any finding that research misconduct (as defined in 45 CFR 689) has been committed, including the name

of the principal investigator, within 30 days of the final administration action of the Foundation.

SEC. 117. RESEARCH REPRODUCIBILITY AND REPLICATION.

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

(1) the gold standard of good science is the ability of a researcher or research lab to reproduce a published method and finding;

(2) there is growing concern that some published research findings cannot be reproduced or replicated, which can negatively affect the public's trust in science;

(3) there are a complex set of factors affecting reproducibility and replication; and

(4) the increasing interdisciplinary nature and complexity of scientific research may be a contributing factor to issues with research reproducibility and replication.

(b) REPORT.—The Director shall—

(1) not later than 45 days after the date of enactment of this Act, enter into an agreement with the National Research Council to provide, within 18 months after the date of enactment of this Act, a report to assess research and data reproducibility and

replicability issues in interdisciplinary research and to make recommendations on how to improve rigor and transparency in scientific research; and

(2) not later than 60 days after receiving the results of the assessment under paragraph (1), submit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the findings of the assessment, together with the agreement or disagreement of the Director and Board with each of its findings and recommendations.

SEC. 118. RESEARCH GRANT CONDITIONS.

The Foundation shall establish procedures to ensure that—

(1) a research grant awarded by the Foundation to a principal investigator supports a scope of work not otherwise being directly funded by grants provided by other Federal agencies;

(2) a principal investigator includes in any application for a research grant awarded by the Foundation a list of all Federal research funding received by the principal investigator, as well as any funding that is being requested as of that time;

(3) unpublished research results used to support a grant proposal made to the Foundation do not include any knowing misrepresentations of data;

(4) principal investigators who receive Foundation research grant funding under more than one grant at the same time have sufficient resources to conduct the proposed research under each of those grants appropriately under the terms of the grant; and

(5) barriers to early career and new investigator applicants are addressed, including taking into account the broader accomplishments and potential of the individual investigator in addition to the potential impact of the project.

SEC. 119. COMPUTING RESOURCES STUDY.

Not later than 1 year after the date of enactment of this Act, the Comptroller General shall transmit to the Congress a report detailing the results of a study on the use of scientific computing resources funded by the Foundation at institutions of higher education. Such study shall assess—

(1) efficiencies that can be achieved by using shared scientific computing resources for projects that have similar scientific computing requirements or projects where specialized software solutions could

be shared with other practitioners in the scientific community;

(2) efficiencies that can be achieved by using shared hardware that can be cost effectively procured from cloud computing services;

(3) efficiencies that can be achieved by using shared software from an open source repository or platform; and

(4) cost savings that could be achieved by potential sharing of scientific computing resources across all Foundation grants.

SEC. 120. SCIENTIFIC BREAKTHROUGH PRIZES.

The Director shall place a high priority on designing and administering pilot programs for scientific breakthrough prizes, in conjunction with private entities, that are consistent with Office of Science and Technology Policy guidelines. Breakthrough prizes shall center around technological breakthroughs that are of strategic importance to the Nation, and have the capacity to spur new economic growth.

SEC. 121. ROTATING PERSONNEL.

In order to control the costs to the Foundation of individuals employed pursuant to the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4701 note)—

(1) the Foundation shall provide to Congress a written justification and waiver by the Deputy Director in instances in which such an individual is to be paid at a rate that exceeds the maximum rate of pay for the Senior Executive Service, including, if applicable, adjustment for the certified Senior Executive Service Performance Appraisal System;

(2) the Foundation shall provide to Congress a written justification and waiver by the Director in instances in which such an individual is to be paid at a rate that exceeds the annual salary rate of the Vice President of the United States; and

(3) the Foundation shall provide an annual report to Congress on the costs to the Foundation of employing such individuals, including—

(A) the timeliness and completeness of Foundation actions in response to recommendations and findings from the Office of Inspector General related to the employment of such individuals;

(B) actions taken by the Foundation to reduce the cost to the Foundation of the employment of such individuals at pay levels that exceed the threshold described in paragraph (1);

(C) the value to the Foundation of employing individuals pursuant to the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4701 note) whose pay is set below the threshold described in paragraph (1); and

(D) the value to the Foundation of employing individuals who are not permanent employees whose pay requires a justification and waiver under paragraph (1) or (2).

SEC. 122. SENSE OF CONGRESS REGARDING INNOVATION CORPS.

It is the sense of Congress that—

(1) the 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 investment 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;

(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; and

(4) I-Corps should continue to promote a strong innovation system by investing in and supporting female entrepreneurs, who are historically underrepresented in entrepreneurial fields, through mentorship, education, and training.

SEC. 123. BRAIN RESEARCH THROUGH ADVANCING INNOVATIVE NEUROTECHNOLOGIES INITIATIVE.

The Foundation shall support research activities related to the Brain Research through Advancing Innovative Neurotechnologies Initiative. The Foundation is encouraged to work in conjunction with the Interagency Working Group on Neuroscience (IWGN) to determine how to use the data infrastructure of the Foundation and other applicable agencies to help neuroscientists collect, standardize, manage, and analyze the large amounts of data that will result from research attempting to understand how the brain functions.

SEC. 124. NOYCE SCHOLARSHIP PROGRAM AMENDMENTS.

(a) 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)—

(i) by 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 and working toward a master's degree—

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

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

(4) by redesignating subsections (g) through (i) as subsections (h) through (j), respectively; and

(5) by inserting 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.".

(b) DEFINITION.—Section 10(i)(5) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1(i)(5)) is amended by inserting ''computer science,'' after ''means a science,''.

SEC. 125. 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. 126. EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH.

The Foundation shall continue to operate a robust Experimental Program to Stimulate Competitive Research (EPSCoR). The EPSCoR program helps ensure that academic research institutions in more than half the States develop a strong research infrastructure and participate fully in federally funded research activities. The program should be a high priority for the Foundation.

SEC. 127. HISPANIC OPPORTUNITY PROGRAM IN EDUCATION AND SCIENCE.

Not later than 120 days after the date of enactment of this Act, the Director of the National Science Foundation shall establish the program described in section 7033 of the America COMPETES Act (42 U.S.C. 1862o–12) for Hispanic-serving institutions (as defined in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a)).

TITLE II—SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

SEC. 201. FINDINGS; SENSE OF CONGRESS.

(a) FINDINGS.—Congress finds the following:

(1) According to the National Science Board's Science and Engineering Indicators, the science and engineering workforce has shown sustained growth for more than half a century, and workers with science and engineering degrees tend to earn more than comparable workers in other fields.

(2) According to the Program for International Student Assessment 2012 results, America lags behind many other nations in STEM education. American students rank 21st in science and 26th in mathematics.

(3) Junior Achievement USA and ING found a decrease of 25 percent in the percentage of teenage students interested in STEM careers.

(4) According to a 2007 report from the Department of Labor, industries and firms dependent on a strong science and mathematics workforce have launched a variety of programs that target K–12 students and undergraduate and graduate students in STEM fields.

(5) The Federal Government spends nearly $3 billion annually on STEM education related program and activities, but encouraging STEM education activities beyond the scope of the Federal Government, including privately sponsored competitions and programs in our schools, is crucial to the future technical and economic competitiveness of the United States.

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

(1) more effective coordination and adoption of performance measurement based on objective outcomes for federally supported STEM programs is needed;

(2) leveraging private and nonprofit investments in STEM education will be essential to strengthening the Federal STEM portfolio;

(3) strengthening the Federal STEM portfolio may require program consolidations and terminations, but such changes should be based on evidence with stakeholder input;

(4) coordinating STEM programs and activities across the Federal Government in order to limit duplication and engage stakeholders in STEM programs and related activities for which objective out-

comes can be measured will bolster results of Federal STEM education programs, improve the return on taxpayers' investments in STEM education programs, and in turn strengthen the United States economy; and

(5) as the Committee on STEM Education implements the 5-year Strategic Plan for Federal STEM education required under section 101(b)(5) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621(b)(5)), STEM education stakeholders must be engaged and outcome-based evaluation metrics should be considered in the coordination and consolidation efforts for the Federal STEM portfolio.

SEC. 202. STEM EDUCATION ADVISORY PANEL.

(a) ESTABLISHMENT.—The President shall establish or designate a STEM Education Advisory Panel that incorporates key stakeholders from the education and industry sectors. The co-chairs shall be members of the President's Council of Advisors on Science and Technology.

(b) QUALIFICATIONS.—The Advisory Panel established or designated by the President under subsection (a) shall consist primarily of members from academic institutions, nonprofit organizations, and industry and shall include in-school, out-of-school, and informal educational

practitioners. Members of the Advisory Panel shall be qualified to provide advice and information on STEM education research, development, training, implementation, interventions, professional development, or workforce needs or concerns. In selecting or designating an Advisory Panel, the President may also seek and give consideration to recommendations from the Congress, industry, the scientific community (including the National Academy of Sciences, scientific professional societies, and academia), State and local governments, and other appropriate organizations. The Advisory Panel shall consist of 15 members, with 3 members appointed by the Speaker of the House of Representatives and 2 members appointed by the Majority Leader of the Senate.

(c) DUTIES.—The Advisory Panel shall advise the President, the Committee on STEM Education, and the STEM Education Coordinating Office established under section 204 on matters relating to STEM education, and shall each year provide general guidance to every Federal agency with STEM education programs or activities, including in the preparation of requests for appropriations for activities related to STEM education. The Advisory Panel shall also assess and develop recommendations for—

(1) progress made in implementing the STEM education Strategic Plan required under section 101 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621), and any needs or opportunities to update the strategic plan;

(2) the management, coordination, and implementation of STEM education programs and activities across the Federal Government;

(3) the appropriateness of criteria used by Federal agencies to evaluate the effectiveness of Federal STEM education programs and activities;

(4) ways to leverage private and nonprofit STEM investments and encourage public-private partnerships to strengthen STEM education and help build the STEM workforce pipeline;

(5) ways to incorporate workforce needs into Federal STEM education programs, particularly for specific fields of national interest and areas experiencing high unemployment rates;

(6) ways to better vertically and horizontally integrate Federal STEM programs and activities from pre-K through graduate study and the workforce, and from in-school to out-of-school in order to improve transitions for students moving through the STEM pipeline;

(7) whether societal and workforce concerns are adequately addressed by current Federal STEM education programs and activities;

(8) the extent to which Federal STEM education programs and activities are contributing to recruitment and retention of women and underrepresented students in the STEM education and workforce pipeline; and

(9) ways to encourage geographic diversity in STEM education and the workforce pipeline.

(d) REPORTS.—The Advisory Panel shall report, not less frequently than once every 3 fiscal years, to the President and Congress on its assessments under subsection (c) and its recommendations for ways to improve Federal STEM education programs. The first report under this subsection shall be submitted within 1 year after the date of enactment of this Act.

(e) TRAVEL EXPENSES OF NON-FEDERAL MEMBERS.—Non-Federal members of the Advisory Panel, while attending meetings of the Advisory Panel or while otherwise serving at the request of the head of the Advisory Panel away from their homes or regular places of business, may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for individuals in the Gov-

ernment serving without pay. Nothing in this subsection shall be construed to prohibit members of the Advisory Panel who are officers or employees of the United States from being allowed travel expenses, including per diem in lieu of subsistence, in accordance with existing law.

SEC. 203. COMMITTEE ON STEM EDUCATION.

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

(1) in the first subsection (b)—

(A) by redesignating paragraphs (3) through (6) as paragraphs (5) through (8), respectively;

(B) by inserting after paragraph (2) the following new paragraphs:

''(3) collaborate with the STEM Education Advisory Panel established under section 202 of the America COMPETES Reauthorization Act of 2015 and other outside stakeholders to ensure the engagement of the STEM education community;

''(4) review evaluation measures used for Federal STEM education programs;''; and

(C) in paragraph (8), as so redesignated by subparagraph (A) of this paragraph, by striking '', periodically update,''; and

(2) in the second subsection (b) and in subsection (c), by striking ''subsection (b)(5)'' and inserting ''subsection (b)(7)''.

SEC. 204. STEM EDUCATION COORDINATING OFFICE.

(a) ESTABLISHMENT.—The Director of the National Science Foundation shall establish within the Directorate for Education and Human Resources a STEM Education Coordinating Office, which shall have a Director and staff that shall include career employees detailed from Federal agencies that fund STEM education programs and activities.

(b) RESPONSIBILITIES.—The STEM Education Coordinating Office shall—

(1) provide technical and administrative support to—

(A) the Committee on STEM Education, especially in its coordination of Federal STEM programs and strategic planning responsibilities;

(B) the Advisory Panel established under section 202; and

(C) Federal agencies with STEM education programs;

(2) periodically update and maintain the inventory of federally sponsored STEM education pro-

grams and activities established under section 101(b)(8) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621); and

(3) provide for dissemination of information on Federal STEM education programs and activities, as appropriate, to stakeholders in academia, industry, nonprofit organizations with expertise in STEM education, State and local educational agencies, and other STEM stakeholders.

