AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4186 OFFERED BY MR. SMITH OF TEXAS

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''Frontiers in Innovation, Research, Science, and Technology Act of 2014'' or the ''FIRST Act of 2014''.

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

SEC. 2. DEFINITIONS.

In this Act—

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

(2) the term ''STEM education'' means education in the subjects of STEM, including other academic subjects that build on these disciplines such as computer science and other academic subjects that a State identifies as important to the workforce of the State.

TITLE I—NATIONAL SCIENCE FOUNDATION

SEC. 101. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2014.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $7,171,918,000 for fiscal year 2014.

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

(A) $5,808,918,000 shall be made available to carry out research and related activities, including—

(i) $742,930,000 for the Biological Science Directorate;

(ii) $940,638,000 for the Computer and Information Science and Engineering Directorate;

(iii) $890,170,000 for the Engineering Directorate;

(iv) $1,265,840,000 for the Geosciences Directorate;

(v) $1,367,940,000 for the Mathematical and Physical Science Directorate;

(vi) $200,000,000 for the Social, Behavioral, and Economics Directorate;

(vii) $400,000,000 for the International and Integrative Activities Directorate; and

(viii) $1,400,000 for the United States Arctic Commission;

(B) $846,500,000 shall be made available for education and human resources;

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

(D) $298,000,000 shall be made available for agency operations and award management;

(E) $4,300,000 shall be made available for the Office of the National Science Board; and

(F) $14,200,000 shall be made available for the Office of Inspector General.

(b) FISCAL YEAR 2015.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation $7,277,257,000 for fiscal year 2015.

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

(A) $5,900,497,000 shall be made available to carry out research and related activities, including—

(i) $760,030,000 for the Biological Science Directorate;

(ii) $963,187,000 for the Computer and Information Science and Engineering Directorate;

(iii) $910,640,000 for the Engineering Directorate;

(iv) $1,265,840,000 for the Geosciences Directorate;

(v) $1,399,400,000 for the Mathematical and Physical Science Directorate;

(vi) $200,000,000 for the Social, Behavioral, and Economics Directorate;

(vii) $400,000,000 for the International and Integrative Activities Directorate; and

(viii) $1,400,000 for the United States Arctic Commission;

(B) $858,500,000 shall be made available for education and human resources;

(C) $200,760,000 shall be made available for major research equipment and facilities construction;

(D) $298,000,000 shall be made available for agency operations and award management;

(E) $4,300,000 shall be made available for the Office of the National Science Board; and

(F) $15,200,000 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 50 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 science, mathematics, engineering, and technology 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) The Foundation should meet the highest standards of efficiency, transparency, and accountability in its stewardship of public funds.

(12) 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.

(13) 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.

(14) Commercial application of the results of Federal investment in basic and computing science is consistent with longstanding United States technology transfer policy for cybersecurity and other homeland security applications, because of the urgent needs of commercial, academic, and individual users, as well as the Federal and State Governments.

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 general 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, be-

havioral, 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 determination by the responsible

Foundation official as to how the research grant or cooperative agreement—

(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 a STEM workforce and increased public scientific literacy in the United States;

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

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

(F) 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 that 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 cooper-

ative 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.

(e) POLICY.—Not later than 6 months after the date of enactment of this Act, the Board shall develop and the Director shall implement a policy for carrying out subsections (a), (b), and (c) that provides for educating professional staff at the Foundation and applicants for Foundation research grants on the policies developed.

(f) NATIONAL SCIENCE BOARD REPORT.—Not later than 6 months after the date of enactment of this Act, the Board shall transmit a report to the Committee on Science, Space, and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate describing plans for implementing subsections (a), (b), (c), and (d).

(g) ANNUAL REPORT.—

(1) IN GENERAL.—The Director shall ensure that this section is properly applied by transmitting an annual report to the Board and to the Committee on Science, Space, and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate.

(2) NATIONAL SCIENCE BOARD REVIEW.—Not later than 30 days after the transmission of an annual report under this subsection, the Board shall transmit in writing its review of the findings of the Director's 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.

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 Foundation. The functions of the Large Facilities Office shall be to support the research directorates in the development and implementation of major research facilities, including by—

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

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

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

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

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

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

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

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

(c) POLICIES FOR COSTING LARGE FACILITIES.—

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

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

SEC. 109. GRADUATE STUDENT SUPPORT.

(a) AMENDMENT.—Section 510(b) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1869 note) is amended to read as follows:

''(b) EQUAL TREATMENT OF IGERT AND GRF.—

''(1) RATE OF FUNDING INCREASES.—For any fiscal year, the Director may only increase funding for the Foundation's Graduate Research Fellowship program (or any successor thereto) over the previous fiscal year's funding level at the same rate as a corresponding funding increase for the Foundation's Integrative Graduate Education and Research Traineeship program (or any successor thereto).

''(2) ESSENTIAL ELEMENTS OF IGERT.—The essential elements of the Foundation's Integrative Graduate Education and Research Traineeship program (or any successor thereto) shall be maintained, including—

''(A) collaborative research that transcends traditional disciplinary boundaries to solve large and complex research problems of significant scientific and societal importance; and

''(B) 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. 110. 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 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 secondary school students' access to, and interest in, careers that require academic preparation in STEM subjects.

SEC. 111. 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 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, or science centers; and

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

(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 underrep-

resented 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. 112. 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.

SEC. 113. 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 multiuser facilities have transitioned to five-year cooperative agreements, and every five years the program officer responsible for the facility makes a rec-

ommendation 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. 114. 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. 115. 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.

(b) INVESTIGATION.—The Inspector General of the Foundation shall investigate suspected violations of subsection (a), and shall submit to the Director the results of any such investigation that the Inspector General finds

has substance and is appropriate to pursue, along with a recommendation with respect to whether a violation has occurred.

(c) DETERMINATION.—Based on the results of the investigation conducted under subsection (b), the Director shall make a determination of whether the principal investigator knowingly violated subsection (a).

(d) 10-Year BAN.—If the Director determines under subsection (c) that a principal investigator knowingly violated subsection (a), the Foundation shall not, for a period determined by the Director of no less than 5 years and no more than 10 years, provide a research grant or research extension to such principal investigator, except as provided in subsection (f).

(e) NOTIFICATION.—Not later than 7 days after making a determination under subsection (c), the Director shall notify the principal investigator of such determination in writing.

(f) APPEAL.—The Director shall establish a process by which a principal investigator may, within 30 days after receipt of a notification under subsection (e), appeal a determination made under subsection (c) and a ban under subsection (d). If the Director concludes that the determination under subsection (c) was not correct, the Director may reduce or eliminate the period of the ban under

subsection (d) based on information provided in the appeal process under this subsection. A ban may not be reduced under this subsection to a period less than 5 years, unless it is eliminated.

(g) PUBLICATION.—The Director shall not make publicly available any determination made under subsection (c) that a knowing violation has occurred until after the later of the expiration of the 30-day period described in subsection (f) or the end of an appeal process under subsection (f). At such time, the Director shall make publicly available any such determination, which shall include the name of the principal investigator.

