DECEMBER 1, 2016

AMENDMENT NO._____ Calendar No._____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—114th Cong., 2d Sess.

S. 3084

To invest in innovation through research and development, and to improve the competitiveness of the United States.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended to be proposed by _____

Viz:

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 "American Innovation and Competitiveness Act".

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

SEC. 2. DEFINITIONS.

In this Act, unless expressly provided otherwise:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term "appropriate committees of Congress" means the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives.

(2) FEDERAL SCIENCE AGENCY.—The term "Federal science agency" has the meaning given the term in section 103 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6623).

(3) FOUNDATION.—The term "Foundation" means the National Science Foundation.

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

(5) NIST.—The term "NIST" means the National Institute of Standards and Technology.

(6) STEM.—The term "STEM" has the meaning given the term in section 2 of the American COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621 note).

(7) STEM EDUCATION.—The term "STEM education" has the meaning given the term in section 2 of the STEM Education Act of 2015 (42 U.S.C. 6621 note).

TITLE I—MAXIMIZING BASIC RESEARCH

SEC. 101. REAFFIRMATION OF MERIT-BASED PEER REVIEW.

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

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

(2) the Foundation's intellectual merit and broader impacts criteria are appropriate for evaluating grant proposals, as concluded by the 2011 National Science Board Task Force on Merit Review;

(3) evaluating proposals on the basis of the Foundation's intellectual merit and broader impacts criteria should be used to assure that the Founda-

tion's activities are in the national interest as these reviews can affirm that—

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

(B) the Foundation's grants address societal needs through basic research findings or through related activities; and

(4) as evidenced by the Foundation's contributions to scientific advancement, economic growth, human health, and national security, its peer review and merit review processes have identified and funded scientifically and societally relevant basic research and should be preserved.

(b) MERIT REVIEW CRITERIA.—The Foundation shall maintain the intellectual merit and broader impacts criteria, among other specific criteria as appropriate, as the basis for evaluating grant proposals in the merit review process.

(c) UPDATES.—If after the date of enactment of this Act a change is made to the merit-review process, the Director shall submit a report to the appropriate committees of Congress not later than 30 days after the date of the change.

SEC. 102. TRANSPARENCY AND ACCOUNTABILITY.

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

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

(2) the Foundation has improved transparency and accountability of the outcomes made through the merit review process, but additional transparency into individual grants is valuable in communicating and assuring the public value of federally funded research; and

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

(b) GUIDANCE.—

(1) IN GENERAL.—The Director of the Foundation shall issue and periodically update, as appropriate, policy guidance for both Foundation staff and other Foundation merit review process participants on the importance of transparency and accountability to the outcomes made through the merit review process.

(2) REQUIREMENTS.—The guidance under paragraph (1) shall require that each public notice of a Foundation-funded research project justify the expenditure of Federal funds by—

(A) describing how the project—

(i) reflects the statutory mission of the Foundation, as established in the National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.); and

(ii) addresses the Foundation's intellectual merit and broader impacts criteria; and

(B) clearly identifying the research goals of the project in a manner that can be easily understood by both technical and non-technical audiences.

(c) BROADER IMPACTS ~~CRITERION~~ CRITERION REVIEW, UPDATE.—Section 526(a) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p-14(a)) is amended to read as follows:

"(a) GOALS.—The Foundation shall apply a broader impacts ~~criterion~~ criterion review, to identify and demonstrate project support of the following goals:

"(1) Increasing the economic competitiveness of the United States.

"(2) Advancing of the health and welfare of the American public.

"(5) Developing an American STEM workforce that is globally competitive through improved pre-kindergarten through grade 12 STEM education, and teacher development, and improved undergraduate STEM education and instruction.

"(6) Improving ~~Increasing~~ public scientific literacy and engagement with science and technology in the United States.

"(4) Enhancing partnerships between academia and industry in the United States.

"(3) Supporting ~~for~~ the national defense of the United States.

"(7) Expanding participation of women and individuals from underrepresented groups in STEM.".