(c) REPORT.—The Director of the STEM Education Coordinating Office shall transmit a report annually to Congress not later than 60 days after the submission of the President's budget request. The annual report shall include—

(1) any updates to the inventory required under subsection (b)(2);

(2) a description of all consolidations and terminations of Federal STEM education programs implemented in the previous fiscal year, including an explanation of the reasons for consolidations and terminations;

(3) recommendations for consolidations and terminations of STEM education programs or activities in the upcoming fiscal year;

(4) a description of any significant new STEM Education public-private partnerships; and

(5) description of the progress made in carrying out the strategic plan required under section 101 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621), including a description of the outcome of any program assessments completed in the previous year.

(d) RESPONSIBILITIES OF NSF.—The Director of the National Science Foundation shall encourage and monitor the efforts of the STEM Education Coordinating Office to ensure that the Coordinating Office is carrying out its responsibilities under subsection (b) appropriately.

TITLE III—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SEC. 301. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated for the Office of Science and Technology Policy—

(1) $4,550,000 for fiscal year 2016; and

(2) $4,550,000 for fiscal year 2017.

SEC. 302. REGULATORY EFFICIENCY.

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

(1) high and increasing administrative burdens and costs in Federal research administration, par-

ticularly in the higher education sector where most federally sponsored research is performed, are eroding funds available to carry out basic scientific research;

(2) progress has been made over the last decade in streamlining the pre-award grant application process through Grants.gov, the Federal Government's website portal;

(3) post-award administrative costs have grown as Federal research agencies have continued to impose agency-unique compliance and reporting requirements on researchers and research institutions;

(4) facilities and administration costs at research universities can exceed 50 percent of the total value of Federal research grants, and it is estimated that nearly 30 percent of the funds invested annually in federally funded research is consumed by paperwork and other administrative processes required by Federal agencies; and

(5) it is a matter of critical importance to American competitiveness that administrative costs of federally funded research be streamlined so that a higher proportion of taxpayer dollars flow into direct research activities.

(b) IN GENERAL.—The Director of the Office of Science and Technology Policy shall establish a working group under the authority of the National Science and Technology Council, to include the Office of Management and Budget. The working group shall be responsible for reviewing Federal regulations affecting research and research universities and making recommendations on how to—

(1) harmonize, streamline, and eliminate duplicative Federal regulations and reporting requirements;

(2) minimize the regulatory burden on United States institutions of higher education performing federally funded research while maintaining accountability for Federal tax dollars; and

(3) identify and update specific regulations to refocus on performance-based goals rather than on process while still meeting the desired outcome.

(c) STAKEHOLDER INPUT.—In carrying out the responsibilities under subsection (b), the working group 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

1 businesses, federally funded research and development
2 centers, and others with a stake in ensuring effectiveness,
3 efficiency, and accountability in the performance of sci-
4 entific research.

5 (d) REPORT.—Not later than 1 year after the date
6 of enactment of this Act, and annually thereafter for 3
7 years, the Director shall report to the Committee on
8 Science, Space, and Technology of the House of Rep-
9 resentatives and the Committee on Commerce, Science,
10 and Transportation of the Senate on what steps have been
11 taken to carry out the recommendations of the working
12 group established under subsection (b).

13 **SEC. 303. COORDINATION OF INTERNATIONAL SCIENCE**
14 **AND TECHNOLOGY PARTNERSHIPS.**

15 (a) ESTABLISHMENT.—The Director of the Office of
16 Science and Technology Policy shall establish a body
17 under the National Science and Technology Council with
18 the responsibility to identify and coordinate international
19 science and technology cooperation that can strengthen
20 the United States science and technology enterprise, im-
21 prove economic and national security, and support United
22 States foreign policy goals.

23 (b) NSTC BODY LEADERSHIP.—The body estab-
24 lished under subsection (a) shall be co-chaired by senior

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

(c) RESPONSIBILITIES.—The body established under subsection (a) 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.

(d) REPORT TO CONGRESS.—The Director of the Office of Science and Technology Policy shall transmit a report, to be updated every 2 years, 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 (c)(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.

(e) ADDITIONAL REPORTS TO CONGRESS.—The Director of the Office of Science and Technology Policy shall transmit, not later than 60 days after the date of enactment of this Act and annually thereafter, 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, a report that lists and describes all foreign travel by Office of Science and Technology Policy staff and detailees. Each report shall specify the dates of each trip, the purpose of the trip, Office of Science and Technology Policy participants on the trip, total Office of Science and Technology Policy costs associated with the trip, and details of all international meetings, including meeting participants and topics addressed.

SEC. 304. ALTERNATIVE RESEARCH FUNDING MODELS.

(a) PILOT PROGRAM AUTHORITY.—The heads of Federal science agencies, in consultation with the Director of the Office of Science and Technology Policy, shall conduct appropriate pilot programs to validate alternative research funding models, including—

(1) scientific breakthrough prize programs that are of strategic importance to the Nation and have the capacity to spur new economic growth; and

(2) novel mechanisms of funding including obtaining non-Federal funds through crowd source funding.

(b) NON-FEDERAL PARTNERS.—A pilot program may be conducted under this section through an agreement, grant, or contractual relationship with a non-Federal entity regarding the design, administration, and funding of the program.

(c) PRIZE COMPETITION JUDGES.—

(1) REQUIREMENTS.—Judges for a prize competition carried out under this section shall not be required to be Federal employees. An individual who serves as a judge for a prize competition carried out under this section who is not a Federal employee shall be required to sign an agreement, developed by the Office of Science and Technology Policy, with respect to nondisclosure, conflict of interest, and judging code of conduct requirements.

(2) DISCLOSURE OF PERSONAL FINANCIAL INTERESTS.—A judge for a prize competition with a total purse of $10,000 or more, or for an aggregate of prize competitions with a total purse of $50,000

or more, shall be required to disclose all personal financial interests.

(3) REPORT TO CONGRESS.—Not later than 30 days after the Office of Science and Technology Policy completes development of an agreement under paragraph (1), it shall transmit a report to Congress describing the requirements of such agreement.

(d) PUBLIC NOTICE.—The heads of Federal science agencies shall widely advertise prize competitions to be conducted under this section to ensure maximum participation.

(e) DEFINITION.—For purposes of this section, the term ''Federal science agency'' means—

(1) the National Aeronautics and Space Administration;

(2) the National Science Foundation;

(3) the National Institute of Standards and Technology; and

(4) the National Weather Service.

(f) REPORT TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, and annually thereafter as part of the annual budget submission to Congress, the Director of the Office of Science and Technology Policy shall transmit to the Congress a report on programs identified and conducted under subsection (a).

SEC. 305. 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 a detailed explanation of the reasons for granting the waivers.'';

(6) 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;

(7) 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.'';

(8) 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 be available to the extent provided by appropriations Acts, 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'';

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

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

(11) in subsection (p)(2)—

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

(B) 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. 306. UNITED STATES CHIEF TECHNOLOGY OFFICER.

Title II of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C.

6611 et seq.) is amended by adding at the end the following new section:

"UNITED STATES CHIEF TECHNOLOGY OFFICER

"SEC. 210. (a) APPOINTMENT.—The President may appoint a United States Chief Technology Officer. Not later than 1 year after the date of enactment of the America COMPETES Reauthorization Act of 2015, such officer shall be one of the Associate Directors of the Office of Science and Technology Policy.

"(b) DUTIES.—The duties of the United States Chief Technology Officer should include—

"(1) advising the President and the Director of the Office of Science and Technology Policy on Federal information systems, technology, data, and innovation policies and initiatives;

"(2) promoting an improved exchange of information among the Federal Government, the public, and Congress;

"(3) promoting the use of innovative technological approaches across the Federal Government to ensure a modern information technology infrastructure;

"(4) working with the Chief Technology Officers and Chief Information Officers of all Federal agencies to ensure the use of best technologies and security practices for information systems;

"(5) establishing a working group with such Officers to exchange best practices about information systems;

"(6) promoting transparency and accountability across the Federal Government for all technological implementation by working with agencies to ensure that each arm of the Federal Government, including the executive branch, makes its records open and accessible;

"(7) promoting security and privacy protection policies for all Federal information technology systems that are consistent with Federal law, regulations, and current best practices;

"(8) promoting technological interoperability of key Government functions;

"(9) in consultation with the Office of Management and Budget, providing an annual report to the President, the Director of the Office of Science and Technology Policy, and Congress on the current state of information systems of all Federal agencies, including—

"(A) the status of information systems, including potential technology and security concerns about these information systems in all Federal agencies;

"(B) a review of all Federal websites with third-party embedded tools that—

"(i) identifies each embedded tool, who it belongs to, and the data it collects; and

"(ii) addresses effects on cybersecurity and consumer privacy, including whether each website provides prominent notice to consumers about the presence of the tool and whether the consumer may opt-out of the tool;

"(C) the amount of money being spent on various technologies; and

"(D) technology recommendations and best practices; and

"(10) such other functions and activities as the President and Director of the Office of Science and Technology Policy may assign.

"(c) REPORT.—In the absence of a United States Chief Technology Officer, the Director of the Office of Science and Technology Policy shall be responsible for providing the report required under subsection (b)(9).".

SEC. 307. NATIONAL RESEARCH COUNCIL STUDY ON TECHNOLOGY FOR EMERGENCY NOTIFICATIONS ON UNIVERSITY CAMPUSES.

(a) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall enter into an arrangement with the National Research Council to conduct and complete a study to identify and review technologies employed at institutions of higher education to provide notifications to students, faculty, and other personnel during emergency situations in accordance with the requirements of existing law. The study shall address—

(1) the timeliness of notifications during emergency situations provided by various technologies;

(2) the durability of such technologies in delivering such notifications to students, faculty, and other personnel; and

(3) the limitations exhibited by such technologies to successfully deliver notifications not more than 30 seconds after the institution of higher education transmits such notifications.

(b) REPORT REQUIRED.—Not later than 1 year after the date on which the National Research Council enters into the arrangement required by subsection (a), the Director of the Office of Science and Technology Policy shall

submit to Congress a report on the study conducted under such subsection.

TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

SEC. 401. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2016.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $938,700,000 for the National Institute of Standards and Technology for fiscal year 2016.

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

(A) $744,700,000 shall be for scientific and technical research and services laboratory activities;

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

(C) $135,000,000 shall be for industrial technology services activities, of which $130,000,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278I) and $5,000,000 shall be for the Network

for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(b) FISCAL YEAR 2017.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $938,700,000 for the National Institute of Standards and Technology for fiscal year 2017.

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

(A) $744,700,000 shall be for scientific and technical research and services laboratory activities;

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

(C) $135,000,000 shall be for industrial technology services activities, of which $130,000,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278I) and $5,000,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

SEC. 402. STANDARDS AND CONFORMITY ASSESSMENT.

Section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272) is amended—

(1) in subsection (b)—

(A) in the matter preceding paragraph (1), by striking ''authorized to take'' and inserting ''authorized to serve as the President's principal adviser on standards policy pertaining to the Nation's technological competitiveness and innovation ability and to take'';

(B) in paragraph (3), by striking ''compare standards'' and all that follows through ''Federal Government'' and inserting ''facilitate standards-related information sharing and cooperation between Federal agencies''; and

(C) in paragraph (13), by striking ''Federal, State, and local'' and all that follows through ''private sector'' and inserting ''technical standards activities and conformity assessment activities of Federal, State, and local governments with private sector''; and

(2) in subsection (c)—

(A) in paragraph (22), by striking ''and'' after the semicolon;

(B) by redesignating paragraph (23) as paragraph (25); and

(C) by inserting after paragraph (22) the following:

''(23) participate in and support scientific and technical conferences;

''(24) perform pre-competitive measurement science and technology research in partnership with institutions of higher education and industry to promote United States industrial competitiveness; and''.

SEC. 403. VISITING COMMITTEE ON ADVANCED TECHNOLOGY.

Section 10 of the National Institute of Standards and Technology Act (15 U.S.C. 278) is amended—

(1) in subsection (a)—

(A) by striking ''15 members'' and inserting ''not fewer than 11 members'';

(B) by striking ''at least 10'' and inserting ''at least two-thirds''; and

(C) by adding at the end the following: ''The Committee may consult with the National Research Council in making recommendations regarding general policy for the Institute.''; and

(2) in subsection (h)(1), by striking '', including the Program established under section 28,''.

SEC. 404. POLICE AND SECURITY AUTHORITY.

Section 15 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;''; and

(2) by striking ''United States Code.'' and inserting ''United States 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.''.

SEC. 405. EDUCATION AND OUTREACH.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by striking sections 18, 19, and 19A and inserting the following:

''SEC. 18. EDUCATION AND OUTREACH.

''(a) IN GENERAL.—The Director may support, promote, and coordinate activities and efforts to enhance public awareness and understanding of measurement sciences, standards, and technology by the general public, industry, government, and academia in support of the Institute's mission.

''(b) RESEARCH FELLOWSHIPS.—

''(1) IN GENERAL.—The Director may award research fellowships and other forms of financial and

logistical assistance, including direct stipend awards, to—

"(A) students at institutions of higher education within the United States who show promise as present or future contributors to the mission of the Institute; and

"(B) United States citizens for research and technical activities of the Institute.