SEC. 116. CITATIONS SUPPORTING RESEARCH GRANT APPLICATIONS.

(a) IN GENERAL.—The portion of a peer-reviewed research grant application to the Foundation supporting the credentials of the principal investigator may not include more than 5 citations to articles published by the principal investigator in a peer-reviewed publication. The Foundation may not consider more than 5 citations to such articles in determining whether to award such a research grant.

(b) EXCEPTION.—The Director may provide an exception to the general rule under subsection (a) if appro-

priate, and shall provide a written justification explaining the reasons for providing an exception.

SEC. 117. RESEARCH GRANT CONDITIONS.

The Foundation shall establish procedures to ensure that—

(1) a research grant awarded by the Foundation to a principal investigator is original and unique and 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 have received more than 5 years of Foundation funding at any point in their careers, other than graduate and postdoctoral traineeship awards, are only awarded additional research grants by the Foundation if they will be contributing original, creative, and transformative research under the grant; and

(5) 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.

SEC. 118. 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. 119. 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. 120. 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 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 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 National Science Board 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. 121. 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; and

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

SEC. 122. UNITED STATES-ISRAELI COOPERATION.

Section 917(a) of the Energy Independence and Security Act of 2007 (42 U.S.C. 17337(a)) is amended—

(1) by striking ''and'' at the end of paragraph (6);

(2) by striking the period at the end of paragraph (7) and inserting ''; and''; and

(3) by adding at the end the following:

''(8) the National Science Foundation of the United States should collaborate with the Israel Science Foundation.''.

SEC. 123. SENSE OF CONGRESS REGARDING AGRICULTURAL RESEARCH.

It is the sense of Congress that the Foundation should support—

(1) basic science research in the plant sciences that will identify and preserve valuable plant genes; and

(2) interdisciplinary research to understand important basic research problems in the plant sciences.

SEC. 124. BRAIN RESEARCH THROUGH ADVANCING INNOVATIVE NEUROTECHNOLOGIES INITIATIVE.

The Foundation shall support research activities related to the Brain Research through Advancing Innovative Neurotechnologies Initiative.

SEC. 125. 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), by—

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

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

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

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

(4) by 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,''.

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 recently 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) the President's fiscal year 2014 budget proposal did not adequately explain proposed program

consolidations and terminations in the Federal STEM portfolio, nor did it elicit stakeholder input and outside expertise, resulting in the need for Congress to limit the Administration's implementation of that proposal;

(5) 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 outcomes 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

(6) as the National Science and Technology Council's 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 within 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 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.

(c) DUTIES.—The Advisory Panel shall advise the President, the committee on STEM education established under the National Science and Technology Council, and the STEM Education Coordinating Office 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—

(1) criteria for evaluating the effectiveness of Federal STEM education programs and activities;

(2) ways to encourage public private-partnerships to strengthen STEM education;

(3) ways to leverage private and nonprofit investments and utilize expertise resulting from STEM-related competitions to help build the STEM education and workforce pipeline;

(4) ways to incorporate workforce needs into Federal STEM education programs, particularly in areas experiencing high unemployment rates;

(5) the management, coordination, implementation, and activities of the STEM Education Coordinating Office and the committee on STEM education established under the National Science and Technology Council;

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

(7) 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;

(8) ways to encourage geographic diversity in STEM education and the workforce pipeline; and

(9) significant links among K-12 education, higher education, and industry.

(d) REPORTS.—The Advisory Panel shall report, not less frequently than once every 2 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 Government 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(b) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621(b)) is amended to read as follows:

''(b) RESPONSIBILITIES.—The Committee established under subsection (a) shall—

''(1) develop, implement through participating agencies, and update once every 3 years a 3-year STEM education strategic plan, which shall—

''(A) specify and prioritize annual and long-term objectives and priority areas for Federal funding in STEM education;

''(B) specify the common metrics that will be used to assess progress toward achieving the objectives;

''(C) describe the approaches that will be taken by each participating agency to assess the effectiveness of its STEM education programs and activities;

''(D) propose the effective dissemination of Federal STEM education expertise and resources; and

''(E) with respect to subparagraph (A), describe the role of each agency in supporting programs and activities designed to achieve the objectives;

''(2) review STEM education activities and programs to ensure they are not duplicative of similar efforts within the Federal Government;

''(3) assist in coordinating the STEM education activities and programs of the Federal agencies;

''(4) encourage the teaching of innovation and entrepreneurship as part of STEM education activities; and

''(5) encourage access to and dissemination of innovations, expertise, and best practices derived from agency activities across the Federal Government.''.

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 established under the National Science and Technology Council and the Advisory Panel established under section 202;

(B) coordinate the STEM education activities of the Federal Government, including at the National Science Foundation, the Department of Energy, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, the Environmental Protection Agency, and any other Federal agency with STEM education programs or activities;

(C) coordinate STEM education activities with the Office of Management and Budget; and

(D) the strategic planning process established under section 101 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621).

(2) periodically update and maintain the inventory or federally sponsored STEM education programs and activities originally conducted by the committee on STEM education established under the National Science and Technology Council, including documentation of assessments of the outcome-oriented effectiveness of such programs and activities and metrics used to evaluate those programs and activities; and

(3) serve as the point of contact on Federal STEM education activities for government agencies, academia, industry, professional societies, State STEM education programs, interested citizen groups, and other STEM stakeholders to exchange technical and programmatic information.

(c) REPORT.—The Director of the STEM Education Coordinating Office shall transmit a report annually to Congress at the time of the President's budget request. The annual report shall include—

(1) a description of the STEM education programs and activities across the Federal Government for the previous and current fiscal years, and the proposed programs and activities under the President's budget request, of every Federal agency with STEM education programs or activities;

(2) an evaluation of the extent of duplication and fragmentation of the programs and activities described under paragraph (1), and any recommendations for consolidations or terminations to remedy those problems;

(3) a description of ways the Federal Government is leveraging private and nonprofit investments and utilizing expertise resulting from STEM-related competitions to build the STEM education workforce pipeline; and

(4) a description of the progress made in carrying out the 3-year strategic plan, including a description of the outcome of any program assessments completed in the previous year, and any changes made to that plan since the previous annual report.

(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) $5,555,000 for fiscal year 2014; and

(2) $5,555,000 for fiscal year 2015.

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, particularly 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 pa-

perwork and other administrative processes required by Federal agencies;

(5) the Office of Management and Budget has recently released an omnibus grant administration regulation that allows agency-unique approaches and fails to provide necessary guidance for agencies to simplify, standardize, or consolidate common reporting and compliance requirements; and

(6) 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; and

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

(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 businesses, federally funded research and development centers, and others with a stake in ensuring effectiveness, efficiency, and accountability in the performance of scientific research.

(d) REPORT.—Not later than 1 year after the date of enactment of this Act, and annually thereafter for 3 years, the Director shall 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 what steps have been taken to carry out the recommendations of the working group established under subsection (b).

SEC. 303. PUBLIC ACCESS TO RESEARCH ARTICLES AND DATA.