SEC. 103. EPSCOR REAFFIRMATION AND UPDATE.

(a) FINDINGS.—Section 517(a) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–9(a)) is amended—

(1) in paragraph (1)—

(A) by striking "The National" and inserting "the National"; and

(B) by striking "education," and inserting "education";

(2) in paragraph (2), by striking "with 27 States" and all that follows through the semicolon at the end and inserting "with 28 States and jurisdictions, taken together, receiving only about 12 percent of all National Science Foundation research funding;";

(3) by striking paragraph (3) and inserting the following:

"(3) each of the States described in paragraph (2) receives only a fraction of 1 percent of the Foundation's research dollars each year;"; and

(4) by adding at the end the following:

"(4) first established at the National Science Foundation in 1979, the Experimental Program to Stimulate Competitive Research (referred to in this section as 'EPSCoR') assists States and jurisdictions historically underserved by Federal research and development funding in strengthening their research and innovation capabilities;

"(5) the EPSCoR structure requires each participating State to develop a science and technology plan suited to State and local research, education, and economic interests and objectives;

"(6) EPSCoR has been credited with advancing the research competitiveness of participating States,

improving awareness of science, promoting policies that link scientific investment and economic growth, and encouraging partnerships between government, industry, and academia;

"(7) EPSCoR proposals are evaluated through a rigorous and competitive merit-review process to ensure that awarded research and development efforts meet high scientific standards; and

"(8) according to the National Academy of Sciences, EPSCoR has strengthened the national research infrastructure and enhanced the educational opportunities needed to develop the science and engineering workforce.".

(b) SENSE OF CONGRESS.—

(1) IN GENERAL.—It is the sense of Congress that—

(A) since maintaining the Nation's scientific and economic leadership requires the participation of talented individuals nationwide, EPSCoR investments into State research and education capacities are in the Federal interest and should be sustained; and

(B) EPSCoR should maintain its experimental component by supporting innovative

methods for improving research capacity and competitiveness.

(2) DEFINITION OF EPSCOR.—In this subsection, the term "EPSCoR" has the meaning given the term in section 502 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p note).

(c) AWARD STRUCTURE UPDATES.—Section 517 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–9) is amended by adding at the end the following:

"(g) AWARD STRUCTURE UPDATES.—In implementing the mandate to maximize the impact of Federal EPSCoR support on building competitive research infrastructure, and based on the inputs and recommendations of previous EPSCoR reviews, the head of each Federal agency administering an EPSCoR program shall—

"(1) consider modifications to EPSCoR proposal solicitation, award type, and project evaluation—

"(A) to more closely align with current agency priorities and initiatives;

"(B) to focus EPSCoR funding on achieving critical scientific, infrastructure, and educational needs of that agency;

"(C) to encourage collaboration between EPSCoR-eligible institutions and researchers, including with institutions and researchers in other States and jurisdictions;

"(D) to improve communication between State and Federal agency proposal reviewers; and

"(E) to continue to reduce administrative burdens associated with EPSCoR;

"(2) consider modifications to EPSCoR award structures—

"(A) to emphasize long-term investments in building research capacity, potentially through the use of larger, renewable funding opportunities; and

"(B) to allow the agency, States, and jurisdictions to experiment with new research and development funding models; and

"(3) consider modifications to the mechanisms used to monitor and evaluate EPSCoR awards—

"(A) to increase collaboration between EPSCoR-funded researchers and agency staff, including by providing opportunities for mentoring young researchers and for the use of Federal facilities;

"(B) to identify and disseminate best practices; and

"(C) to harmonize metrics across participating Federal agencies, as appropriate.".