"(2) SELECTION.—The Director shall select persons to receive such fellowships and assistance on the basis of ability and of the relevance of the proposed work to the mission and programs of the Institute.

"(3) DEFINITION.—For the purposes of this subsection, financial and logistical assistance includes, notwithstanding section 1345 of title 31, United States Code, or any contrary provision of law, temporary housing and local transportation to and from the Institute facilities.

"(c) POST-DOCTORAL FELLOWSHIP PROGRAM.—The Director shall establish and conduct a post-doctoral fellowship program, subject to the availability of appropriations, that shall include not fewer than 20 fellows per fiscal year. In evaluating applications for fellowships under this subsection, the Director shall give consideration to the goal

of promoting the participation of underrepresented students in research areas supported by the Institute.''.

SEC. 406. PROGRAMMATIC PLANNING REPORT.

Section 23(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278i(d)) is amended by adding at the end the following: ''The 3-year programmatic planning document shall also describe how the Director is addressing recommendations from the Visiting Committee on Advanced Technology established under section 10.''.

SEC. 407. ASSESSMENTS BY THE NATIONAL RESEARCH COUNCIL.

(a) NATIONAL ACADEMY OF SCIENCES 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 Academy of Sciences 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 crosscutting 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.

(b) ADDITIONAL ASSESSMENTS.—Section 24 of the National Institute of Standards and Technology Act (15 U.S.C. 278j) is amended to read as follows:

"SEC. 24. ASSESSMENTS BY THE NATIONAL RESEARCH COUNCIL.

''(a) IN GENERAL.—The Institute shall contract with the National Research Council to perform and report on assessments of the technical quality and impact of the work conducted at Institute laboratories.

''(b) SCHEDULE.—Two laboratories shall be assessed under subsection (a) each year, and each laboratory shall be assessed at least once every 3 years.

''(c) SUMMARY REPORT.—Beginning in the year after the first assessment is conducted under subsection (a), and once every 2 years thereafter, the Institute shall contract with the National Research Council to prepare a report that summarizes the findings common across the individual assessment reports.

"(d) ADDITIONAL ASSESSMENTS.—The Institute, at the discretion of the Director, also may contract with the National Research Council to conduct additional assessments of Institute programs and projects that involve collaboration across the Institute laboratories and centers and assessments of selected scientific and technical topics.

"(e) CONSULTATION WITH VISITING COMMITTEE ON ADVANCED TECHNOLOGY.—The National Research Council may consult with the Visiting Committee on Advanced Technology established under section 10 in performing the assessments under this section.

"(f) REPORTS.—Not later than 30 days after the completion of each assessment, the Institute shall transmit the report on such assessment to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.".

SEC. 408. 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 and, if appropriate, through other officials, shall provide assistance for the creation and support of manufacturing extension centers, to be known as the 'Hollings Manufacturing Extension Centers', for the transfer of manufacturing technology and best business practices (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 Centers is to enhance competitiveness, productivity, and technological performance in United States manufacturing through—

"(A) the transfer of manufacturing technology and techniques developed at the Institute 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 utilization, when appropriate, of the expertise and capability that exists in Federal laboratories other than the Institute;

"(F) 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; and

"(G) promoting and expanding certification systems offered through industry, associations, and local colleges, when appropriate.

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

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

"(2) 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

"(3) 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) OPERATIONS.—

"(1) FINANCIAL SUPPORT.—The Secretary may provide financial support to any Center created under subsection (a). The Secretary may not provide to a Center more than 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 3 years.

"(3) APPLICATION.—

"(A) IN GENERAL.—Any nonprofit institution, or consortium thereof, or State or local government, 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 competitiveness, management, productivity, 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 also submit a proposal for the allocation of the legal rights associated with any invention which 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 tech-

nologies 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 private 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 sixth year.

"(F) PROBATION.—The Secretary shall not provide funding unless the Center has received a positive evaluation. 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 probation for 1 year, after which time the panel shall reevaluate the Center. 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 to select an operator for the Center or may close the Center.

"(G) ADDITIONAL FINANCIAL SUPPORT.—After the sixth 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) EIGHT-YEAR REVIEW.—A Center shall undergo an independent review in the eighth year of operation. Each evaluation panel

shall measure the Center's performance against the objectives specified in this section. A Center that has not received a positive evaluation as a result of an independent review shall be notified by the Program of the deficiencies in its performance and shall be placed on probation for 1 year, after which time the Program shall re-evaluate the Center. If the Center has not addressed the deficiencies identified by the review, or shown a significant improvement in its performance, the Director shall conduct a new competition to select an operator for the Center or may close the Center.

"(I) RECOMPETITION.—If a recipient of a Center award has received financial assistance for 10 consecutive years, the Director shall conduct a new competition to select an operator for the Center consistent with the plan required in this Act. Incumbent Center operators in good standing shall be eligible to compete for the new award.

"(J) REPORTS.—

"(i) PLAN.—Not later than 180 days after the date of enactment of the America COMPETES Reauthorization Act of 2015,

the Director 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 plan as to how the Institute will conduct reviews, assessments, and reapplication competitions under this paragraph.

"(ii) INDEPENDENT ASSESSMENT.—The Director shall contract with an independent organization to perform an assessment of the implementation of the reapplication competition process under this paragraph within 3 years after the transmittal of the report under clause (i). The organization conducting the assessment under this clause may consult with the MEP Advisory Board.

"(iii) COMPARISON OF CENTERS.—Not later than 2 years after the date of enactment of the America COMPETES Reauthorization Act of 2015, the Director shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Com-

mittee on Commerce, Science, and Transportation of the Senate a report providing information on the first and second years of operations for centers operating from new competitions or recompetition as compared to longstanding centers. The report shall provide detail on the engagement in services provided by Centers and the characteristics of services provided, including volume and type of services, so that the Committees can evaluate whether the cost-sharing ratio has an effect on the services provided at Centers.

"(6) 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.

"(7) PROTECTION OF CENTER CLIENT CONFIDENTIAL INFORMATION.—Section 552 of title 5, United States Code, shall apply to the following information obtained by the Federal Government on a confidential basis in connection with the activities of

any participant involved in the Hollings Manufacturing Extension Partnership:

"(A) Information on the business operation of any participant in a Hollings Manufacturing Extension Partnership program or of a client of a Center.

"(B) Trade secrets possessed by any client of a Center.

"(8) ADVISORY BOARDS.—Each Center's advisory boards shall institute a conflict of interest policy, approved by the Director, that ensures the Board represents local small and medium-sized manufacturers in the Center's region. Board Members may not serve as a vendor or provide services to the Center, nor may they serve on more than one Center's oversight board simultaneously.

"(d) 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, to be available to the extent provided by ap-

propriations Acts, 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.

"(e) 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 two members shall be employed by or on an advisory board for the Centers, at least one member shall represent a community college, and at least five 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 1-year period following the expiration of the second such term.

"(3) MEETINGS.—The MEP Advisory Board shall meet not less than two 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

1 submission to Congress of the President's annual
2 budget request in each year. Such report shall ad-
3 dress the status of the program established pursuant
4 to this section and comment on the relevant sections
5 of the programmatic planning document and updates
6 thereto transmitted to Congress by the Director
7 under subsections (c) and (d) of section 23.
8 ''(f) COMPETITIVE GRANT PROGRAM.—
9 ''(1) ESTABLISHMENT.—The Director shall es-
10 tablish, within the Hollings Manufacturing Exten-
11 sion Partnership, under this section and section 26,
12 a program of competitive awards among participants
13 described in paragraph (2) for the purposes de-
14 scribed in paragraph (3).
15 ''(2) PARTICIPANTS.—Participants receiving
16 awards under this subsection shall be the Centers, or
17 a consortium of such Centers.
18 ''(3) PURPOSE.—The purpose of the program
19 under this subsection is to add capabilities to the
20 Hollings Manufacturing Extension Partnership, in-
21 cluding the development of projects to solve new or
22 emerging manufacturing problems as determined by
23 the Director, in consultation with the Director of the
24 Hollings Manufacturing Extension Partnership pro-
25 gram, the MEP Advisory Board, and small and me-

dium-sized manufacturers. 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. Centers may be reimbursed for costs incurred under the program.

"(4) 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.

"(5) 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) improve the competitiveness of industries in the region in which the Center or Centers are located;

"(B) create jobs or train newly hired employees; and

"(C) promote the transfer and commercialization of research and technology from in-

stitutions of higher education, national laboratories, and nonprofit research institutes.

"(6) PROGRAM CONTRIBUTION.—Recipients of awards under this subsection shall not be required to provide a matching contribution.

"(7) GLOBAL MARKETPLACE PROJECTS.—In making awards under this subsection, the Director, in consultation with the MEP Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace.

"(8) DURATION.—Awards under this subsection shall last no longer than 3 years.

"(g) EVALUATION OF OBSTACLES UNIQUE TO SMALL MANUFACTURERS.—The Director shall—

"(1) evaluate obstacles that are unique to small manufacturers that prevent such manufacturers from effectively competing in the global market;

"(2) implement a comprehensive plan to train the Centers to address such obstacles; and

"(3) facilitate improved communication between the Centers to assist such manufacturers in imple-

menting appropriate, targeted solutions to such obstacles.

''(h) DEFINITIONS.—In this section—

''(1) 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); and

''(2) 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. 409. ELIMINATION OF OBSOLETE REPORTS.

Section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n) is amended—

(1) by striking subsection (g); and

(2) in subsection (k)—

(A) in paragraph (3), by inserting ''and'' after the semicolon at the end;

(B) in paragraph (4)(B), by striking ''; and'' at the end and inserting a period; and

(C) by striking paragraph (5).

SEC. 410. MODIFICATIONS TO GRANTS AND COOPERATIVE AGREEMENTS.

Section 8(a) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3706(a)) is amended by striking ''The total amount of any such grant or cooperative agreement may not exceed 75 percent of the total cost of the program.''.

SEC. 411. INFORMATION SYSTEMS STANDARDS CONSULTATION.

Section 20(c)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278g–3(c)(1)) is amended by striking ''the National Security Agency,''.

SEC. 412. UNITED STATES-ISRAELI COOPERATION.

It is the Sense of Congress that—

(1) partnerships that facilitate basic scientific research between the United States and Israel advance technology development, innovation, and commercialization leading to growth in various sectors, including manufacturing, and creating benefits for both nations;

(2) joint research and development agreements carried out through government organizations like the National Institute of Standards and Technology support these efforts;

(3) partnerships between the United States and Israel that further the basic scientific enterprise should be encouraged; and

(4) the National Institute of Standards and Technology should continue to facilitate scientific collaborations between Israel and United States' technical agencies working in measurement science and standardization.

TITLE V—DEPARTMENT OF ENERGY SCIENCE

SEC. 501. MISSION.

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. In support of this mission, the Director shall carry out programs on basic energy sciences, advanced scientific computing research, high energy physics, biological and environmental research, fusion energy sciences, and nuclear physics, including as provided under subtitle A of title V of the America

COMPETES Reauthorization Act of 2015, through activities focused on—

"(1) fundamental scientific discoveries through the study of matter and energy;

"(2) science in the national interest, including—

"(A) advancing an agenda for American energy security through research on energy production, storage, transmission, efficiency, and use; and

"(B) advancing our understanding of the Earth's climate through research in atmospheric and environmental sciences; 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 materials science.

"(d) COORDINATION WITH OTHER DEPARTMENT OF ENERGY PROGRAMS.—The Under Secretary for Science and Energy shall ensure the coordination of Office of Science activities and programs with other activities of the Department.".

SEC. 502. BASIC ENERGY SCIENCES.

(a) PROGRAM.—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.

(b) MISSION.—The mission of the program described in subsection (a) shall be to support fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels in order to provide the foundations for new energy technologies and to support Department missions in energy, environment, and national security.

(c) BASIC ENERGY SCIENCES USER FACILITIES.—The Director shall carry out a subprogram for the development, construction, operation, and maintenance of national user facilities to 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—

(1) x-ray light sources;

(2) neutron sources;

(3) nanoscale science research centers; and

(4) other facilities the Director considers appropriate, consistent with section 209 of the Department of Energy Organization Act (42 U.S.C. 7139).

(d) LIGHT SOURCE LEADERSHIP INITIATIVE.—

(1) ESTABLISHMENT.—In support of the subprogram authorized in subsection (c), the Director shall establish an initiative to sustain and advance global leadership of light source user facilities.

(2) LEADERSHIP STRATEGY.—Not later than 9 months after the date of enactment of this Act, and biennially thereafter, the Director shall prepare, in consultation with relevant stakeholders, and 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 light source leadership strategy that—

(A) identifies, prioritizes, and describes plans for the development, construction, and operation of light sources over the next decade;

(B) describes plans for optimizing management and use of existing light source facilities; and

(C) assesses the international outlook for light source user facilities and describes plans for United States cooperation in such projects.

(3) ADVISORY COMMITTEE FEEDBACK AND RECOMMENDATIONS.—Not later than 45 days after submission of the strategy described in paragraph (2), the Basic Energy Sciences Advisory Committee shall provide the Director, 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 of the Advisory Committee's analyses, findings, and recommendations for improving the strategy, including a review of the most recent budget request for the initiative.