(a) PUBLIC ACCESS POLICIES AND PROCEDURES.—

(1) PLAN.—Not later than 18 months after the date of enactment of this Act, the National Science and Technology Council shall deliver a plan to Congress containing policies, procedures, and standards for the Federal science agencies to enable archiving and retrieving covered material in digital form for public availability in perpetuity. The plan shall—

(A) provide a data-driven justification for the plan, including the embargo periods set under subsections (c)(2)(A) and (e);

(B) be developed in a transparent and open manner;

(C) indicate what procedures were followed to ensure that this process of developing the plan allowed for the full consideration of all stakeholder concerns; and

(D) draw on information developed under section 103 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6623).

(2) REQUIREMENTS.—Such policies, procedures, and standards shall—

(A) use existing information technology infrastructure to the extent practicable, including

infrastructure of the National Center for Biotechnology Information, the National Center for Atmospheric Research, and the private sector that facilitate public access to covered material;

(B) minimize the cost of storing, archiving, and retrieving articles and data; and

(C) minimize the burden of providing articles and data archiving, and of retrieving articles and data.

(3) STAKEHOLDER INPUT.—In developing policies, procedures, and standards under paragraph (1), the National Science and Technology Council shall use a transparent process for soliciting views from stakeholders, including federally funded researchers, institutions of higher education, libraries, publishers, users of federally funded research results, and civil science society groups.

(b) GRANT RECIPIENT REQUIREMENTS.—A recipient of a research grant made by a Federal science agency shall make, or enable others on their behalf to make, covered material associated with such grant available consistent with the policies, procedures, and standards established under subsection (a).

(c) FEDERAL SCIENCE AGENCY REQUIREMENTS.—In implementing the policies, procedures, and standards

established pursuant to subsection (a), each Federal science agency shall provide for—

(1) submission of, or linking to, an electronic version of covered material by or on behalf of recipients of research grants made by the agency;

(2) free online public access to such covered material—

(A) in the case of a research article, consistent with appropriate embargo periods but not later than 24 months after publication of the research article in a peer-reviewed publication; and

(B) in the case of data used to support the findings and conclusions of such article, not later than 60 days after the article is published in a peer-reviewed publication;

(3) implementation in a manner and format that enables and ensures full-text search, productive use, and long-term preservation;

(4) production of an online bibliography of all research papers that are publicly accessible in its repository, with each entry linking to the corresponding free online full text and supporting data; and

(5) access to all data that is used directly or indirectly by the agency to support the promulgation of a Federal regulation.

(d) REVIEW.—At least once every 5 years, the National Science and Technology Council shall review the policies, procedures, and standards established under subsection (a) and revise such policies, procedures, and standards as appropriate.

(e) EXTENSION.—Each Federal science agency may extend the time period specified in subsection (c)(2)(A) by 6 to 12 months, in consultation with the stakeholders described in subsection (a)(3), if the agency head, or designee, determines that the scientific field and stakeholders described in subsection (a)(3) will be uniquely harmed without such extension.

(f) PATENT OR COPYRIGHT LAW.—Except as provided in this section, nothing in this section shall be construed to affect any right under the provisions of title 17 or title 35, United States Code.

(g) DEFINITIONS.—For purposes of this section:

(1) COVERED MATERIAL.—The term ''covered material'' means—

(A) a manuscript of an article accepted for publication in a peer-reviewed publication that

results from research funded by a grant from a Federal science agency; and

(B) data that was used to support the findings and conclusions of such article, except for data that is protected from disclosure under section 552 of title 5, United States Code.

(2) DATA.—The term ''data'' includes raw data, computer code, and algorithms, but does not include—

(A) commercially available software used to analyze the data or code;

(B) preliminary work and analyses;

(C) drafts of scientific papers not accepted or intended for publication; or

(D) plans for future research.

(3) FEDERAL SCIENCE AGENCY.—The term ''Federal science agency'' means—

(A) the National Aeronautics and Space Administration;

(B) the National Science Foundation;

(C) the National Institute of Standards and Technology;

(D) the National Weather Service; and

(E) the Office of Science of the Department of Energy.

(4) PEER-REVIEWED PUBLICATION.—The term ''peer-reviewed publication'' means a publication for which articles are assigned to at least 1 external reviewer to assess the validity of the articles' scientific findings and conclusions.

SEC. 304. STRATEGIC PLAN FOR ADVANCED MANUFACTURING RESEARCH AND DEVELOPMENT.

Section 102 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6622) is amended to read as follows:

''SEC. 102. COORDINATION OF ADVANCED MANUFACTURING RESEARCH AND DEVELOPMENT.

''(a) INTERAGENCY COMMITTEE.—The Director shall establish or designate a Committee on Technology under the National Science and Technology Council. The Committee shall be responsible for planning and coordinating Federal programs and activities in advanced manufacturing research and development. In furtherance of the Committee's work, the Committee shall consult with the National Economic Council.

''(b) RESPONSIBILITIES OF COMMITTEE.—The Committee shall—

''(1) coordinate the advanced manufacturing research and development programs and activities of

the Federal agencies, in consultation with the National Economic Council;

''(2) establish goals and priorities for advanced manufacturing research and development that will strengthen United States manufacturing;

''(3) work with industry organizations, Federal agencies, and Federally Funded Research and Development Centers not represented on the Committee, to identify and reduce regulatory, logistical, and fiscal barriers within the Federal Government and State governments that inhibit United States advanced manufacturing;

''(4) facilitate the transfer of intellectual property and technology based on federally supported university research into commercialization and manufacturing;

''(5) identify technological, market, or business challenges that may best be addressed by public-private partnerships, and are likely to attract both participation and primary funding from industry;

''(6) encourage the formation of public-private partnerships to respond to those challenges for transition for United States advanced manufacturing; and

''(7) develop and update a national strategic plan for advanced manufacturing in accordance with subsection (c).

''(c) NATIONAL STRATEGIC PLAN FOR ADVANCED MANUFACTURING.—

''(1) IN GENERAL.—The President shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, and publish on an Internet website that is accessible to the public, the strategic plan developed under paragraph (2).

''(2) DEVELOPMENT.—The Committee shall develop, and update as required under paragraph (4), in coordination with the National Economic Council, a strategic plan to improve Government coordination and provide long-term guidance for Federal programs and activities in support of United States manufacturing competitiveness, including advanced manufacturing research and development.

''(3) CONTENTS.—The strategic plan described in paragraph (2) shall—

''(A) specify and prioritize near-term and long-term objectives, including research and development objectives, the anticipated time frame

for achieving the objectives, and the metrics for use in assessing progress toward the objectives;

''(B) describe the progress made in achieving the objectives from prior strategic plans, including a discussion of why specific objectives were not met;

''(C) specify the role, including the programs and activities, of each relevant Federal agency in meeting the objectives of the strategic plan;

''(D) describe how the Federal agencies and Federally funded research and development centers supporting advanced manufacturing research and development will foster the transfer of research and development results into new manufacturing technologies and United States based manufacturing of new products and processes for the benefit of society to ensure national, energy, and economic security;

''(E) describe how such Federal agencies and centers will strengthen all levels of manufacturing education and training programs to ensure an adequate, well-trained workforce;

''(F) describe how such Federal agencies and centers will assist small and medium-sized

manufacturers in developing and implementing new products and processes;

''(G) analyze factors that impact innovation and competitiveness for United States advanced manufacturing, including—

''(i) technology transfer and commercialization activities;

''(ii) the adequacy of the national security industrial base;

''(iii) the capabilities of the domestic manufacturing workforce;

''(iv) export opportunities and trade policies;

''(v) financing, investment, and taxation policies and practices;

''(vi) emerging technologies and markets; and

''(vii) advanced manufacturing research and development undertaken by competing nations; and

''(H) elicit and consider the recommendations of a wide range of stakeholders, including representatives from diverse manufacturing companies, academia, and other relevant organizations and institutions.