(d) REPORTS.—

(1) CONGRESSIONAL REPORTS.—Section 517 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–9), as amended, is further amended—

(A) by striking subsection (e);

(B) by redesignating subsections (d) through (g) as subsections (e) through (f), respectively;

(C) in subsection (e), as redesignated—

(i) in paragraph (1), by striking "Experimental Programs to Stimulate Competitive Research" and inserting "EPSCoR"; and

(ii) in paragraph (2)—

(I) in subparagraphs (A) and (E), by striking "EPSCoR and Federal EPSCoR-like programs" and inserting "each EPSCoR";

(II) in subparagraph (D), by striking "EPSCoR and other Federal

EPSCoR-like programs" and inserting "each EPSCoR";

(III) in subparagraph (E), by striking "EPSCoR or Federal EPSCoR-like programs" and inserting "each EPSCoR"; and

(IV) in subparagraph (G), by striking "EPSCoR programs" and inserting "each EPSCoR"; and

(D) by amending subsection (d), as redesignated, to read as follows:

"(d) FEDERAL AGENCY REPORTS.—Each Federal agency that administers an EPSCoR shall submit to Congress, as part of its Federal budget submission—

"(1) a description of the program strategy and objectives;

"(2) a description of the awards made in the previous fiscal year, including—

"(A) the total amount made available, by State, under EPSCoR;

"(B) the total amount of agency funding made available to all institutions and entities within each EPSCoR State;

"(C) the efforts and accomplishments to more fully integrate the EPSCoR States in major agency activities and initiatives;

"(D) the percentage of EPSCoR reviewers from EPSCoR States; and

"(E) the number of programs or large collaborator awards involving a partnership of organizations and institutions from EPSCoR and non-EPSCoR States; and

"(3) an analysis of the gains in academic research quality and competitiveness, and in science and technology human resource development, achieved by the program over the last 5 fiscal years."; and

(E) in subsection (e)(1), as redesignated, by striking "Experimental Program to Stimulate Competitive Research or a program similar to the Experimental Program to Stimulate Competitive Research" and inserting "EPSCoR".

(2) RESULTS OF AWARD STRUCTURE PLAN.—Not later than 1 year after the date of enactment of this Act, the EPSCoR Interagency Coordinating Committee shall brief the appropriate committees of Congress on the updates made to the award struc-

ture under 517(f) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–9(f)), as amended by this subsection.

(c) DEFINITION OF EPSCoR.—

(1) IN GENERAL.—Section 502 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p note) is amended by amending paragraph (2) to read as follows:

"(2) EPSCoR.—The term 'EPSCoR' means—

"(A) the Established Program to Stimulate Competitive Research established by the Foundation; or

"(B) a program similar to the Established Program to Stimulate Competitive Research at another Federal agency.".

(2) TECHNICAL AND CONFORMING AMENDMENTS.—Section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g) is amended—

(A) in the heading, by striking "**EXPERIMENTAL**" and inserting "**ESTABLISHED**";

(B) in subsection (a), by striking "an Experimental Program to Stimulate Competitive Research" and inserting "a program to stimulate competitive research (known as the 'Estab-

lished Program to Stimulate Competitive Research')"; and

(C) in subsection (b), by striking "the program" and inserting "the Program".

SEC. 104. CYBERSECURITY RESEARCH.

(a) FOUNDATION CYBERSECURITY RESEARCH.—Section 4(a)(1) of the Cyber Security Research and Development Act, as amended (15 U.S.C. 7403(a)(1)) is amended—

(1) in subparagraph (O), by striking "and" at the end;

(2) in subparagraph (P), by striking the period at the end and inserting a semicolon; and

(3) by adding at the end the following:

"(Q) security of election-dedicated voting system software and hardware; and

"(R) role of the human factor in cybersecurity and the interplay of computers and humans and the physical world.".

(b) NIST CYBERSECURITY PRIORITIES.—

(1) CRITICAL INFRASTRUCTURE AWARENESS.—The Director of NIST shall continue to raise public awareness of the voluntary, industry-led cybersecurity standards and best practices for critical infrastructure developed under section 2(c)(15)

of the National Institute of Standards and Technology Act (15 U.S.C. 272(c)(15)).