(4) PROPOSED BUDGET.—The Director shall transmit annually to Congress a proposed budget corresponding to the activities identified in the strategy.

(e) ACCELERATOR RESEARCH AND DEVELOPMENT.—The Director shall carry out research and development on advanced accelerator and storage ring technologies relevant to the development of Basic Energy Sciences user facilities, in consultation with the Office of

Science's High Energy Physics and Nuclear Physics programs.

(f) 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 fundamental and use-inspired energy research to accelerate scientific breakthroughs.

(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. 503. ADVANCED SCIENTIFIC COMPUTING RESEARCH.

(a) PROGRAM.—The Director shall carry out a research, development, and demonstration program to advance computational and networking capabilities to analyze, model, simulate, and predict complex phenomena relevant to the development of new energy technologies and the competitiveness of the United States.

(b) FACILITIES.—The Director, as part of the program described in subsection (a), shall develop and maintain world-class computing and network facilities for science and deliver critical research in applied mathematics, computer science, and advanced networking to support the Department's missions.

(c) 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) 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).

"(6) 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.

''(7) NATIONAL LABORATORY.—The term 'National Laboratory' means any one of the seventeen laboratories owned by the Department.

''(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.''.

(d) DEPARTMENT OF ENERGY HIGH-END COMPUTING RESEARCH AND DEVELOPMENT 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 America COMPETES Reauthorization 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.''.

SEC. 504. HIGH ENERGY PHYSICS.

(a) PROGRAM.—The Director shall carry out a research program on the fundamental constituents of matter and energy and the nature of space and time.

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

(1) the Director should incorporate the findings and recommendations of the Particle Physics Project Prioritization Panel's report entitled ''Building for Discovery: Strategic Plan for U.S. Particle Physics in the Global Context'', into the Department's planning process as part of the program described in subsection (a);

(2) the Director should prioritize domestically hosted research projects that will maintain the United States position as a global leader in particle physics and attract the world's most talented physicists and foreign investment for international collaboration; and

(3) the nations that lead in particle physics by hosting international teams dedicated to a common scientific goal attract the world's best talent and in-

spire future generations of physicists and technologists.

(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.

(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, which may include collaborations with the National Aeronautics and Space Administration or the National Science Foundation, or international collaborations.

(e) ACCELERATOR RESEARCH AND DEVELOPMENT.—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. The Director shall ensure access to national laboratory accelerator facilities, infrastructure, and technology for users and developers of accelerators that advance applications in energy and the environment, medicine, industry, national security, and discovery science.

(f) 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. 505. BIOLOGICAL AND ENVIRONMENTAL RESEARCH.

(a) PROGRAM.—The Director shall carry out a program of research, development, and demonstration in the areas of biological systems science and climate and environmental science to support the energy and environmental missions of the Department.

(b) PRIORITY RESEARCH.—In carrying out this section, the Director shall prioritize fundamental research on biological systems and genomics science with the greatest potential to enable scientific discovery.

(c) ASSESSMENT.—Not later than 12 months after the date of enactment of this Act, the Comptroller General shall submit a report to Congress identifying climate science-related initiatives under this section that overlap or duplicate initiatives of other Federal agencies and the extent of such overlap or duplication.

(d) LIMITATION.—The Director shall not approve new climate science-related initiatives to be carried out through the Office of Science without making a determina-

1 tion that such work is unique and not duplicative of work
2 by other Federal agencies. Not later than 3 months after
3 receiving the assessment required under subsection (c),
4 the Director shall cease those climate science-related ini-
5 tiatives identified in the assessment as overlapping or du-
6 plicative, unless the Director justifies that such work is
7 critical to achieving American energy security.

8 (e) LOW DOSE RADIATION RESEARCH PROGRAM.—

9 (1) IN GENERAL.—The Director of the Depart-
10 ment of Energy Office of Science shall carry out a
11 research program on low dose radiation. The pur-
12 pose of the program is to enhance the scientific un-
13 derstanding of and reduce uncertainties associated
14 with the effects of exposure to low dose radiation in
15 order to inform improved risk management methods.

16 (2) STUDY.—Not later than 60 days after the
17 date of enactment of this Act, the Director shall
18 enter into an agreement with the National Acad-
19 emies to conduct a study assessing the current sta-
20 tus and development of a long-term strategy for low
21 dose radiation research. Such study shall be com-
22 pleted not later than 18 months after the date of en-
23 actment of this Act. The study shall be conducted in
24 coordination with Federal agencies that perform ion-
25 izing radiation effects research and shall leverage

the most current studies in this field. Such study shall—

(A) identify current scientific challenges for understanding the long-term effects of ionizing radiation;

(B) assess the status of current low dose radiation research in the United States and internationally;

(C) formulate overall scientific goals for the future of low-dose radiation research in the United States;

(D) 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;

(E) define the essential components of a research program that would address this research agenda within the universities and the National Laboratories; and

(F) assess the cost-benefit effectiveness of such a program.

(3) RESEARCH PLAN.—Not later than 90 days after the completion of the study performed under paragraph (2) the Secretary of Energy 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 5-year research plan that responds to the study's findings and recommendations and identifies and prioritizes research needs.

(4) DEFINITION.—In this subsection, the term ''low dose radiation'' means a radiation dose of less than 100 millisieverts.

(5) RULE OF CONSTRUCTION.—Nothing in this subsection shall be construed to subject any research carried out by the Director under the research program under this subsection to any limitations described in section 977(e) of the Energy Policy Act of 2005 (42 U.S.C. 16317(e)).

SEC. 506. FUSION ENERGY.

(a) PROGRAM.—The Director shall carry out a fusion energy sciences research program to expand the fundamental understanding of plasmas and matter at very high temperatures and densities and to build the scientific foundation necessary to enable fusion power.

(b) 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)—

(1) 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 demonstrate materials that can endure the neutron, plasma, and heat fluxes expected in a fusion power system; and

(2) the Secretary shall—

(A) provide an assessment of the need for a facility or facilities that can examine and test potential fusion and next generation fission materials and other enabling technologies relevant to the development of fusion power; and

(B) provide an assessment of whether a single new facility that substantially addresses magnetic fusion and next generation fission materials research needs is feasible, in conjunction with the expected capabilities of facilities operational as of the date of enactment of this Act.

(c) 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 optimize the tokamak approach to fusion energy.

(2) ITER.—

(A) 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.

(B) 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.''.

(C) SENSE OF CONGRESS.—It is the sense of Congress that the United States should support a robust, diverse fusion program. 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.

(d) 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.

(e) 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 represent 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.

(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 establish 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; and

(C) assess the ability of the United States fusion workforce to carry out the activities identified in subparagraphs (A) and (B), 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. 507. NUCLEAR PHYSICS.

(a) PROGRAM.—The Director shall carry out a program of experimental and theoretical research, and support associated facilities, to discover, explore, and understand all forms of nuclear matter.

(b) ISOTOPE DEVELOPMENT AND PRODUCTION FOR RESEARCH APPLICATIONS.—The Director shall carry out a program for the production of isotopes, including the development of techniques to produce isotopes, that the Secretary determines are needed for research, medical, industrial, or other purposes. In making this determination, the Secretary shall—

(1) ensure that, as has been the policy of the United States since the publication in 1965 of Federal Register notice 30 Fed. Reg. 3247, isotope production activities do not compete with private industry unless critical national interests necessitate the Federal Government's involvement;

(2) ensure that activities undertaken pursuant to this section, to the extent practicable, promote the growth of a robust domestic isotope production industry; and

(3) consider any relevant recommendations made by Federal advisory committees, the National Academies, and interagency working groups in which the Department participates.

SEC. 508. 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.

SEC. 509. DOMESTIC MANUFACTURING.

Not later than 1 year after the date of enactment of this Act, the Secretary 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 on the current ability of domestic manufacturers to meet the procurement requirements for major ongoing projects funded by the Office of Science of the Department, including a calculation of the percentage of equipment acquired from domestic manufacturers for this purpose.

SEC. 510. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2016.—There are authorized to be appropriated to the Secretary for the Office of Science for fiscal year 2016 $5,339,800,000, of which—

(1) $1,850,000,000 shall be for Basic Energy Science;

(2) $788,000,000 shall be for High Energy Physics;

(3) $550,000,000 shall be for Biological and Environmental Research;

(4) $624,700,000 shall be for Nuclear Physics;

(5) $621,000,000 shall be for Advanced Scientific Computing Research;

(6) $488,000,000 shall be for Fusion Energy Sciences;

(7) $113,600,000 shall be for Science Laboratories Infrastructure;

(8) $181,000,000 shall be for Science Program Direction;

(9) $103,000,000 shall be for Safeguards and Security; and

(10) $20,500,000 shall be for Workforce Development for Teachers and Scientists.

(b) FISCAL YEAR 2017.—There are authorized to be appropriated to the Secretary for the Office of Science for fiscal year 2017 $5,339,800,000, of which—

(1) $1,850,000,000 shall be for Basic Energy Science;

(2) $788,000,000 shall be for High Energy Physics;

(3) $550,000,000 shall be for Biological and Environmental Research;

(4) $624,700,000 shall be for Nuclear Physics;

(5) $621,000,000 shall be for Advanced Scientific Computing Research;

(6) $488,000,000 shall be for Fusion Energy Sciences;

(7) $113,600,000 shall be for Science Laboratories Infrastructure;

(8) $181,000,000 shall be for Science Program Direction;

(9) $103,000,000 shall be for Safeguards and Security; and

(10) $20,500,000 shall be for Workforce Development for Teachers and Scientists.

SEC. 511. DEFINITIONS.

In this title—

(1) the term ''Department'' means the Department of Energy;

(2) the term ''Director'' means the Director of the Office of Science of the Department; and

(3) the term ''Secretary'' means the Secretary of Energy.

TITLE VI—DEPARTMENT OF ENERGY APPLIED RESEARCH AND DEVELOPMENT

Subtitle A—Crosscutting Research and Development

SEC. 601. CROSSCUTTING RESEARCH AND DEVELOPMENT.

(a) CROSSCUTTING RESEARCH AND DEVELOPMENT.—The Secretary shall, through the Under Secretary for Science and Energy, utilize the capabilities of the Department to identify strategic opportunities for collaborative research, development, demonstration, and commercial application of innovative science and technologies for—

(1) advancing the understanding of the energy-water-land use nexus;

(2) modernizing the electric grid by improving energy transmission and distribution systems security and resiliency;

(3) utilizing supercritical carbon dioxide in electric power generation;

(4) subsurface technology and engineering;

(5) high performance computing;

(6) cybersecurity; and

(7) critical challenges identified through comprehensive energy studies, evaluations, and reviews.

(b) CROSSCUTTING APPROACHES.—To the maximum extent practicable, the Secretary shall seek to leverage existing programs, and consolidate and coordinate activities, throughout the Department to promote collaboration and crosscutting approaches within programs.

(c) ADDITIONAL ACTIONS.—The Secretary shall—

(1) prioritize activities that promote the utilization of all affordable domestic resources;

(2) develop a rigorous and realistic planning, evaluation, and technical assessment framework for setting objective, long-term strategic goals and evaluating progress that ensures the integrity and inde-

pendence to insulate planning from political influence and the flexibility to adapt to market dynamics;

(3) ensure that activities shall be undertaken in a manner that does not duplicate other activities within the Department or other Federal Government activities; and

(4) identify programs that may be more effectively left to the States, industry, nongovernmental organizations, institutions of higher education, or other stakeholders.

SEC. 602. STRATEGIC RESEARCH PORTFOLIO ANALYSIS AND COORDINATION PLAN.

Section 994 of Energy Policy Act of 2005 (42 U.S.C. 16358) is amended to read as follows:

"SEC. 994. STRATEGIC RESEARCH PORTFOLIO ANALYSIS AND COORDINATION PLAN.

"(a) IN GENERAL.—The Secretary shall periodically review all of the science and technology activities of the Department in a strategic framework that takes into account the frontiers of science to which the Department can contribute, the national needs relevant to the Department's statutory missions, and global energy dynamics.

"(b) COORDINATION ANALYSIS AND PLAN.—As part of the review under subsection (a), the Secretary shall develop a plan to improve coordination and collaboration in

research, development, demonstration, and commercial application activities across Department organizational boundaries.

"(c) PLAN CONTENTS.—The plan shall describe—

"(1) crosscutting scientific and technical issues and research questions that span more than one program or major office of the Department;

"(2) how the applied technology programs of the Department are coordinating their activities, and addressing those questions;

"(3) ways in which the technical interchange within the Department, particularly between the Office of Science and the applied technology programs, can be enhanced, including limited ways in which the research agendas of the Office of Science and the applied programs can better interact and assist each other;

"(4) a description of how the Secretary will ensure that the Department's overall research agenda include, in addition to fundamental, curiosity-driven research, fundamental research related to topics of concern to the applied programs, and applications in Departmental technology programs of research results generated by fundamental, curiosity-driven research;

"(5) critical assessments of any ongoing programs that have experienced sub-par performance or cost over-runs of 10 percent or more over 1 or more years;

"(6) activities that may be more effectively left to the States, industry, nongovernmental organizations, institutions of higher education, or other stakeholders; and

"(7) detailed proposals for innovation hubs, institutes, and research centers prior to establishment or renewal by the Department, including—

"(A) certification that all hubs, institutes, and research centers will advance the mission of the Department, and prioritize research, development, and demonstration;

"(B) certification that the establishment or renewal of hubs, institutes, or research centers will not diminish funds available for basic research and development within the Office of Science; and

"(C) certification that all hubs, institutes, and research centers established or renewed within the Office of Science are consistent with the mission of the Office of Science as described

in section 209(c) of the Department of Energy Organization Act (42 U.S.C. 7139(c)).