''(4) PLAN AND UPDATES.—Not later than May 1, 2018, and not less frequently than once every 4 years thereafter, the President shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, and publish on an Internet website that is accessible to the public, the strategic plan submitted under paragraph (1) or an update thereto. Such updates shall be developed in accordance with the procedures set forth under this subsection.

''(5) REQUIREMENT TO CONSIDER STRATEGY IN THE BUDGET.—In preparing the budget for a fiscal year under section 1105(a) of title 31, United States Code, the President shall include information regarding the consistency of the budget with the goals and recommendations included in the strategic plan developed under this subsection applying to that fiscal year.

''(6) AMP STEERING COMMITTEE INPUT.—The Advanced Manufacturing Partnership Steering Committee of the President's Council of Advisors on Science and Technology shall provide input, perspective, and recommendations to assist in the develop-

ment and updates of the strategic plan under this subsection.''.

SEC. 305. COORDINATION OF INTERNATIONAL SCIENCE AND TECHNOLOGY PARTNERSHIPS.

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

(b) NSTC BODY LEADERSHIP.—The body established 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 re-

port, to be updated annually, to the Committee on Science, Space, and Technology and the Committee on Foreign Affairs of the House of Representatives, and to the Committee on Commerce, Science, and Transportation and the Committee on Foreign Relations of the Senate. The report shall also be made available to the public on the reporting agency's website. The report shall contain a description of—

(1) the priorities and policies established under subsection (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.

SEC. 306. 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. 307. 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 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)(C), by striking ''cash prizes'' both places it occurs and inserting ''cash prize purses''.

TITLE IV—INNOVATION AND TECHNOLOGY TRANSFER

Subtitle A—NIST Reauthorization

SEC. 401. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2014.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $850,000,000 for the National Institute of Standards and Technology for fiscal year 2014.

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

(A) $651,000,000 shall be for scientific and technical research and services laboratory activities;

(B) $56,000,000 shall be for the construction and maintenance of facilities; and

(C) $143,000,000 shall be for industrial technology services activities, of which $128,000,000 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 278l).

(b) FISCAL YEAR 2015.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $855,800,000 for the National Institute of Standards and Technology for fiscal year 2015.

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

(A) $670,500,000 shall be for scientific and technical research and services laboratory activities;

(B) $55,300,000 shall be for the construction and maintenance of facilities; and

(C) $130,000,000 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 278l).

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 (21), by striking ''and'' after the semicolon;

(B) by redesignating paragraph (22) as paragraph (24); and

(C) by inserting after paragraph (21) the following:

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

''(23) 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) for 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 is (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, 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 cross-cutting research and development activities are planned, coordinated, and executed across the laboratories; and

(4) assess how the laboratories are engaging industry, including the incorporation of industry need, into the research goals and objectives of the Institute.

(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 two 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) COSTSHARING.—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 techno-

logical 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 re-

garding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors.

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

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

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

''(5) EVALUATION.—

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

''(B) COMPOSITION.—Each such evaluation panel shall be composed of 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 in-

volved 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 one 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 8th 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 one year, after which time the Program shall reevaluate 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 FIRST Act of 2014, 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 FIRST Act of 2014, 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 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 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 2 members shall be employed by or on an advisory board for the Centers, at least 1 member shall represent a community college, and at least 5 other members shall be from United States small businesses in the manufacturing sector. No member shall be an employee of the Federal Government.

''(B) TERM.—Except as provided in subparagraph (C) or (D), the term of office of each member of the MEP Advisory Board shall be 3 years.

''(C) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

''(D) SERVING CONSECUTIVE TERMS.—Any person who has completed two consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the one-year period following the expiration of the second such term.

''(3) MEETINGS.—The MEP Advisory Board shall meet not less than 2 times annually and shall provide to the Director—

''(A) advice on Hollings Manufacturing Extension Partnership programs, plans, and policies;

''(B) assessments of the soundness of Hollings Manufacturing Extension Partnership plans and strategies; and

''(C) assessments of current performance against Hollings Manufacturing Extension Partnership program plans.

''(4) FEDERAL ADVISORY COMMITTEE ACT APPLICABILITY.—

''(A) IN GENERAL.—In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.

''(B) EXCEPTION.—Section 14 of the Federal Advisory Committee Act shall not apply to the MEP Advisory Board.

''(5) REPORT.—The MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to Congress within 30 days after the

submission to Congress of the President's annual budget request in each year. Such report shall address the status of the program established pursuant to this section and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23.

''(f) COMPETITIVE GRANT PROGRAM.—

''(1) ESTABLISHMENT.—The Director shall establish, within the Hollings Manufacturing Extension Partnership, under this section and section 26, a program of competitive awards among participants described in paragraph (2) for the purposes described in paragraph (3).

''(2) PARTICIPANTS.—Participants receiving awards under this subsection shall be the Centers, or a consortium of such Centers.

''(3) PURPOSE.—The purpose of the program under this subsection is to add capabilities to the Hollings Manufacturing Extension Partnership, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership program, 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.

(a) ENTERPRISE INTEGRATION STANDARDIZATION AND IMPLEMENTATION ACTIVITIES REPORT.—Section 3 of the Enterprise Integration Act of 2002 (15 U.S.C. 278g-5) is amended—

(1) by striking subsection (c); and

(2) by redesignating subsections (d) and (e) as subsections (c) and (d), respectively.

(b) TIP 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), 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.''.

Subtitle B—Innovative Approaches to Technology Transfer

SEC. 421. INNOVATIVE APPROACHES TO TECHNOLOGY TRANSFER.

Section 9(jj) of the Small Business Act (15 U.S.C. 638(jj)) is amended to read as follows:

''(jj) INNOVATIVE APPROACHES TO TECHNOLOGY TRANSFER.—

''(1) GRANT PROGRAM.—

''(A) IN GENERAL.—Each Federal agency required by subsection (n) to establish an STTR program shall carry out a grant program to support innovative approaches to technology transfer at institutions of higher education (as defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)), non-

profit research institutions, and Federal laboratories in order to improve or accelerate the commercialization of federally funded research and technology by small business concerns, including new businesses.

''(B) AWARDING OF GRANTS AND AWARDS.—

''(i) IN GENERAL.—Each Federal agency required by subparagraph (A) to participate in this program shall award, through a competitive, merit-based process, grants, in the amounts listed in subparagraph (C) to institutions of higher education, technology transfer organizations that facilitate the commercialization of technologies developed by one or more such institutions of higher education, Federal laboratories, other public and private nonprofit entities, and consortia thereof, for initiatives that help identify high-quality, commercially viable federally funded research and technologies and to facilitate and accelerate their transfer into the marketplace.