(2) QUANTUM COMPUTING.—Under section 2(b) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)) and section 20 of that Act (15 U.S.C. 278g-3), the Director of NIST shall—

(A) research information systems for future cybersecurity needs; and

(B) coordinate with relevant stakeholders to develop a process—

(i) to research and identify or, if necessary, develop cryptography standards and guidelines for future cybersecurity needs, including quantum-resistant cryptography standards; and

(ii) to provide recommendations to Congress, Federal agencies, and industry consistent with the National Technology Transfer and Advancement Act of 1995 (Public Law 104–113; 110 Stat. 775), for a secure and smooth transition to the standards under clause (i).

(3) FEDERAL INFORMATION SYSTEMS RESEARCH AND DEVELOPMENT.—Section 20(d)(3) of

the National Institute of Standards and Technology Act (15 U.S.C. 278g–3(d)(3)) is amended to read as follows:

"(3) conduct research and analysis—

"(A) to determine the nature and extent of information security vulnerabilities and techniques for providing cost-effective information security;

"(B) to review and determine prevalent information security challenges and deficiencies identified by agencies or the Institute, including any challenges or deficiencies described in any of the annual reports under section 3553(c) or 3554(c) of title 44, United States Code, and in any of the reports and the independent evaluations under section 3555 of that title, that may undermine the effectiveness of agency information security programs and practices; and

"(C) to ~~study~~ evaluate the effectiveness and sufficiency of, and challenges to, Federal agencies' implementation of standards and guidelines developed under this section and policies and standards promulgated under section 11331 of title 40, United States Code;".

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

(A) by redesignating paragraphs (16) through (23) as paragraphs (17) through (24), respectively; and

(B) by inserting after paragraph (15) the following:

"(16) perform research to support the development of voluntary, consensus-based, industry-led standards and recommendations on the security of computers, computer networks, and computer data storage used in election systems to ensure voters can vote securely and privately.".

SEC. 105. NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT UPDATE.

(a) SHORT TITLE.—This section may be cited as the "Networking and Information Technology Research and Development Modernization Act of 2016".

(b) FINDINGS.—Section 2 of the High-Performance Computing Act of 1991 (15 U.S.C. 5501) is amended—

(1) in paragraphs (2) and (5), by striking "high-performance computing" and inserting "networking and information technology, including high-performance computing,"; and

(2) in paragraph (3), by striking "high-performance computing" and inserting "networking and information technology, including high-performance computing";

(c) PURPOSES.—Section 3 of the High-Performance Computing Act of 1991 (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 "expanding Federal support for research, development, and application of high-performance computing" and inserting "supporting Federal research, development, and application of networking and information technology";

(B) in subparagraph (A), by striking "high-performance computing" both places it appears and inserting "networking and information technology";

(C) by striking subparagraphs (C) and (D);

(D) by inserting after subparagraph (B) the following:

"(C) stimulate research on and promote more rapid development of high-end computing systems software and applications software;";

(E) by redesignating subparagraphs (E) through (H) as subparagraphs (D) through (G), respectively;

(F) in subparagraph (D), as redesignated, by inserting "high-end" after "the development of";

(G) in subparagraphs (E) and (F), as redesignated, by striking "high-performance computing" each place it appears and inserting "networking and information technology"; and

(H) in subparagraph (G), as redesignated, 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".

(d) DEFINITIONS.—Section 4 of the High-Performance Computing Act of 1991 (15 U.S.C. 5503) is amended—

(1) by striking paragraphs (3) and (5);

(2) by redesignating paragraphs (1), (2), (4), (6), and (7) as paragraphs (2), (3), (5), (8), and (9), respectively;

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

"(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 enable safe and effective, real-time performance in safety-critical and other applications;";

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

(5) by inserting after paragraph (3), as redesignated, the following:

"(4) 'high-end computing' means the most advanced and capable computing systems, including their hardware, storage, networking and software, encompassing both massive computational capability

and large-scale data analytics to solve computational problems of national importance that are beyond the capability of small- to medium-scale systems, including computing formerly known as high-performance computing;";

(6) by inserting after paragraph (5), as redesignated, the following:

"(6) 'networking and information technology' means high-end computing, communications, and information technologies, high-capacity and high-speed networks, special purpose and experimental systems, high-end computing systems software and applications software, and the management of large data sets;

"(7) 'participating agency' means an agency described in section 101(a)(3)(C);"; and

(7) in paragraph (8), as redesignated, by striking "National High-Performance Computing Program" and inserting "Networking and Information Technology Research and Development Program".