"(d) PLAN TRANSMITTAL.—Not later than 1 year after the date of enactment of the America COMPETES Reauthorization Act of 2015, and every 4 years thereafter, the Secretary 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 the results of the review under subsection (a) and the coordination plan under subsection (b).".

SEC. 603. STRATEGY FOR FACILITIES AND INFRASTRUCTURE.

(a) AMENDMENTS.—Section 993 of the Energy Policy Act of 2005 (42 U.S.C. 16357) is amended—

(1) by amending the section heading to read as follows: "**STRATEGY FOR FACILITIES AND INFRASTRUCTURE**"; and

(2) in subsection (b)(1), by striking "2008" and inserting "2018".

(b) TABLE OF CONTENTS AMENDMENT.—The item relating to section 993 in the table of contents of the Energy Policy Act of 2005 is amended to read as follows:

"Sec. 993. Strategy for facilities and infrastructure.".

SEC. 604. 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, and demonstration 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, including 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 two 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 consortium 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, subject to the availability of appropriations, 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, subject to the availability of appropriations, 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, and demonstration 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, and avoid such conflicts.

(B) DISQUALIFICATION AND REVOCATION.—The Secretary may disqualify an appli-

1 cation or revoke funds distributed to a Hub if
2 the Secretary discovers a failure to comply with
3 conflict of interest procedures established under
4 subparagraph (A).
5 (3) PROHIBITION ON CONSTRUCTION.—
6 (A) IN GENERAL.—No funds provided pur-
7 suant to this section may be used for construc-
8 tion of new buildings or facilities for Hubs.
9 Construction of new buildings or facilities shall
10 not be considered as part of the non-Federal
11 share of a Hub cost-sharing agreement.
12 (B) TEST BED AND RENOVATION EXCEP-
13 TION.—Nothing in this subsection shall prohibit
14 the use of funds provided pursuant to this sec-
15 tion, or non-Federal cost share funds, for re-
16 search or for the construction of a test bed or
17 renovations to existing buildings or facilities for
18 the purposes of research if the Secretary deter-
19 mines that the test bed or renovations are lim-
20 ited to a scope and scale necessary for the re-
21 search to be conducted.
22 (e) TERMINATION.—Consistent with the existing au-
23 thorities of the Department, the Secretary may terminate
24 an underperforming Hub for cause during the perform-
25 ance 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 efficiently 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, and demonstration 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) HUB.—The term ''Hub'' means an Energy Innovation Hub established or operating in accordance with this section, including any Energy Innovation Hub existing as of the date of enactment of this Act.

(3) 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.

Subtitle B—Electricity Delivery and Energy Reliability Research and Development

SEC. 611. DISTRIBUTED ENERGY AND ELECTRIC ENERGY SYSTEMS.

Section 921 of the Energy Policy Act of 2005 (42 U.S.C. 16211) is amended to read as follows:

"SEC. 921. DISTRIBUTED ENERGY AND ELECTRIC ENERGY SYSTEMS.

''(a) IN GENERAL.—The Secretary shall carry out programs of research, development, demonstration, and commercial application on distributed energy resources and systems reliability and efficiency, to improve the reliability and efficiency of distributed energy resources and systems, integrating advanced energy technologies with grid connectivity, including activities described in this subtitle. The programs shall address advanced energy technologies and systems and advanced grid security, resiliency, and reliability technologies.

''(b) OBJECTIVES.—To the maximum extent practicable, the Secretary shall seek to—

''(1) leverage existing programs;

''(2) consolidate and coordinate activities throughout the Department to promote collaboration and crosscutting approaches;

"(3) ensure activities are undertaken in a manner that does not duplicate other activities within the Department or other Federal Government activities; and

"(4) identify programs that may be more effectively left to the States, industry, nongovernmental organizations, institutions of higher education, or other stakeholders.".

SEC. 612. ELECTRIC TRANSMISSION AND DISTRIBUTION RESEARCH AND DEVELOPMENT.

(a) AMENDMENTS.—Section 925 of the Energy Policy Act of 2005 (42 U.S.C. 16215) is amended—

(1) by amending the section heading to read as follows: "**ELECTRIC TRANSMISSION AND DISTRIBUTION RESEARCH AND DEVELOPMENT**";

(2) by amending subsection (a) to read as follows:

"(a) PROGRAM.—The Secretary shall establish a comprehensive research, development, and demonstration program to ensure the reliability, efficiency, and environmental integrity of electrical transmission and distribution systems, which shall include innovations for—

"(1) advanced energy delivery technologies, energy storage technologies, materials, and systems;

"(2) advanced grid reliability and efficiency technology development;

"(3) technologies contributing to significant load reductions;

"(4) advanced metering, load management, and control technologies;

"(5) technologies to enhance existing grid components;

"(6) the development and use of high-temperature superconductors to—

"(A) enhance the reliability, operational flexibility, or power-carrying capability of electric transmission or distribution systems; or

"(B) increase the efficiency of electric energy generation, transmission, distribution, or storage systems;

"(7) integration of power systems, including systems to deliver high-quality electric power, electric power reliability, and combined heat and power;

"(8) supply of electricity to the power grid by small scale, distributed, and residential-based power generators;

"(9) the development and use of advanced grid design, operation, and planning tools;

"(10) technologies to enhance security for electrical transmission and distributions systems; and

"(11) any other infrastructure technologies, as appropriate."; and

(3) by amending subsection (c) to read as follows:

"(c) IMPLEMENTATION.—

"(1) CONSORTIUM.—The Secretary shall consider implementing the program under this section using a consortium of participants from industry, institutions of higher education, and National Laboratories.

"(2) OBJECTIVES.—To the maximum extent practicable the Secretary shall seek to—

"(A) leverage existing programs;

"(B) consolidate and coordinate activities, throughout the Department to promote collaboration and crosscutting approaches;

"(C) ensure activities are undertaken in a manner that does not duplicate other activities within the Department or other Federal Government activities; and

"(D) identify programs that may be more effectively left to the States, industry, non-

governmental organizations, institutions of higher education, or other stakeholders.''.

(b) TABLE OF CONTENTS AMENDMENT.—The item relating to section 925 in the table of contents of the Energy Policy Act of 2005 is amended to read as follows:

''Sec. 925. Electric transmission and distribution research and development.''.

Subtitle C—Nuclear Energy Research and Development

SEC. 621. OBJECTIVES.

Section 951 of the Energy Policy Act of 2005 (42 U.S.C. 16271) is amended—

(1) by amending subsection (a) to read as follows:

''(a) IN GENERAL.—The Secretary shall conduct programs of civilian nuclear energy research, development, demonstration, and commercial application, including activities described in this subtitle. Such programs shall take into consideration the following objectives:

''(1) Enhancing nuclear power's viability as part of the United States energy portfolio.

''(2) Reducing used nuclear fuel and nuclear waste products generated by civilian nuclear energy.

''(3) Supporting technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty.

"(4) Providing the technical means to reduce the likelihood of nuclear proliferation.

"(5) Maintaining a cadre of nuclear scientists and engineers.

"(6) Maintaining National Laboratory and university nuclear programs, including their infrastructure.

"(7) Supporting both individual researchers and multidisciplinary teams of researchers to pioneer new approaches in nuclear energy, science, and technology.

"(8) Developing, planning, constructing, acquiring, and operating special equipment and facilities for the use of researchers.

"(9) Supporting technology transfer and other appropriate activities to assist the nuclear energy industry, and other users of nuclear science and engineering, including activities addressing reliability, availability, productivity, component aging, safety, and security of nuclear power plants.

"(10) Reducing the environmental impact of nuclear energy-related activities.

"(11) Researching and developing technologies and processes to meet Federal and State requirements and standards for nuclear power systems.";

(2) by striking subsections (b) through (d); and

(3) by redesignating subsection (e) as subsection (b).

SEC. 622. PROGRAM OBJECTIVES STUDY.

Section 951 of the Energy Policy Act of 2005 (42 U.S.C. 16271) is further amended by adding at the end the following new subsection:

''(c) PROGRAM OBJECTIVES STUDY.—In furtherance of the program objectives listed in subsection (a) of this section, the Government Accountability Office shall, within 1 year after the date of enactment of this subsection, transmit to the Congress a report on the results of a study on the scientific and technical merit of major Federal and State requirements and standards, including moratoria, that delay or impede the further development and commercialization of nuclear power, and how the Department can assist in overcoming such delays or impediments.''.

SEC. 623. NUCLEAR ENERGY RESEARCH AND DEVELOPMENT PROGRAMS.

Section 952 of the Energy Policy Act of 2005 (42 U.S.C. 16272) is amended by striking subsections (c) through (e) and inserting the following:

''(c) REACTOR CONCEPTS.—

''(1) IN GENERAL.—The Secretary shall carry out a program of research, development, demonstra-

tion, and commercial application to advance nuclear power systems as well as technologies to sustain currently deployed systems.

"(2) DESIGNS AND TECHNOLOGIES.—In conducting the program under this subsection, the Secretary shall examine advanced reactor designs and nuclear technologies, including those that—

"(A) have higher efficiency, lower cost, and improved safety compared to reactors in operation as of the date of enactment of the America COMPETES Reauthorization Act of 2015;

"(B) utilize passive safety features;

"(C) minimize proliferation risks;

"(D) substantially reduce production of high-level waste per unit of output;

"(E) increase the life and sustainability of reactor systems currently deployed;

"(F) use improved instrumentation;

"(G) are capable of producing large-scale quantities of hydrogen or process heat;

"(H) minimize water usage or use alternatives to water as a cooling mechanism; or

"(I) use nuclear energy as part of an integrated energy system.

"(3) INTERNATIONAL COOPERATION.—In carrying out the program under this subsection, the Secretary shall seek opportunities to enhance the progress of the program through international cooperation through such organizations as the Generation IV International Forum or any other international collaboration the Secretary considers appropriate.

"(4) EXCEPTIONS.—No funds authorized to be appropriated to carry out the activities described in this subsection shall be used to fund the activities authorized under sections 641 through 645.".

SEC. 624. SMALL MODULAR REACTOR PROGRAM.

Section 952 of the Energy Policy Act of 2005 (42 U.S.C. 16272) is further amended by adding at the end the following new subsection:

"(d) SMALL MODULAR REACTOR PROGRAM.—

"(1) IN GENERAL.—The Secretary shall carry out a small modular reactor program to promote research, development, demonstration, and commercial application of small modular reactors, including through cost-shared projects for commercial application of reactor systems designs.

"(2) CONSULTATION.—The Secretary shall consult with and utilize the expertise of the Secretary

of the Navy in establishing and carrying out such program.

"(3) ADDITIONAL ACTIVITIES.—Activities may also include development of advanced computer modeling and simulation tools, by Federal and non-Federal entities, which demonstrate and validate new design capabilities of innovative small modular reactor designs.

"(4) DEFINITION.—For the purposes of this subsection, the term 'small modular reactor' means a nuclear reactor meeting generally accepted industry standards—

"(A) with a rated capacity of less than 300 electrical megawatts;

"(B) with respect to which most parts can be factory assembled and shipped as modules to a reactor plant site for assembly; and

"(C) that can be constructed and operated in combination with similar reactors at a single site.".

SEC. 625. FUEL CYCLE RESEARCH AND DEVELOPMENT.

(a) AMENDMENTS.—Section 953 of the Energy Policy Act of 2005 (42 U.S.C. 16273) is amended—

(1) in the section heading by striking "**ADVANCED FUEL CYCLE INITIATIVE**" and inserting "**FUEL CYCLE RESEARCH AND DEVELOPMENT**";

(2) by striking subsection (a);

(3) by redesignating subsections (b) through (d) as subsections (d) through (f), respectively; and

(4) by inserting before subsection (d), as so redesignated by paragraph (3) of this subsection, the following new subsections:

"(a) IN GENERAL.—The Secretary shall conduct a fuel cycle research, development, demonstration, and commercial application program (referred to in this section as the 'program') on fuel cycle options that improve uranium resource utilization, maximize energy generation, minimize nuclear waste creation, improve safety, mitigate risk of proliferation, and improve waste management in support of a national strategy for spent nuclear fuel and the reactor concepts research, development, demonstration, and commercial application program under section 952(c).

"(b) FUEL CYCLE OPTIONS.—Under this section the Secretary may consider implementing the following initiatives:

"(1) OPEN CYCLE.—Developing fuels, including the use of nonuranium materials and alternate claddings, for use in reactors that increase energy

generation, improve safety performance and margins, and minimize the amount of nuclear waste produced in an open fuel cycle.