''(ii) USE OF FUNDS.—Activities supported by grants under this subsection may include—

''(I) providing early-stage proof of concept funding for translational research;

''(II) identifying research and technologies at institutions that have the potential for accelerated commercialization;

''(III) technology maturation funding to support activities such as prototype construction, experiment analysis, product comparison, and the collection of performance data;

''(IV) technical validations, market research, clarifying intellectual property rights position and strategy, and investigating commercial and business opportunities;

''(V) programs to provide advice, mentoring, entrepreneurial education, project management, and technology and business development expertise to innovators and recipients of tech-

nology transfer licenses to maximize commercialization potential; and

''(VI) conducting outreach to small business concerns as potential licensees of federally funded research and technology, and providing technology transfer services to such small business concerns.

''(iii) SELECTION PROCESS AND APPLICATIONS.—Qualifying institutions seeking a grant under this subsection shall submit an application to a Federal agency required by subparagraph (A) to participate in this program at such time, in such manner, and containing such information as the agency may require. The application shall include, at a minimum—

''(I) a description of innovative approaches to technology transfer, technology development, and commercial readiness that have the potential to increase or accelerate technology transfer outcomes and can be adopted by other qualifying institutions, or a demonstration of proven technology

transfer and commercialization strategies, or a plan to implement proven technology transfer and commercialization strategies that can achieve greater commercialization of federally funded research and technologies with program funding;

''(II) a description of how the qualifying institution will contribute to local and regional economic development efforts; and

''(III) a plan for sustainability beyond the duration of the funding award.

''(iv) PROGRAM OVERSIGHT BOARDS.—

''(I) IN GENERAL.—Successful proposals shall include a plan to assemble a Program Oversight Board, the members of which shall have technical, scientific, or business expertise three-fifths of whom shall be drawn from industry, start-up companies, venture capital or other equity investment mechanism, technical enter-

prises, financial institutions, and business development organizations with a track record of success in commercializing innovations. Proposals may use oversight boards in existence on the date of the enactment of the FIRST Act of 2014 that meet the requirements of this subclause.

''(II) PROGRAM OVERSIGHT BOARDS RESPONSIBILITIES.—Program Oversight Boards shall—

''(aa) establish award programs for individual projects;

''(bb) provide rigorous evaluation of project applications;

''(cc) determine which projects should receive awards, in accordance with guidelines established under subparagraph (C)(ii);

''(dd) establish milestones and associated award amounts for projects that reach milestones;

''(ee) determine whether awarded projects are reaching milestones; and

''(ff) develop a process to reallocate outstanding award amounts from projects that are not reaching milestones to other projects with more potential.

''(III) CONFLICT OF INTEREST.—Program Oversight Boards shall be composed of members who do not have a conflict of interest. Boards shall adopt conflict of interest policies to ensure relevant relationships are disclosed and proper recusal procedures are in place.

''(C) GRANT AND AWARD AMOUNTS.—

''(i) GRANT AMOUNTS.—Each Federal agency required by subparagraph (A) to carry out a grant program may make grants of up to $3,000,000 to a qualifying institution.

''(ii) AWARD AMOUNTS.—Each qualifying institution that receives a grant under subparagraph (B) shall provide

awards for individual projects of not more than $100,000, to be provided in phased amounts, based on reaching the milestones established by the qualifying institution's Program Oversight Board.

''(D) AUTHORIZED EXPENDITURES FOR INNOVATIVE APPROACHES TO TECHNOLOGY TRANSFER GRANT PROGRAM.—

''(i) PERCENTAGE.—The percentage of the extramural budget for research, or research and development, each Federal agency required by subsection (n) to establish an STTR program shall expend on the Innovative Approaches to Technology Transfer Grant Program shall be—

''(I) 0.05 percent for each of fiscal years 2014 and 2015; and

''(II) 0.1 percent for each of fiscal years 2016 and 2017.

''(ii) TREATMENT OF EXPENDITURES.—Any portion of the extramural budget expended by a Federal agency on the Innovative Approaches to Technology Transfer Grant Program shall apply to-

wards the agency's expenditure requirements under subsection (n).

''(2) PROGRAM EVALUATION AND DATA COLLECTION AND DISSEMINATION.—

''(A) EVALUATION PLAN AND DATA COLLECTION.—Each Federal agency required by paragraph (1)(A) to establish an Innovative Approaches to Technology Transfer Grant Program shall develop a program evaluation plan and collect annually such information from grantees as is necessary to assess the Program. Program evaluation plans shall require the collection of data aimed at identifying outcomes resulting from the transfer of technology with assistance from the Innovative Approaches to Technology Transfer Grant Program. Such data may include—

''(i) specific follow-on funding identified or obtained, including follow-on funding sources, such as Federal sources or private sources, within 3 years of the completion of the award;

''(ii) the number of projects which, within 5 years of receiving an award under paragraph (1), result in a license to a

start-up company or an established company with sufficient resources for effective commercialization;

''(iii) the number of invention disclosures received, United States patent applications filed, and United States patents issued within 5 years of the award;

''(iv) the number of projects receiving a grant under paragraph (1) that secure Phase I or Phase II SBIR or STTR awards;

''(v) available information on revenue, sales, or other measures of products that have been commercialized as a result of projects awarded under paragraph (1) within 5 years of the award;

''(vi) the number and location of jobs created resulting from projects awarded under paragraph (1); and

''(vii) other data as deemed appropriate by a Federal agency required by this subparagraph to develop a program evaluation plan.

''(B) EVALUATIVE REPORT TO CONGRESS.—The head of each Federal agency that

participates in the Innovative Approaches to Technology Transfer Grant Program shall submit to the Committee on Science, Space, and Technology and the Committee on Small Business of the House of Representatives and the Committee on Small Business and Entrepreneurship of the Senate an evaluative report regarding the activities of the program. The report shall include—

''(i) a detailed description of the implementation of the program;

''(ii) a detailed description of the grantee selection process;

''(iii) an accounting of the funds used in the program; and

''(iv) a summary of the data collected under subparagraph (A).

''(C) DATA DISSEMINATION.—For the purposes of program transparency and dissemination of best practices, the Administrator shall include on the public database under subsection (k)(1) information on the Innovative Approaches to Technology Transfer Grant Program, including—

''(i) the program evaluation plan required under subparagraph (A);

''(ii) a list of recipients by State of awards under paragraph (1); and

''(iii) information on the use of grants under paragraph (1) by recipient institutions.''.

SEC. 422. NATIONAL ACADEMIES REPORT ON UNIVERSITY INCUBATORS AND ACCELERATORS.

Not later than 1 year after the date of enactment of this Act, the Secretary of Commerce shall enter into an arrangement with the National Academy of Sciences to conduct a study on the role of incubators and accelerators, including university-based incubators and accelerators, in the commercialization of federally funded research and regional economic development. The study shall—

(1) examine the effectiveness of incubators and accelerators in stimulating the creation of start-ups, including metrics for comparing start-ups that have and have not completed incubator or accelerator programs, and developing regional innovation clusters; and

(2) identify best practices in the structure, goals, operation, management, and funding mechanisms of leading incubators and accelerators.