(e) TITLE I HEADING.—The heading of title I of the High-Performance Computing Act of 1991 (15 U.S.C. 5511 et seq.) is amended by striking "**HIGH-PERFORMANCE COMPUTING**" and inserting "**NET-**

WORKING AND INFORMATION TECHNOLOGY".

(f) NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT PROGRAM.—Section 101 of the High-Performance Computing Act of 1991 (15 U.S.C. 5511) is amended—

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

(2) in subsection (a)—

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

(B) in paragraph (1)—

(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";

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

(v) by amending subparagraph (D) to read as follows:

"(D) provide for efforts to increase software security and reliability;";

(vi) in subparagraph (H)—

(I) by inserting "support and guidance" after "provide"; and

(II) by striking "and" after the semicolon;

(vii) in subparagraph (I)—

(I) by striking "improving the security" and inserting "improving the security, reliability, and resilience"; and

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

(viii) by adding at the end the following:

"(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;

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

"(L) provide for research and development on the enhancement of cybersecurity, including the human facets of cyber threats and secure cyber systems;

"(M) provide for the understanding of the science, engineering, policy, and privacy protection related to networking and information technology;

"(N) provide for the transition of high-end computing hardware, system software, development tools, and applications into development and operations; and

"(O) foster public-private collaboration among government, industry research laboratories, academia, and nonprofit organizations to maximize research and development efforts and the benefits of networking and information technology, including high-end computing.";

(C) in paragraph (2)—

(i) by amending subparagraph (A) to read as follows:

"(A) establish the goals and priorities for Federal networking and information technology research, development, education, and other activities;";

(ii) by amending subparagraph (C) to read as follows:

"(C) provide for interagency coordination of Federal networking and information technology research, development, education, and other activities undertaken pursuant to the Program—

"(i) among the participating agencies; and

"(ii) to the extent practicable, with other Federal agencies not described in paragraph (3)(C), other Federal and pri-

vate research laboratories, industry, research entities, institutions of higher education, relevant nonprofit organizations, and international partners of the United States;";

(iii) by amending subparagraph (E) to read as follows:

"(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 plans under subsection (e) are developed and executed effectively and that the objectives of the Program are met; and"; and

(iv) in subparagraph (F), by striking "high-performance" and inserting "high-end"; and

(D) in paragraph (3)—

(i) by redesignating subparagraphs (B), (C), (D), and (E) as subparagraphs (C), (D), (E), and (G), respectively;

(ii) by inserting after subparagraph (A) the following:

"(B) provide a detailed description of the nature and scope of research infrastructure designated as such under the Program;";

(iii) in subparagraph (C), as redesignated—

(I) by amending clause (i) to read as follows:

"(i) the Department of Justice;";

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

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

"(vii) the Department of Homeland Security;"; and

(IV) by amending clause (viii), as redesignated, to read as follows:

"(viii) the National Archives and Records Administration;";

(iv) in subparagraph (D), as redesignated—

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

(II) by striking "each Program Component Area;" and inserting "each Program Component Area and research area supported in accordance with section 102;";

(v) by amending subparagraph (E), as redesignated, to read as follows:

"(E) describe the levels of Federal funding for each participating agency, and for each Program Component Area, for the fiscal year during which such report is submitted, the levels for the previous fiscal year, and the levels proposed for the fiscal year with respect to which the budget submission applies;"; and

(vi) by inserting after subparagraph (E), as redesignated, the following:

"(F) 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 plans required under subsection (e); and";

(3) in subsection (b)—

(A) in paragraph (1), in the matter preceding subparagraph (A)—

(i) by striking "high-performance computing" both places it appears and inserting "networking and information technology"; and

(ii) after the first sentence, by inserting the following: "Each chair of the advisory committee shall meet the qualifications of committee membership and may be a member of the President's Council of Advisors on Science and Technology.";