"(2) RECYCLE.—Developing advanced recycling technologies, including advanced reactor concepts to improve resource utilization, reduce proliferation risks, and minimize radiotoxicity, decay heat, and mass and volume of nuclear waste to the greatest extent possible.

"(3) ADVANCED STORAGE METHODS.—Developing advanced storage technologies for both onsite and long-term storage that substantially prolong the effective life of current storage devices or that substantially improve upon existing nuclear waste storage technologies and methods, including repositories.

"(4) FAST TEST REACTOR.—Investigating the potential research benefits of a fast test reactor user facility to conduct experiments on fuels and materials related to fuel forms and fuel cycles that will increase fuel utilization, reduce proliferation risks, and reduce nuclear waste products.

"(5) ADVANCED REACTOR INNOVATION.—Developing an advanced reactor innovation testbed where national laboratories, universities, and industry can address advanced reactor design challenges

to enable construction and operation of privately funded reactor prototypes to resolve technical uncertainty for United States-based designs for future domestic and international markets.

"(6) OTHER TECHNOLOGIES.—Developing any other technology or initiative that the Secretary determines is likely to advance the objectives of the program.

"(c) ADDITIONAL ADVANCED RECYCLING AND CROSSCUTTING ACTIVITIES.—In addition to and in support of the specific initiatives described in paragraphs (1) through (5) of subsection (b), the Secretary may support the following activities:

"(1) Development and testing of integrated process flow sheets for advanced nuclear fuel recycling processes.

"(2) Research to characterize the byproducts and waste streams resulting from fuel recycling processes.

"(3) Research and development on reactor concepts or transmutation technologies that improve resource utilization or reduce the radiotoxicity of waste streams.

"(4) Research and development on waste treatment processes and separations technologies, ad-

vanced waste forms, and quantification of proliferation risks.

"(5) Identification and evaluation of test and experimental facilities necessary to successfully implement the advanced fuel cycle initiative.

"(6) Advancement of fuel cycle-related modeling and simulation capabilities.

"(7) Research to understand the behavior of high-burnup fuels.".

(b) CONFORMING AMENDMENT.—The item relating to section 953 in the table of contents of the Energy Policy Act of 2005 is amended to read as follows:

"Sec. 953. Fuel cycle research and development.".

SEC. 626. NUCLEAR ENERGY ENABLING TECHNOLOGIES PROGRAM.

(a) AMENDMENT.—Subtitle E of title IX of the Energy Policy Act of 2005 (42 U.S.C. 16271 et seq.) is amended by adding at the end the following new section:

"SEC. 958. NUCLEAR ENERGY ENABLING TECHNOLOGIES.

"(a) IN GENERAL.—The Secretary shall conduct a program to support the integration of activities undertaken through the reactor concepts research, development, demonstration, and commercial application program under section 952(c) and the fuel cycle research and development program under section 953, and support crosscutting nuclear energy concepts. Activities commenced under this

1 section shall be concentrated on broadly applicable re-
2 search and development focus areas.
3 "(b) ACTIVITIES.—Activities conducted under this
4 section may include research involving—
5 "(1) advanced reactor materials;
6 "(2) advanced radiation mitigation methods;
7 "(3) advanced proliferation and security risk
8 assessment methods;
9 "(4) advanced sensors and instrumentation;
10 "(5) high performance computation modeling,
11 including multiphysics, multidimensional modeling
12 simulation for nuclear energy systems, and contin-
13 ued development of advanced modeling simulation
14 capabilities through national laboratory, industry,
15 and university partnerships for operations and safety
16 performance improvements of light water reactors
17 for currently deployed and near-term reactors and
18 advanced reactors and for the development of small
19 modular reactors; and
20 "(6) any crosscutting technology or trans-
21 formative concept aimed at establishing substantial
22 and revolutionary enhancements in the performance
23 of future nuclear energy systems that the Secretary
24 considers relevant and appropriate to the purpose of
25 this section.

"(c) REPORT.—The Secretary shall submit, as part of the annual budget submission of the Department, a report on the activities of the program conducted under this section, which shall include a brief evaluation of each activity's progress.".

(b) CONFORMING AMENDMENT.—The table of contents of the Energy Policy Act of 2005 is amended by adding at the end of the items for subtitle E of title IX the following new item:

"Sec. 958. Nuclear energy enabling technologies.".

SEC. 627. TECHNICAL STANDARDS COLLABORATION.

(a) IN GENERAL.—The Director of the National Institute of Standards and Technology shall establish a nuclear energy standards committee (in this section referred to as the "technical standards committee") to facilitate and support, consistent with the National Technology Transfer and Advancement Act of 1995, the development or revision of technical standards for new and existing nuclear power plants and advanced nuclear technologies.

(b) MEMBERSHIP.—

(1) IN GENERAL.—The technical standards committee shall include representatives from appropriate Federal agencies and the private sector, and be open to materially affected organizations involved in the development or application of nuclear energy-related standards.

(2) CO-CHAIRS.—The technical standards committee shall be co-chaired by a representative from the National Institute of Standards and Technology and a representative from a private sector standards organization.

(c) DUTIES.—The technical standards committee shall, in cooperation with appropriate Federal agencies—

(1) perform a needs assessment to identify and evaluate the technical standards that are needed to support nuclear energy, including those needed to support new and existing nuclear power plants and advanced nuclear technologies, including developing the technical basis for regulatory frameworks for advanced reactors;

(2) formulate, coordinate, and recommend priorities for the development of new technical standards and the revision of existing technical standards to address the needs identified under paragraph (1);

(3) facilitate and support collaboration and cooperation among standards developers to address the needs and priorities identified under paragraphs (1) and (2);

(4) as appropriate, coordinate with other national, regional, or international efforts on nuclear energy-related technical standards in order to avoid

conflict and duplication and to ensure global compatibility; and

(5) promote the establishment and maintenance of a database of nuclear energy-related technical standards.

(d) AUTHORIZATION OF APPROPRIATIONS.—To the extent provided for in advance by appropriations Acts, the Secretary may transfer to the Director of the National Institute of Standards and Technology not to exceed $1,000,000 for fiscal year 2016 for the Secretary of Commerce to carry out this section from amounts appropriated for nuclear energy research and development within the Nuclear Energy Enabling Technologies account for the Department.

SEC. 628. AVAILABLE FACILITIES DATABASE.

The Secretary shall prepare a database of non-Federal user facilities receiving Federal funds that may be used for unclassified nuclear energy research. The Secretary shall make this database accessible on the Department's website.

Subtitle D—Energy Efficiency and Renewable Energy Research and Development

SEC. 641. ENERGY EFFICIENCY.

Section 911 of the Energy Policy Act of 2005 (42 U.S.C. 16191) is amended to read as follows:

"SEC. 911. ENERGY EFFICIENCY.

''(a) OBJECTIVES.—The Secretary shall conduct programs of energy efficiency research, development, demonstration, and commercial application, including activities described in this subtitle. Such programs shall prioritize activities that industry by itself is not likely to undertake because of technical challenges or regulatory uncertainty, and take into consideration the following objectives:

''(1) Increasing energy efficiency.

''(2) Reducing the cost of energy.

''(3) Reducing the environmental impact of energy-related activities.

''(b) PROGRAMS.—Programs under this subtitle shall include research, development, demonstration, and commercial application of—

''(1) innovative, affordable technologies to improve the energy efficiency and environmental performance of vehicles, including weight and drag re-

duction technologies, technologies, modeling, and simulation for increasing vehicle connectivity and automation, and whole-vehicle design optimization;

''(2) cost-effective technologies, for new construction and retrofit, to improve the energy efficiency and environmental performance of buildings, using a whole-buildings approach;

''(3) advanced technologies to improve the energy efficiency, environmental performance, and process efficiency of energy-intensive and waste-intensive industries;

''(4) technologies to improve the energy efficiency of appliances and mechanical systems for buildings in extreme climates, including cogeneration, trigeneration, and polygeneration units;

''(5) advanced battery technologies; and

''(6) fuel cell and hydrogen technologies.''.

SEC. 642. NEXT GENERATION LIGHTING INITIATIVE.

Section 912 of the Energy Policy Act of 2005 (42 U.S.C. 16192) and the item relating thereto in the table of contents of that Act are repealed.

SEC. 643. BUILDING STANDARDS.

Section 914 of the Energy Policy Act of 2005 (42 U.S.C. 16194) is amended by striking subsection (c).

SEC. 644. SECONDARY ELECTRIC VEHICLE BATTERY USE PROGRAM.

Section 915 of the Energy Policy Act of 2005 (42 U.S.C. 16195) and the item relating thereto in the table of contents of that Act are repealed.

SEC. 645. NETWORK FOR MANUFACTURING INNOVATION PROGRAM.

To the extent provided for in advance by appropriations Acts, the Secretary may transfer to the National Institute of Standards and Technology up to $150,000,000 for the period encompassing fiscal years 2015 through 2017 from amounts appropriated for advanced manufacturing research and development under this subtitle (and the amendments made by this subtitle) for the Secretary of Commerce to carry out the Network for Manufacturing Innovation Program authorized under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

SEC. 646. ADVANCED ENERGY TECHNOLOGY TRANSFER CENTERS.

Section 917 of the Energy Policy Act of 2005 (42 U.S.C. 16197) is amended—

(1) in subsection (a)—

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

(B) by striking "; and" at the end of paragraph (3) and inserting a period; and

(C) by striking paragraph (4);

(2) in subsection (b)—

(A) by striking paragraph (1);

(B) by redesignating paragraphs (2) through (5) as paragraphs (1) through (4), respectively; and

(C) by striking paragraph (6);

(3) by amending subsection (g) to read as follows:

"(g) PROHIBITION.—None of the funds awarded under this section may be used for the construction of facilities or the deployment of commercially available technologies."; and

(4) by striking subsection (i).

SEC. 647. RENEWABLE ENERGY.

Section 931 of the Energy Policy Act of 2005 (42 U.S.C. 16231) is amended to read as follows:

"SEC. 931. RENEWABLE ENERGY.

"(a) IN GENERAL.—

"(1) OBJECTIVES.—The Secretary shall conduct programs of renewable energy research, development, demonstration, and commercial application, including activities described in this subtitle. Such

1 programs shall prioritize discovery research and de-
2 velopment and take into consideration the following
3 objectives:
4 "(A) Increasing the conversion efficiency of
5 all forms of renewable energy through improved
6 technologies.
7 "(B) Decreasing the cost of renewable en-
8 ergy generation and delivery.
9 "(C) Promoting the diversity of the energy
10 supply.
11 "(D) Decreasing the dependence of the
12 United States on foreign mineral resources.
13 "(E) Decreasing the environmental impact
14 of renewable energy-related activities.
15 "(F) Increasing the export of renewable
16 generation technologies from the United States.
17 "(2) PROGRAMS.—
18 "(A) SOLAR ENERGY.—The Secretary shall
19 conduct a program of research, development,
20 demonstration, and commercial application for
21 solar energy, including innovations in—
22 "(i) photovoltaics;
23 "(ii) solar heating;
24 "(iii) concentrating solar power;

"(iv) lighting systems that integrate sunlight and electrical lighting in complement to each other; and

"(v) development of technologies that can be easily integrated into new and existing buildings.

"(B) WIND ENERGY.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for wind energy, including innovations in—

"(i) low speed wind energy;

"(ii) testing and verification technologies;

"(iii) distributed wind energy generation; and

"(iv) transformational technologies for harnessing wind energy.

"(C) GEOTHERMAL.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for geothermal energy, including technologies for—

"(i) improving detection of geothermal resources;

"(ii) decreasing drilling costs;

"(iii) decreasing maintenance costs through improved materials;

"(iv) increasing the potential for other revenue sources, such as mineral production; and

"(v) increasing the understanding of reservoir life cycle and management.

"(D) HYDROPOWER.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for technologies that enable the development of new and incremental hydropower capacity, including:

"(i) Advanced technologies to enhance environmental performance and yield greater energy efficiencies.

"(ii) Ocean energy, including wave energy.

"(E) MISCELLANEOUS PROJECTS.—The Secretary shall conduct research, development, demonstration, and commercial application programs for—

"(i) the combined use of renewable energy technologies with one another and with other energy technologies, including

the combined use of renewable power and fossil technologies;

"(ii) renewable energy technologies for cogeneration of hydrogen and electricity; and

"(iii) kinetic hydro turbines.

"(b) RURAL DEMONSTRATION PROJECTS.—In carrying out this section, the Secretary, in consultation with the Secretary of Agriculture, shall give priority to demonstrations that assist in delivering electricity to rural and remote locations including—

"(1) advanced renewable power technology, including combined use with fossil technologies;

"(2) biomass; and

"(3) geothermal energy systems.

"(c) ANALYSIS AND EVALUATION.—

"(1) IN GENERAL.—The Secretary shall conduct analysis and evaluation in support of the renewable energy programs under this subtitle. These activities shall be used to guide budget and program decisions, and shall include—

"(A) economic and technical analysis of renewable energy potential, including resource assessment;

"(B) analysis of past program performance, both in terms of technical advances and in market introduction of renewable energy;

"(C) assessment of domestic and international market drivers, including the impacts of any Federal, State, or local grants, loans, loan guarantees, tax incentives, statutory or regulatory requirements, or other government initiatives; and

"(D) any other analysis or evaluation that the Secretary considers appropriate.