TITLE V—NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT

SEC. 501. SHORT TITLE.

This title may be cited as the ''Advancing America's Networking and Information Technology Research and Development Act of 2014''.

SEC. 502. PROGRAM PLANNING AND COORDINATION.

(a) PERIODIC REVIEWS.—Section 101 of the High-Performance Computing Act of 1991 (15 U.S.C. 5511) is amended by adding at the end the following new subsection:

''(d) PERIODIC REVIEWS.—The agencies identified in subsection (a)(3)(B) shall—

''(1) periodically assess the contents and funding levels of the Program Component Areas and restructure the Program when warranted, taking into consideration any relevant recommendations of the advisory committee established under subsection (b); and

''(2) ensure that the Program includes large-scale, long-term, interdisciplinary research and development activities, including activities described in section 104.''.

(b) DEVELOPMENT OF STRATEGIC PLAN.—Section 101 of such Act (15 U.S.C. 5511) is amended further by adding after subsection (d), as added by subsection (a) of this Act, the following new subsection:

''(e) STRATEGIC PLAN.—

''(1) IN GENERAL.—The agencies identified in subsection (a)(3)(B), working through the National Science and Technology Council and with the assistance of the National Coordination Office described under section 102, shall develop, within 12 months after the date of enactment of the Advancing America's Networking and Information Technology Research and Development Act of 2014, and update every 3 years thereafter, a 5-year strategic plan to guide the activities described under subsection (a)(1).

''(2) CONTENTS.—The strategic plan shall specify near-term and long-term objectives for the Program, the anticipated time frame for achieving the near-term objectives, the metrics to be used for assessing progress toward the objectives, and how the Program will—

''(A) foster the transfer of research and development results into new technologies and applications for the benefit of society, including

through cooperation and collaborations with networking and information technology research, development, and technology transition initiatives supported by the States;

''(B) encourage and support mechanisms for interdisciplinary research and development in networking and information technology, including through collaborations across agencies, across Program Component Areas, with industry, with Federal laboratories (as defined in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703)), and with international organizations;

''(C) address long-term challenges of national importance for which solutions require large-scale, long-term, interdisciplinary research and development;

''(D) place emphasis on innovative and high-risk projects having the potential for substantial societal returns on the research investment;

''(E) strengthen all levels of networking and information technology education and training programs to ensure an adequate, well-trained workforce; and

''(F) attract more women and underrepresented minorities to pursue postsecondary degrees in networking and information technology.

''(3) NATIONAL RESEARCH INFRASTRUCTURE.—The strategic plan developed in accordance with paragraph (1) shall be accompanied by milestones and roadmaps for establishing and maintaining the national research infrastructure required to support the Program, including the roadmap required by subsection (a)(2)(E).

''(4) RECOMMENDATIONS.—The entities involved in developing the strategic plan under paragraph (1) shall take into consideration the recommendations—

''(A) of the advisory committee established under subsection (b); and

''(B) of the stakeholders whose input was solicited by the National Coordination Office, as required under section 102(b)(3).

''(5) REPORT TO CONGRESS.—The Director of the National Coordination Office shall transmit the strategic plan required under paragraph (1) to the advisory committee, the Committee on Commerce, Science, and Transportation of the Senate, and the

Committee on Science, Space, and Technology of the House of Representatives.''.

(c) ADDITIONAL RESPONSIBILITIES OF DIRECTOR.—Section 101(a)(2) of such Act (15 U.S.C. 5511(a)(2)) is amended—

(1) in subparagraph (A) by inserting ''education,'' before ''and other activities'';

(2) by redesignating subparagraphs (E) and (F) as subparagraphs (F) and (G), respectively; and

(3) by inserting after subparagraph (D) the following new subparagraph:

''(E) encourage and monitor the efforts of the agencies participating in the Program to allocate the level of resources and management attention necessary to ensure that the strategic plan under subsection (e) is developed and executed effectively and that the objectives of the Program are met;''.

(d) ADVISORY COMMITTEE.—Section 101(b)(1) of such Act (15 U.S.C. 5511(b)(1)) is amended—

(1) after the first sentence, by inserting the following: ''The co-chairs of the advisory committee shall meet the qualifications of committee membership and may be members of the President's Council of Advisors on Science and Technology.''; and

(2) in subparagraph (D), by striking ''high-performance'' and inserting ''high-end''.

(e) REPORT.—Section 101(a)(3) of such Act (15 U.S.C. 5511(a)(3)) is amended—

(1) in subparagraph (B)—

(A) by redesignating clauses (vii) through (xi) as clauses (viii) through (xii), respectively; and

(B) by inserting after clause (vi) the following:

''(vii) the Department of Homeland Security;'';

(2) in subparagraph (C)—

(A) by striking ''is submitted,'' and inserting ''is submitted, the levels for the previous fiscal year,''; and

(B) by striking ''each Program Component Area;'' and inserting ''each Program Component Area and research area supported in accordance with section 104;'';

(3) in subparagraph (D)—

(A) by striking ''each Program Component Area,'' and inserting ''each Program Component Area and research area supported in accordance with section 104,'';

(B) by striking ''is submitted,'' and inserting ''is submitted, the levels for the previous fiscal year,''; and

(C) by striking ''and'' after the semicolon;

(4) by redesignating subparagraph (E) as subparagraph (G); and

(5) by inserting after subparagraph (D) the following new subparagraphs:

''(E) include a description of how the objectives for each Program Component Area, and the objectives for activities that involve multiple Program Component Areas, relate to the objectives of the Program identified in the strategic plan required under subsection (e);

''(F) include—

''(i) a description of the funding required by the National Coordination Office to perform the functions specified under section 102(b) for the next fiscal year by category of activity;

''(ii) a description of the funding required by such Office to perform the functions specified under section 102(b) for the current fiscal year by category of activity; and

''(iii) the amount of funding provided for such Office for the current fiscal year by each agency participating in the Program; and''.

(f) DEFINITION.—Section 4 of such Act (15 U.S.C. 5503) is amended—

(1) by redesignating paragraphs (1) through (7) as paragraphs (2) through (8), respectively;

(2) by inserting before paragraph (2), as so redesignated, the following new paragraph:

''(1) 'cyber-physical systems' means physical or engineered systems whose networking and information technology functions and physical elements are deeply integrated and are actively connected to the physical world through sensors, actuators, or other means to perform monitoring and control functions;'';

(3) in paragraph (3), as so redesignated, by striking ''high-performance computing'' and inserting ''networking and information technology'';

(4) in paragraph (4), as so redesignated—

(A) by striking ''high-performance computing'' and inserting ''networking and information technology''; and

(B) by striking ''supercomputer'' and inserting ''high-end computing'';

(5) in paragraph (6), as so redesignated, by striking ''network referred to as'' and all that follows through the semicolon and inserting ''network, including advanced computer networks of Federal agencies and departments;''; and

(6) in paragraph (7), as so redesignated, by striking ''National High-Performance Computing Program'' and inserting ''networking and information technology research and development program''.