(B) in paragraph (1)(D), by striking "high-performance computing, networking technology, and related software" and inserting "networking and information technology"; and

(C) in paragraph (2)—

(i) in the second sentence, by striking "2" and inserting "3";

(ii) by striking "Committee on Science and Technology" and inserting "Committee on Science, Space, and Technology"; and

(iii) by striking "The first report shall be due within 1 year after the date of enactment of the America COMPETES Act.";

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

(5) by adding at the end the following:

"(d) PERIODIC REVIEWS.—The heads of the participating agencies, working through the National Science and Technology Council and the Program, shall—

"(1) periodically assess and update, as appropriate, the structure of the Program, including the Program Component Areas and associated contents, scope, and funding levels, taking into consideration any relevant recommendations of the advisory committee established under subsection (b); and

"(2) ensure that such agency's implementation of the Program includes foundational, large-scale, long-term, and interdisciplinary information technology research and development activities, including activities described in section 102.

"(e) STRATEGIC PLANS.—

"(1) IN GENERAL.—The heads of the participating agencies, working through the National Science and Technology Council and the Program, shall develop and implement strategic plans to guide—

"(A) emerging activities of Federal networking and information technology research and development; and

"(B) the activities described in subsection (a)(1).

"(2) UPDATES.—The heads of the participating agencies shall update the strategic plans as appropriate.

"(3) CONTENTS.—Each strategic plan shall—

"(A) specify near-term and long-term objectives for the portions of the Program relevant to the strategic plan, the anticipated schedule for achieving the near-term and long-term objectives, and the metrics to be used for assessing progress toward the near-term and long-term objectives;

"(B) specify how the near-term and long-term objectives complement research and development areas in which academia and the private sector are actively engaged;

"(C) describe how the heads of the participating agencies will support mechanisms for foundational, large-scale, long-term, and interdisciplinary information technology research

and development and for Grand Challenges, including through collaborations—

"(i) across Federal agencies;

"(ii) across Program Component Areas; and

"(iii) with industry, Federal and private research laboratories, research entities, institutions of higher education, relevant nonprofit organizations, and international partners of the United States;

"(D) describe how the heads of the participating agencies will foster the rapid transfer of research and development results into new technologies and applications in the national interest, including through cooperation and collaborations with networking and information technology research, development, and technology transition initiatives supported by the States; and

"(E) describe how the portions of the Program relevant to the strategic plan will address long-term challenges for which solutions require foundational, large-scale, long-term, and interdisciplinary information technology research and development.

"(4) PRIVATE SECTOR EFFORTS.—In developing, implementing, and updating strategic plans, the heads of the participating agencies, working through the National Science and Technology Council and the Program, shall coordinate with industry, academia, and other interested stakeholders to ensure, to the extent practicable, that the Federal networking and information technology research and development activities carried out under this section do not duplicate the efforts of the private sector.

"(5) RECOMMENDATIONS.—In developing and updating strategic plans, the heads of the participating agencies shall solicit recommendations and advice from—

"(A) the advisory committee under subsection (b);

"(B) the Committee on Science and relevant subcommittees of the National Science and Technology Council; and

"(C) a wide range of stakeholders, including industry, academia, National Laboratories, and other relevant organizations and institutions.

"(f) REPORTS.—The heads of the participating agencies, working through the National Science and Tech-

nology Council and the Program, shall submit 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—

"(1) the strategic plans developed under subsection (e)(1); and

"(2) each update under subsection (e)(2).".

(g) NATIONAL RESEARCH AND EDUCATION NETWORK.—Section 102 of the High-Performance Computing Act of 1991 (15 U.S.C. 5512) is repealed.

(h) NEXT GENERATION INTERNET.—Section 103 of the High-Performance Computing Act of 1991 (15 U.S.C. 5513) is repealed.

(i) GRAND CHALLENGES IN AREAS OF NATIONAL IMPORTANCE.—Title I of the High-Performance Computing Act of 1991 (15 U.S.C. 5511 et seq.) is amended by adding at the end the following:

"SEC. 102. GRAND CHALLENGES IN AREAS OF NATIONAL IMPORTANCE.