"(2) FUNDING.—The Secretary may designate up to 1 percent of the funds appropriated for carrying out this subtitle for analysis and evaluation activities under this subsection.

"(3) SUBMITTAL TO CONGRESS.—This analysis and evaluation shall be submitted to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate at least 30 days before each annual budget request is submitted to Congress.".

SEC. 648. BIOENERGY PROGRAM.

Section 932 of the Energy Policy Act of 2005 (42 U.S.C. 16232) is amended to read as follows:

"SEC. 932. BIOENERGY PROGRAM.

''(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for bioenergy, including innovations in—

''(1) biopower energy systems;

''(2) biofuels;

''(3) bioproducts;

''(4) integrated biorefineries that may produce biopower, biofuels, and bioproducts; and

''(5) crosscutting research and development in feedstocks.

''(b) BIOFUELS AND BIOPRODUCTS.—The goals of the biofuels and bioproducts programs shall be to develop, in partnership with industry and institutions of higher education—

''(1) advanced biochemical and thermochemical conversion technologies capable of making fuels from lignocellulosic feedstocks that are price-competitive with fossil-based fuels and fully compatible with either internal combustion engines or fuel cell-powered vehicles;

''(2) advanced conversion of biomass to biofuels and bioproducts as part of integrated biorefineries based on either biochemical processes,

thermochemical processes, or hybrids of these processes; and

"(3) other advanced processes that will enable the development of cost-effective bioproducts, including biofuels.

"(c) RETROFIT TECHNOLOGIES FOR THE DEVELOPMENT OF ETHANOL FROM CELLULOSIC MATERIALS.—The Secretary shall establish a program of research, development, demonstration, and commercial application for technologies and processes to enable biorefineries that exclusively use corn grain or corn starch as a feedstock to produce ethanol to be retrofitted to accept a range of biomass, including lignocellulosic feedstocks.

"(d) LIMITATIONS.—None of the funds authorized for carrying out this section may be used to fund commercial biofuels production for defense purposes.

"(e) DEFINITIONS.—In this section:

"(1) BIOMASS.—The term 'biomass' means—

"(A) any organic material grown for the purpose of being converted to energy;

"(B) any organic byproduct of agriculture (including wastes from food production and processing) that can be converted into energy; or

"(C) any waste material that can be converted to energy, is segregated from other waste materials, and is derived from—

"(i) any of the following forest-related resources: mill residues, precommercial thinnings, slash, brush, or otherwise nonmerchantable material;

"(ii) wood waste materials, including waste pallets, crates, dunnage, manufacturing and construction wood wastes (other than pressure-treated, chemically treated, or painted wood wastes), and landscape or right-of-way tree trimmings, but not including municipal solid waste, gas derived from the biodegradation of municipal solid waste, or paper that is commonly recycled; or

"(iii) solids derived from waste water treatment processes.

"(2) LIGNOCELLULOSIC FEEDSTOCK.—The term 'lignocellulosic feedstock' means any portion of a plant or coproduct from conversion, including crops, trees, forest residues, grasses, and agricultural residues not specifically grown for food, including from barley grain, grapeseed, rice bran, rice

hulls, rice straw, soybean matter, cornstover, and sugarcane bagasse.''.

SEC. 649. CONCENTRATING SOLAR POWER RESEARCH PROGRAM.

Section 934 of the Energy Policy Act of 2005 (42 U.S.C. 16234) and the item relating thereto in the table of contents of that Act are repealed.

SEC. 650. RENEWABLE ENERGY IN PUBLIC BUILDINGS.

Section 935 of the Energy Policy Act of 2005 (42 U.S.C. 16235) and the item relating thereto in the table of contents of that Act are repealed.

Subtitle E—Fossil Energy Research and Development

SEC. 661. FOSSIL ENERGY.

Section 961 of Energy Policy Act of 2005 (42 U.S.C. 16291) is amended to read as follows:

"SEC. 961. FOSSIL ENERGY.

''(a) IN GENERAL.—The Secretary shall carry out research, development, demonstration, and commercial application programs in fossil energy, including activities under this subtitle, with the goal of improving the efficiency, effectiveness, and environmental performance of fossil energy production, upgrading, conversion, and consumption. Such programs shall take into consideration the following objectives:

1 "(1) Increasing the energy conversion efficiency
2 of all forms of fossil energy through improved tech-
3 nologies.
4 "(2) Decreasing the cost of all fossil energy
5 production, generation, and delivery.
6 "(3) Promoting diversity of energy supply.
7 "(4) Decreasing the dependence of the United
8 States on foreign energy supplies.
9 "(5) Decreasing the environmental impact of
10 energy-related activities.
11 "(6) Increasing the export of fossil energy-re-
12 lated equipment, technology, and services from the
13 United States.
14 "(b) OBJECTIVES.—To the maximum extent prac-
15 ticable, the Secretary shall seek to—
16 "(1) leverage existing programs;
17 "(2) consolidate and coordinate activities
18 throughout the Department to promote collaboration
19 and crosscutting approaches;
20 "(3) ensure activities are undertaken in a man-
21 ner that does not duplicate other activities within
22 the Department or other Federal Government activi-
23 ties; and
24 "(4) identify programs that may be more effec-
25 tively left to the States, industry, nongovernmental

organizations, institutions of higher education, or other stakeholders.

"(c) LIMITATIONS.—

"(1) USES.—None of the funds authorized for carrying out this section may be used for Fossil Energy Environmental Restoration.

"(2) INSTITUTIONS OF HIGHER EDUCATION.—Not less than 20 percent of the funds appropriated for carrying out section 964 of this Act for each fiscal year shall be dedicated to research and development carried out at institutions of higher education.

"(3) USE FOR REGULATORY ASSESSMENTS OR DETERMINATIONS.—The results of any research, development, demonstration, or commercial application projects or activities of the Department authorized under this subtitle may not be used for regulatory assessments or determinations by Federal regulatory authorities.

"(d) ASSESSMENTS.—

"(1) CONSTRAINTS AGAINST BRINGING RESOURCES TO MARKET.—Not later than 1 year after the date of enactment of the America COMPETES Reauthorization Act of 2015, the Secretary shall transmit to Congress an assessment of the technical,

institutional, policy, and regulatory constraints to bringing new domestic fossil resources to market.

"(2) TECHNOLOGY CAPABILITIES.—Not later than 2 years after the date of enactment of the America COMPETES Reauthorization Act of 2015, the Secretary shall transmit to Congress a long-term assessment of existing and projected technological capabilities for expanded production from domestic unconventional oil, gas, and methane reserves.".

SEC. 662. COAL RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION PROGRAMS.

(a) IN GENERAL.—Section 962 of the Energy Policy Act of 2005 (42 U.S.C. 16292) is amended—

(1) in subsection (a)—

(A) in paragraph (10), by striking "and" at the end;

(B) in paragraph (11), by striking the period at the end and inserting a semicolon; and

(C) by adding at the end the following:

"(12) specific additional programs to address water use and reuse;

"(13) the testing, including the construction of testing facilities, of high temperature materials for

use in advanced systems for combustion or use of coal; and

"(14) innovations to application of existing coal conversion systems designed to increase efficiency of conversion, flexibility of operation, and other modifications to address existing usage requirements.";

(2) by redesignating subsections (b) through (d) as subsections (c) through (e), respectively;

(3) by inserting after subsection (a) the following:

"(b) TRANSFORMATIONAL COAL TECHNOLOGY PROGRAM.—

"(1) IN GENERAL.—As part of the program established under subsection (a), the Secretary may carry out a program designed to undertake research, development, demonstration, and commercial application of technologies, including the accelerated development of—

"(A) chemical looping technology;

"(B) supercritical carbon dioxide power generation cycles;

"(C) pressurized oxycombustion, including new and retrofit technologies; and

"(D) other technologies that are characterized by the use of—

"(i) alternative energy cycles;

"(ii) thermionic devices using waste heat;

"(iii) fuel cells;

"(iv) replacement of chemical processes with biotechnology;

"(v) nanotechnology;

"(vi) new materials in applications (other than extending cycles to higher temperature and pressure), such as membranes or ceramics;

"(vii) carbon utilization, such as in construction materials, using low quality energy to reconvert back to a fuel, or manufactured food;

"(viii) advanced gas separation concepts; and

"(ix) other technologies, including—

"(I) modular, manufactured components; and

"(II) innovative production or research techniques, such as using 3–D printer systems, for the production of early research and development prototypes.

"(2) COST SHARE.—In carrying out the program described in paragraph (1), the Secretary shall enter into partnerships with private entities to share the costs of carrying out the program. The Secretary may reduce the non-Federal cost share requirement if the Secretary determines that the reduction is necessary and appropriate considering the technological risks involved in the project."; and

(4) in subsection (c) (as so redesignated) by striking paragraph (1) and inserting the following:

"(1) IN GENERAL.—In carrying out programs authorized by this section, the Secretary shall identify cost and performance goals for coal-based technologies that would permit the continued cost-competitive use of coal for the production of electricity, chemical feedstocks, transportation fuels, and other marketable products.".

(b) ADVISORY COMMITTEE; AUTHORIZATION OF APPROPRIATIONS.—Section 963 of the Energy Policy Act of 2005 (42 U.S.C. 16293) is amended—

(1) by amending paragraph (6) of subsection (c) to read as follows:

"(6) ADVISORY COMMITTEE.—

"(A) IN GENERAL.—Subject to subparagraph (B), the Secretary shall establish an advi-

sory committee to undertake, not less frequently than once every 3 years, a review and prepare a report on the progress being made by the Department of Energy to achieve the goals described in subsections (a) and (b) of section 962 and subsection (b) of this section.

"(B) MEMBERSHIP REQUIREMENTS.—Members of the advisory committee established under subparagraph (A) shall be appointed by the Secretary, except that three members shall be appointed by the Speaker of the House of Representatives and two members shall be appointed by the Majority Leader of the Senate. The total number of members of the advisory committee shall be 15."; and

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

"(d) STUDY OF CARBON DIOXIDE PIPELINES.—Not later than 1 year after the date of enactment of the America COMPETES Reauthorization Act of 2015, the Secretary shall transmit to Congress the results of a study to assess the cost and feasibility of engineering, permitting, building, maintaining, regulating, and insuring a national system of carbon dioxide pipelines.".

SEC. 663. HIGH EFFICIENCY GAS TURBINES RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—The Secretary, through the Office of Fossil Energy, shall carry out a multiyear, multiphase program of research, development, demonstration, and commercial application to innovate technologies to maximize the efficiency of gas turbines used in power generation systems.

(b) PROGRAM ELEMENTS.—The program under this section shall—

(1) support innovative engineering and detailed gas turbine design for megawatt-scale and utility-scale electric power generation, including—

(A) high temperature materials, including superalloys, coatings, and ceramics;

(B) improved heat transfer capability;

(C) manufacturing technology required to construct complex three-dimensional geometry parts with improved aerodynamic capability;

(D) combustion technology to produce higher firing temperature while lowering nitrogen oxide and carbon monoxide emissions per unit of output;

(E) advanced controls and systems integration;

(F) advanced high performance compressor technology; and

(G) validation facilities for the testing of components and subsystems;

(2) include technology demonstration through component testing, subscale testing, and full scale testing in existing fleets;

(3) include field demonstrations of the developed technology elements so as to demonstrate technical and economic feasibility; and

(4) assess overall combined cycle and simple cycle system performance.

(c) PROGRAM GOALS.—The goals of the multiphase program established under subsection (a) shall be—

(1) in phase I—

(A) to develop the conceptual design of advanced high efficiency gas turbines that can achieve at least 62 percent combined cycle efficiency or 47 percent simple cycle efficiency on a lower heating value basis; and

(B) to develop and demonstrate the technology required for advanced high efficiency gas turbines that can achieve at least 62 percent combined cycle efficiency or 47 percent simple

cycle efficiency on a lower heating value basis; and

(2) in phase II, to develop the conceptual design for advanced high efficiency gas turbines that can achieve at least 65 percent combined cycle efficiency or 50 percent simple cycle efficiency on a lower heating value basis.

(d) PROPOSALS.—Within 180 days after the date of enactment of this Act, the Secretary shall solicit grant and contract proposals from industry, small businesses, universities, and other appropriate parties for conducting activities under this section. In selecting proposals, the Secretary shall emphasize—

(1) the extent to which the proposal will stimulate the creation or increased retention of jobs in the United States; and

(2) the extent to which the proposal will promote and enhance United States technology leadership.

(e) COMPETITIVE AWARDS.—The provision of funding under this section shall be on a competitive basis with an emphasis on technical merit.

(f) COST SHARING.—Section 988 of the Energy Policy Act of 2005 (42 U.S.C. 16352) shall apply to an award of financial assistance made under this section.

Subtitle F—Advanced Research Projects Agency–Energy

SEC. 671. ARPA–E AMENDMENTS.