SEC. 503. LARGE-SCALE RESEARCH IN AREAS OF NATIONAL IMPORTANCE.

Title I of such Act (15 U.S.C. 5511) is amended by adding at the end the following new section:

''SEC. 104. LARGE-SCALE RESEARCH IN AREAS OF NATIONAL IMPORTANCE.

''(a) IN GENERAL.—The Program shall encourage agencies identified in section 101(a)(3)(B) to support large-scale, long-term, interdisciplinary research and development activities in networking and information technology directed toward application areas that have the potential for significant contributions to national economic competitiveness and for other significant societal benefits. Such activities, ranging from basic research to the demonstration of technical solutions, shall be designed to advance the development of research discoveries. The advi-

sory committee established under section 101(b) shall make recommendations to the Program for candidate research and development areas for support under this section.

''(b) CHARACTERISTICS.—

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

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

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

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

''(D) include a plan for fostering the transfer of research discoveries and the results of technology demonstration activities, including from institutions of higher education and Federal laboratories, to industry for commercial development.

''(2) COST-SHARING.—In selecting applications for support, the agencies shall give special consideration to projects that include cost sharing from non-Federal sources.

''(3) AGENCY COLLABORATION.—If 2 or more agencies identified in section 101(a)(3)(B), or other appropriate agencies, are working on large-scale research and development activities in the same area of national importance, then such agencies shall strive to collaborate through joint solicitation and selection of applications for support and subsequent funding of projects.

''(4) INTERDISCIPLINARY RESEARCH CENTERS.—Research and development activities under this section may be supported through interdisciplinary research centers that are organized to investigate basic research questions and carry out technology demonstration activities in areas described in subsection (a). Research may be carried out through existing interdisciplinary centers, including those authorized under section 7024(b)(2) of the America COMPETES Act (Public Law 110–69; 42 U.S.C. 1862o–10).''.

SEC. 504. CYBER-PHYSICAL SYSTEMS.

(a) ADDITIONAL PROGRAM CHARACTERISTICS.—Section 101(a)(1) of such Act (15 U.S.C. 5511(a)(1)) is amended—

(1) in subparagraph (H), by striking ''and'' after the semicolon;

(2) in subparagraph (I)—

(A) by striking ''improving the security'' and inserting ''improving the security, reliability, and resilience''; and

(B) by striking the period at the end and inserting a semicolon; and

(3) by adding at the end the following new subparagraphs:

''(J) provide for increased understanding of the scientific principles of cyber-physical systems and improve the methods available for the design, development, and operation of cyber-physical systems that are characterized by high reliability, safety, and security; and

''(K) provide for research and development on human-computer interactions, visualization, and big data.''.

(b) WORKSHOP.—Title I of such Act (15 U.S.C. 5511) is amended further by adding after section 104, as

added by section 503 of this Act, the following new section:

"SEC. 105. UNIVERSITY/INDUSTRY WORKSHOP.

"(a) ESTABLISHMENT.—Not later than 1 year after the date of enactment of the Advancing America's Networking and Information Technology Research and Development Act of 2014, the Director of the National Coordination Office shall convene a workshop, with participants from institutions of higher education, Federal laboratories, and industry, to explore mechanisms for carrying out collaborative research and development activities for cyber-physical systems, including the related technologies required to enable these systems, and to develop grand challenges in cyber-physical systems research and development.

"(b) FUNCTIONS.—The workshop participants shall—

"(1) develop options for models for research and development partnerships among institutions of higher education, Federal laboratories, and industry, including mechanisms for the support of research and development carried out under these partnerships;

''(2) develop options for grand challenges in cyber-physical systems research and development that would be addressed through such partnerships;

''(3) propose guidelines for assigning intellectual property rights and for the transfer of research results to the private sector; and

''(4) make recommendations for how Federal agencies participating in the Program can help support research and development partnerships in cyber-physical systems, including through existing or new grant programs.

''(c) PARTICIPANTS.—The Director of the National Coordination Office shall ensure that participants in the workshop are individuals with knowledge and expertise in cyber-physical systems and that participants represent a broad mix of relevant stakeholders, including academic and industry researchers, cyber-physical systems and technologies manufacturers, cyber-physical systems and technologies users, and, as appropriate, Federal Government regulators.

''(d) REPORT.—Not later than 18 months after the date of enactment of the Advancing America's Networking and Information Technology Research and Development Act of 2014, the Director of the National Coordination Office shall transmit to the Committee on Commerce,

Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report describing the findings and recommendations resulting from the workshop required under this section.''.

SEC. 505. CLOUD COMPUTING SERVICES FOR RESEARCH.

Title I of such Act (15 U.S.C. 5511) is amended further by adding after section 105, as added by section 504(b) of this Act, the following new section:

''SEC. 106. CLOUD COMPUTING SERVICES FOR RESEARCH.

''(a) INTERAGENCY WORKING GROUP.—Not later than 180 days after the date of enactment of the Advancing America's Networking and Information Technology Research and Development Act of 2014, the Director of the National Coordination Office, working through the National Science and Technology Council, shall convene an interagency working group to examine—

''(1) the research and development needed—

''(A) to enhance the effectiveness and efficiency of cloud computing environments;

''(B) to increase the trustworthiness of cloud applications and infrastructure; and

''(C) to enhance the foundations of cloud architectures, programming models, and interoperability; and

''(2) how Federal science agencies can facilitate the use of cloud computing for federally funded science and engineering research, including—

''(A) making recommendations on changes in funding mechanisms, budget models, and policies needed to remove barriers to the adoption of cloud computing services for research and for data preservation and sharing; and

''(B) providing guidance to organizations and researchers on opportunities and guidelines for using cloud computing services for federally supported research and related activities.

''(b) CONSULTATION.—In carrying out the tasks in paragraphs (1) and (2) of subsection (a), the working group shall consult with academia, industry, Federal laboratories, and other relevant organizations and institutions, as appropriate.

''(c) REPORT.—Not later than 1 year after the date of enactment of the Advancing America's Networking and Information Technology Research and Development Act of 2014, the Director of the National Coordination Office 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 report describing the findings and any recommendations of the working group.

''(d) TERMINATION.—The interagency working group shall terminate upon transmittal of the report required under subsection (c).''.

SEC. 506. NATIONAL COORDINATION OFFICE.

Section 102 of such Act (15 U.S.C. 5512) is amended to read as follows:

''SEC. 102. NATIONAL COORDINATION OFFICE.

''(a) OFFICE.—The Director shall continue a National Coordination Office with a Director and full-time staff.