"(a) IN GENERAL.—The Program shall encourage the participating agencies to support foundational, large-scale, long-term, interdisciplinary, and interagency information technology research and development activities in networking and information technology directed toward

agency mission 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 fundamental discoveries. The advisory 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) to the extent practicable, involve collaborations among researchers in institutions of higher education and industry, and may involve nonprofit research institutions and Federal laboratories, as appropriate;

"(C) to the extent practicable, leverage Federal investments through collaboration with related State and private sector 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 may give special consideration to projects that include cost sharing from non-Federal sources.".

(j) NATIONAL SCIENCE FOUNDATION ACTIVITIES.—Section 201 of the High-Performance Computing Act of 1991 (15 U.S.C. 5521) is amended—

(1) in subsection (a)—

(A) by striking "(a) GENERAL RESPONSIBILITIES.—";

(B) in paragraph (1)—

(i) by inserting "high-end" after "National Science Foundation shall provide"; and

(ii) by striking "high-performance computing" and all that follows through "networking;" and inserting "networking and information technology; and";

(C) by striking paragraphs (2) through (4); and

(D) by inserting after paragraph (1) the following:

"(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 individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a and 1885b).";

and

(2) by striking subsection (b).

(k) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ACTIVITIES.—Section 202 of the High-Performance Computing Act of 1991 (15 U.S.C. 5522) is amended—

(1) by striking "(a) GENERAL RESPONSIBILITIES.—";

(2) by striking "high-performance computing" and inserting "networking and information technology"; and

(3) by striking subsection (b).

(l) DEPARTMENT OF ENERGY ACTIVITIES.—Section 203 of the High-Performance Computing Act of 1991 (15 U.S.C. 5523) is amended—

(1) by striking "(a) GENERAL RESPONSIBILITIES.—";

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

(3) in paragraph (2)(A), by striking "high-performance" and inserting "high-end"; and

(4) by striking subsection (b).

(m) DEPARTMENT OF COMMERCE ACTIVITIES.—Section 204 of the High-Performance Computing Act of 1991 (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";

(2) in subsection (b)—

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

(B) by striking "Pursuant to the Computer Security Act of 1987 (Public Law 100–235; 101 Stat. 1724), the" and inserting "The"; and

(C) by striking "sensitive information in Federal computer systems" and inserting "Federal agency information and information systems"; and

(3) by striking subsections (c) and (d).

(n) ENVIRONMENTAL PROTECTION AGENCY ACTIVITIES.—Section 205 of the High-Performance Computing Act of 1991 (15 U.S.C. 5525) is repealed.

(o) ROLE OF THE DEPARTMENT OF EDUCATION.—Section 206 of the High-Performance Computing Act of 1991 (15 U.S.C. 5526) is repealed.

(p) MISCELLANEOUS PROVISIONS.—Section 207 of the High-Performance Computing Act of 1991 (15 U.S.C. 5527) is amended—

(1) in subsection (a)(2), by striking "paragraphs (1) through (5) of section 2315(a) of title 10" and inserting "section 3552(b)(6)(A)(i) of title 44"; and

(2) in subsection (b), by striking "high-performance computing" and inserting "networking and information technology".

(q) REPEAL.—Section 208 of the High-Performance Computing Act of 1991 (15 U.S.C. 5528) is repealed.

(r) NATIONAL SCIENCE FOUNDATION RESEARCH.—Section 4(b)(5)(K) of the Cyber Security Research and Development Act (15 U.S.C. 7403(b)(5)(K)) is amended by striking "high-performance computing" and inserting "networking and information technology".

(s) NATIONAL INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT PROGRAM.—Section 13202(b) of the America Recovery and Reinvestment Act of 2009 (42 U.S.C. 17912(b)) is amended by striking "National High-Performance Computing Program" and inserting "Networking and Information Technology Research and Development Program".