Section 5012 of the America COMPETES Act (42 U.S.C. 16538) is amended—

(1) by amending paragraph (1) of subsection (c) to read as follows:

"(1) IN GENERAL.—The goals of ARPA–E shall be to enhance the economic and energy security of the United States and to ensure that the United States maintains a technological lead through the development of advanced energy technologies.";

(2) in subsection (i)(1), by inserting "ARPA–E shall not provide funding for a project unless the prospective grantee demonstrates sufficient attempts to secure private financing or indicates that the project is not independently commercially viable." after "relevant research agencies.";

(3) in subsection (l)(1), by inserting "and once every 6 years thereafter," after "operation for 6 years,"; and

(4) by redesignating subsection (n) as subsection (o) and inserting after subsection (m) the following new subsection:

"(n) PROTECTION OF PROPRIETARY INFORMATION.—

"(1) IN GENERAL.—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 disclosure pursuant to section 552 of title 5, United States Code:

"(A) Plans for commercialization of technologies developed under the award, including business plans, technology to market plans, market studies, and cost and performance models.

"(B) 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.

"(C) 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.

"(D) Revenue from the licensing or sale of new products or services resulting from the research conducted under the award.

"(2) EFFECT OF SUBSECTION.—Nothing in this subsection affects—

"(A) the authority of the Secretary to use information without publicly disclosing such information; or

"(B) the responsibility of the Secretary to transmit information to Congress as required by law.".

Subtitle G—Authorization of Appropriations

SEC. 681. AUTHORIZATION OF APPROPRIATIONS.

(a) ELECTRICITY DELIVERY AND ENERGY RELIABILITY RESEARCH AND DEVELOPMENT.—There are authorized to be appropriated to the Secretary for research, development, demonstration, and commercial application for electrical delivery and energy reliability technology activities within the Office of Electricity $113,000,000 for each of fiscal years 2016 and 2017.

(b) NUCLEAR ENERGY.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary for research, development, demonstration, and commercial application for

nuclear energy technology activities within the Office of Nuclear Energy $504,600,000 for each of fiscal years 2016 and 2017.

(2) LIMITATION.—Any amounts made available pursuant to the authorization of appropriations under paragraph (1) shall not be derived from the Nuclear Waste Fund established under section 302(c) of the Nuclear Waste Policy Act of 1982 (42 U.S.C. 10222(c)).

(c) ENERGY EFFICIENCY AND RENEWABLE ENERGY.—There are authorized to be appropriated to the Secretary for research, development, demonstration, and commercial application for energy efficiency and renewable energy technology activities within the Office of Energy Efficiency and Renewable Energy $1,193,500,000 for each of fiscal years 2016 and 2017.

(d) FOSSIL ENERGY.—There are authorized to be appropriated to the Secretary for research, development, demonstration, and commercial application for fossil energy technology activities within the Office of Fossil Energy $605,000,000 for each of fiscal years 2016 and 2017.

(e) ARPA–E.—There are authorized to be appropriated to the Secretary for the Advanced Research Projects Agency–Energy $140,000,000 for each of fiscal years 2016 and 2017.

Subtitle H—Definitions

SEC. 691. DEFINITIONS.

In this title—

(1) the term ''Department'' means the Department of Energy; and

(2) the term ''Secretary'' means the Secretary of Energy.

TITLE VII—DEPARTMENT OF ENERGY TECHNOLOGY TRANSFER

Subtitle A—In General

SEC. 701. DEFINITIONS.

In this title:

(1) DEPARTMENT.—The term ''Department'' means the Department of Energy.

(2) NATIONAL LABORATORY.—The term ''National Laboratory'' means a Department of Energy nonmilitary national laboratory, including—

(A) Ames Laboratory;

(B) Argonne National Laboratory;

(C) Brookhaven National Laboratory;

(D) Fermi National Accelerator Laboratory;

(E) Idaho National Laboratory;

(F) Lawrence Berkeley National Laboratory;

(G) National Energy Technology Laboratory;

(H) National Renewable Energy Laboratory;

(I) Oak Ridge National Laboratory;

(J) Pacific Northwest National Laboratory;

(K) Princeton Plasma Physics Laboratory;

(L) Savannah River National Laboratory;

(M) Stanford Linear Accelerator Center;

(N) Thomas Jefferson National Accelerator Facility; and

(O) any laboratory operated by the National Nuclear Security Administration, but only with respect to the civilian energy activities thereof.

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

SEC. 702. SAVINGS CLAUSE.

Nothing in this title or an amendment made by this title abrogates or otherwise affects the primary responsibilities of any National Laboratory to the Department.

Subtitle B—Innovation Management at Department of Energy

SEC. 712. TECHNOLOGY TRANSFER AND TRANSITIONS ASSESSMENT.

Not later than 1 year after the date of enactment of this Act, and annually thereafter, the Secretary 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.

SEC. 713. SENSE OF CONGRESS.

It is the sense of the Congress that the Secretary should encourage the National Laboratories and federally funded research and development centers to inform small

1 businesses of the opportunities and resources that exist
2 pursuant to this title.

3 **SEC. 714. NUCLEAR ENERGY INNOVATION.**

4 Not later than 180 days after the date of enactment
5 of this Act, the Secretary, in consultation with the Na-
6 tional Laboratories, relevant Federal agencies, and other
7 stakeholders, shall transmit to the Committee on Science,
8 Space, and Technology of the House of Representatives
9 and the Committee on Energy and Natural Resources of
10 the Senate a report assessing the Department's capabili-
11 ties to authorize, host, and oversee privately funded fusion
12 and non-light water reactor prototypes and related dem-
13 onstration facilities at Department-owned sites. For pur-
14 poses of this report, the Secretary shall consider the De-
15 partment's capabilities to facilitate privately-funded proto-
16 types up to 20 megawatts thermal output. The report shall
17 address the following:

18 (1) The Department's safety review and over-
19 sight capabilities.

20 (2) Potential sites capable of hosting research,
21 development, and demonstration of prototype reac-
22 tors and related facilities for the purpose of reducing
23 technical risk.

(3) The Department's and National Laboratories' existing physical and technical capabilities relevant to research, development, and oversight.

(4) The efficacy of the Department's available contractual mechanisms, including cooperative research and development agreements, work for others agreements, and agreements for commercializing technology.

(5) Potential cost structures related to physical security, decommissioning, liability, and other long-term project costs.

(6) Other challenges or considerations identified by the Secretary, including issues related to potential cases of demonstration reactors up to 2 gigawatts of thermal output.

Subtitle C—Cross-Sector Partnerships and Grant Competitiveness

SEC. 721. AGREEMENTS FOR COMMERCIALIZING TECHNOLOGY PILOT PROGRAM.

(a) 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 section.

(b) TERMS.—Each agreement entered into pursuant to the pilot program referred to in subsection (a) 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.

(c) ELIGIBILITY.—

(1) IN GENERAL.—Any director of a National Laboratory may enter into an agreement pursuant to the pilot program referred to in subsection (a).

(2) AGREEMENTS WITH NON-FEDERAL ENTITIES.—To carry out paragraph (1) and subject to paragraph (3), 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 paragraph (1), provided that such funding is solely used to carry out the purposes of the Federal award.

(3) RESTRICTION.—The requirements of chapter 18 of title 35, United States Code (commonly known as the ''Bayh-Dole Act'') shall apply if—

(A) the agreement is a funding agreement (as that term is defined in section 201 of that title); and

(B) at least one of the parties to the funding agreement is eligible to receive rights under that chapter.

(d) SUBMISSION TO SECRETARY.—Each affected director of a National Laboratory shall submit to the Secretary, with respect to each agreement entered into under this section—

(1) a summary of information relating to the relevant project;

(2) the total estimated costs of the project;

(3) estimated commencement and completion dates of the project; and

(4) other documentation determined to be appropriate by the Secretary.

(e) 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 section—

(1) is not in direct competition with the private sector; and

(2) 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 section.

(f) EXTENSION.—The pilot program referred to in subsection (a) shall be extended until October 31, 2017.

(g) REPORTS.—

(1) OVERALL ASSESSMENT.—Not later than 60 days after the date described in subsection (f), 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—

(A) assesses the overall effectiveness of the pilot program referred to in subsection (a);

(B) identifies opportunities to improve the effectiveness of the pilot program;

(C) assesses the potential for program activities to interfere with the responsibilities of the National Laboratories to the Department; and

(D) provides a recommendation regarding the future of the pilot program.

(2) 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 section.

SEC. 722. PUBLIC-PRIVATE PARTNERSHIPS FOR COMMERCIALIZATION.

(a) IN GENERAL.—Subject to subsections (b) and (c), the Secretary shall delegate to directors of the National Laboratories signature authority with respect to any agreement described in subsection (b) the total cost of which (including the National Laboratory contributions and project recipient cost share) is less than $1 million.

(b) AGREEMENTS.—Subsection (a) applies to—

(1) a cooperative research and development agreement;

(2) a non-Federal work-for-others agreement; and

(3) any other agreement determined to be appropriate by the Secretary, in collaboration with the directors of the National Laboratories.

(c) ADMINISTRATION.—

(1) ACCOUNTABILITY.—The director of the affected National Laboratory and the affected contractor shall carry out an agreement under this section in accordance with applicable policies of the Department, including by ensuring that the agreement does not compromise any national security, economic, or environmental interest of the United States.

(2) CERTIFICATION.—The director of the affected National Laboratory and the affected contractor shall certify that each activity carried out under a project for which an agreement is entered into under this section 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 section.

(3) AVAILABILITY OF RECORDS.—On entering an agreement under this section, the director of a National Laboratory shall submit to the Secretary for monitoring and review all records of the National Laboratory relating to the agreement.

(4) RATES.—The director of a National Laboratory may charge higher rates for services performed under a partnership agreement entered into pursuant to this section, regardless of the full cost

of recovery, if such funds are used exclusively to support further research and development activities at the respective National Laboratory.

(d) EXCEPTION.—This section does not apply to any agreement with a majority foreign-owned company.

(e) CONFORMING AMENDMENT.—Section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a) is amended—

(1) in subsection (a)—

(A) by redesignating paragraphs (1) and (2) as subparagraphs (A) and (B), respectively, and indenting the subparagraphs appropriately;

(B) by striking ''Each Federal agency'' and inserting the following:

''(1) IN GENERAL.—Except as provided in paragraph (2), each Federal agency''; and

(C) by adding at the end the following:

''(2) EXCEPTION.—Notwithstanding paragraph (1), in accordance with section 722(a) of the America COMPETES Reauthorization Act of 2015, approval by the Secretary of Energy shall not be required for any technology transfer agreement proposed to be entered into by a National Laboratory of the Department of Energy, the total cost of which (including the National Laboratory contributions

and project recipient cost share) is less than $1 million.''; and

(2) in subsection (b), by striking ''subsection (a)(1)'' each place it appears and inserting ''subsection (a)(1)(A)''.

SEC. 723. INCLUSION OF EARLY-STAGE TECHNOLOGY DEMONSTRATION IN AUTHORIZED TECHNOLOGY TRANSFER ACTIVITIES.

Section 1001 of the Energy Policy Act of 2005 (42 U.S.C. 16391) is amended by—

(1) redesignating subsection (g) as subsection (h); and

(2) inserting after subsection (f) the following:

''(g) EARLY-STAGE TECHNOLOGY DEMONSTRATION.—The Secretary shall permit the directors of the National Laboratories to use funds authorized to support technology transfer within the Department to carry out early-stage and pre-commercial technology demonstration activities to remove technology barriers that limit private sector interest and demonstrate potential commercial applications of any research and technologies arising from National Laboratory activities.''.

SEC. 724. FUNDING COMPETITIVENESS FOR INSTITUTIONS OF HIGHER EDUCATION AND OTHER NONPROFIT 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. 725. PARTICIPATION IN THE INNOVATION CORPS PROGRAM.

The Secretary may enter into an agreement with the Director of the National Science Foundation to enable researchers funded by the Department to participate in the National Science Foundation Innovation Corps program.

Subtitle D—Assessment of Impact

SEC. 731. REPORT BY GOVERNMENT ACCOUNTABILITY OFFICE.

Not later than 3 years after the date of enactment of this Act, the Comptroller General of the United States shall submit to Congress a report—

(1) describing the results of the projects developed under sections 721, 722, and 723, including information regarding—

(A) partnerships initiated as a result of those projects and the potential linkages presented by those partnerships with respect to national priorities and other taxpayer-funded research; and

(B) whether the activities carried out under those projects result in—

(i) fiscal savings;

(ii) expansion of National Laboratory capabilities;

(iii) increased efficiency of technology transfers; or

(iv) an increase in general efficiency of the National Laboratory system; and

(2) assess the scale, scope, efficacy, and impact of the Department's efforts to promote technology transfer and private sector engagement at the National Laboratories, and make recommendations on how the Department can improve these activities.

TITLE VIII—SENSE OF CONGRESS

SEC. 801. SENSE OF CONGRESS.

It is the sense of Congress that climate change is real.

Passed the House of Representatives May 20, 2015.

Attest:

Clerk.

114th CONGRESS
1st Session

H. R. 1806

AN ACT

To provide for technological innovation through the prioritization of Federal investment in basic research, fundamental scientific discovery, and development to improve the competitiveness of the United States, and for other purposes.