''(b) FUNCTIONS.—The National Coordination Office shall—

''(1) provide technical and administrative support to—

''(A) the agencies participating in planning and implementing the Program, including such support as needed in the development of the strategic plan under section 101(e); and

''(B) the advisory committee established under section 101(b);

''(2) serve as the primary point of contact on Federal networking and information technology activities for government organizations, academia, in-

dustry, professional societies, State computing and networking technology programs, interested citizen groups, and others to exchange technical and programmatic information;

''(3) solicit input and recommendations from a wide range of stakeholders during the development of each strategic plan required under section 101(e) through the convening of at least 1 workshop with invitees from academia, industry, Federal laboratories, and other relevant organizations and institutions;

''(4) conduct public outreach, including the dissemination of findings and recommendations of the advisory committee, as appropriate; and

''(5) promote access to and early application of the technologies, innovations, and expertise derived from Program activities to agency missions and systems across the Federal Government and to United States industry.

''(c) SOURCE OF FUNDING.—

''(1) IN GENERAL.—The operation of the National Coordination Office shall be supported by funds from each agency participating in the Program.

''(2) SPECIFICATIONS.—The portion of the total budget of such Office that is provided by each agency for each fiscal year shall be in the same proportion as each such agency's share of the total budget for the Program for the previous fiscal year, as specified in the report required under section 101(a)(3).''.

SEC. 507. IMPROVING NETWORKING AND INFORMATION TECHNOLOGY EDUCATION.

Section 201(a) of such Act (15 U.S.C. 5521(a)) is amended—

(1) by redesignating paragraphs (2) through (4) as paragraphs (3) through (5), respectively; and

(2) by inserting after paragraph (1) the following new paragraph:

''(2) the National Science Foundation shall use its existing programs, in collaboration with other agencies, as appropriate, to improve the teaching and learning of networking and information technology at all levels of education and to increase participation in networking and information technology fields, including by women and underrepresented minorities;''.

SEC. 508. CONFORMING AND TECHNICAL AMENDMENTS.

(a) SECTION 3.—Section 3 of such Act (15 U.S.C. 5502) is amended—

(1) in the matter preceding paragraph (1), by striking ''high-performance computing'' and inserting ''networking and information technology'';

(2) in paragraph (1)—

(A) in the matter preceding subparagraph (A), by striking ''high-performance computing'' and inserting ''networking and information technology'';

(B) in subparagraphs (A), (F), and (G), by striking ''high-performance computing'' each place it appears and inserting ''networking and information technology''; and

(C) in subparagraph (H), by striking ''high-performance'' and inserting ''high-end''; and

(3) in paragraph (2)—

(A) by striking ''high-performance computing and'' and inserting ''networking and information technology and''; and

(B) by striking ''high-performance computing network'' and inserting ''networking and information technology''.

(b) TITLE I.—The heading of title I of such Act (15 U.S.C. 5511) is amended by striking ''**HIGH-PERFORMANCE COMPUTING**'' and inserting ''**NETWORKING AND INFORMATION TECHNOLOGY**''.

(c) SECTION 101.—Section 101 of such Act (15 U.S.C. 5511) is amended—

(1) in the section heading, by striking ''**HIGH-PERFORMANCE COMPUTING**'' and inserting ''**NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT**'';

(2) in subsection (a)—

(A) in the subsection heading, by striking ''NATIONAL HIGH-PERFORMANCE COMPUTING'' and inserting ''NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT'';

(B) in paragraph (1) of such subsection—

(i) in the matter preceding subparagraph (A), by striking ''National High-Performance Computing Program'' and inserting ''networking and information technology research and development program'';

(ii) in subparagraph (A), by striking ''high-performance computing, including networking'' and inserting ''networking and information technology'';

(iii) in subparagraphs (B) and (G), by striking ''high-performance'' each place it appears and inserting ''high-end''; and

(iv) in subparagraph (C), by striking ''high-performance computing and networking'' and inserting ''high-end computing, distributed, and networking''; and

(C) in paragraph (2) of such subsection—

(i) in subparagraphs (A) and (C)—

(I) by striking ''high-performance computing'' each place it appears and inserting ''networking and information technology''; and

(II) by striking ''development, networking,'' each place it appears and inserting ''development,''; and

(ii) in subparagraphs (F) and (G), as redesignated by section 2(c)(1) of this Act, by striking ''high-performance'' each place it appears and inserting ''high-end'';

(3) in subsection (b)—

(A) in paragraph (1), in the matter preceding subparagraph (A), by striking ''high-performance computing'' both places it appears and inserting ''networking and information technology''; and

(B) in paragraph (2), in the second sentence, by striking ''2'' and inserting ''3''; and

(4) in subsection (c)(1)(A), by striking ''high-performance computing'' and inserting ''networking and information technology''.

(d) SECTION 201.—Section 201(a)(1) of such Act (15 U.S.C. 5521(a)(1)) is amended by striking ''high-performance computing'' and all that follows through ''networking;'' and inserting ''networking and information research and development;''.

(e) SECTION 202.—Section 202(a) of such Act (15 U.S.C. 5522(a)) is amended by striking ''high-performance computing'' and inserting ''networking and information technology''.

(f) SECTION 203.—Section 203(a) of such Act (15 U.S.C. 5523(a)(1)) is amended—

(1) in paragraph (1), by striking ''high-performance computing and networking'' and inserting ''networking and information technology''; and

(2) in paragraph (2)(A), by striking ''high-performance'' and inserting ''high-end''.

(g) SECTION 204.—Section 204 of such Act (15 U.S.C. 5524) is amended—

(1) in subsection (a)(1)—

(A) in subparagraph (A), by striking ''high-performance computing systems and networks'' and inserting ''networking and information technology systems and capabilities'';

(B) in subparagraph (B), by striking ''interoperability of high-performance computing systems in networks and for common user interfaces to systems'' and inserting ''interoperability and usability of networking and information technology systems''; and

(C) in subparagraph (C), by striking ''high-performance computing'' and inserting ''networking and information technology''; and

(2) in subsection (b)—

(A) in the heading, by striking ''HIGH-PERFORMANCE COMPUTING AND NETWORK'' and inserting ''NETWORKING AND INFORMATION TECHNOLOGY''; and

(B) by striking ''sensitive''.

(h) SECTION 205.—Section 205(a) of such Act (15 U.S.C. 5525(a)) is amended by striking ''computational'' and inserting ''networking and information technology''.

(i) SECTION 206.—Section 206(a) of such Act (15 U.S.C. 5526(a)) is amended by striking ''computational research'' and inserting ''networking and information technology research''.

(j) SECTION 207.—Section 207(b) of such Act (15 U.S.C. 5527(b)) is amended by striking ''high-performance computing'' and inserting ''networking and information technology''.

(k) SECTION 208.—Section 208 of such Act (15 U.S.C. 5528) is amended—

(1) in the section heading, by striking ''**HIGH-PERFORMANCE COMPUTING**'' and inserting ''**NETWORKING AND INFORMATION TECHNOLOGY**''; and

(2) in subsection (a)—

(A) in paragraph (1), by striking ''High-performance computing and associated'' and inserting ''Networking and information'';

(B) in paragraph (2), by striking ''high-performance computing'' and inserting ''networking and information technologies'';

(C) in paragraph (3), by striking ''high-performance'' and inserting ''high-end'';

(D) in paragraph (4), by striking ''high-performance computers and associated'' and inserting ''networking and information''; and

(E) in paragraph (5), by striking ''high-performance computing and associated'' and inserting ''networking and information''.

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