(t) FEDERAL CYBERSECURITY RESEARCH AND DEVELOPMENT.—Section 201(a)(4) of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7431(a)(4)) is amended—

(1) by striking "clauses (i) through (x)" and inserting "clauses (i) through (xi)"; and

(2) by striking "under clause (xi)" and inserting "under clause (xii)".

(u) ADDITIONAL REPEAL.—Section 4 of the Department of Energy High-End Computing Revitalization Act of 2004 (15 U.S.C. 5543) is repealed.

SEC. 106. PHYSICAL SCIENCES COORDINATION.

(a) HIGH-ENERGY PHYSICS.—

(1) IN GENERAL.—The Physical Science Subcommittee of the National Science and Technology Council (referred to in this section as "Subcommittee") shall continue to coordinate Federal efforts related to high-energy physics research to maximize the efficiency and effectiveness of United States investment in high-energy physics.

(2) PURPOSES.—The purposes of the Subcommittee include—

(A) to advise and assist the Committee on Science and the National Science and Technology Council on United States policies, proce-

dures, and plans in the physical sciences, including high-energy physics; and

(B) to identify emerging opportunities, stimulate international cooperation, and foster the development of the physical sciences in the United States, including—

(i) in high-energy physics research, including related underground science and engineering research;

(ii) in physical infrastructure and facilities;

(iii) in information and analysis; and

(iv) in coordination activities.

(3) RESPONSIBILITIES.—In regard to coordinating Federal efforts related to high-energy physics research, the Subcommittee shall, taking into account the findings and recommendations of relevant advisory committees—

(A) provide recommendations on planning for construction and stewardship of large facilities participating in high-energy physics;

(B) provide recommendations on research coordination and collaboration among the programs and activities of Federal agencies related

to underground science, neutrino research, dark energy, and dark matter research;

(C) establish goals and priorities for high-energy physics, related underground science, and research and development that will strengthen United States competitiveness in high-energy physics;

(D) propose methods for engagement with international, Federal, and State agencies and Federal laboratories not represented on the National Science and Technology Council to identify and reduce regulatory, logistical, and fiscal barriers that inhibit United States leadership in high-energy physics and related underground science; and

(E) develop, and update as necessary, a strategic plan to guide Federal programs and activities in support of high-energy physics research, including—

(i) the efforts taken in support of paragraph (2) since the last strategic plan;

(ii) an evaluation of the current research needs for maintaining United States leadership in high-energy physics; and

(iii) an identification of future priorities in the area of high-energy physics.

(b) RADIATION BIOLOGY.—

(1) IN GENERAL.—The Subcommittee shall continue to coordinate Federal efforts related to radiation biology research to maximize the efficiency and effectiveness of United States investment in radiation biology.

(2) RESPONSIBILITIES FOR RADIATION BIOLOGY.—In regard to coordinating Federal efforts related to radiation biology research, the Subcommittee shall—

(A) advise and assist the National Science and Technology Council on policies and initiatives in radiation biology, including enhancing scientific knowledge of the effects of low dose radiation on biological systems to improve radiation risk management methods;

(B) identify opportunities to stimulate international cooperation and leverage research and knowledge from sources outside of the United States;

(C) ensure coordination between the Department of Energy Office of Science, Foundation, National Aeronautics and Space Adminis-

tration, National Institutes of Health, Environmental Protection Agency, Department of Defense, Nuclear Regulatory Commission, and Department of Homeland Security;

(D) identify ongoing scientific challenges for understanding the long-term effects of ionizing radiation on biological systems; and

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

(c) FUSION ENERGY SCIENCES.—

(1) IN GENERAL.—The Subcommittee shall continue to coordinate Federal efforts related to fusion energy research to maximize the efficiency and effectiveness of United States investment in fusion energy sciences.

(2) RESPONSIBILITIES FOR FUSION ENERGY SCIENCES.—In regard to coordinating Federal efforts related to fusion energy sciences, the Subcommittee shall—

(A) advise and assist the National Science and Technology Council on policies and initiatives in fusion energy sciences, including enhancing scientific knowledge of fusion energy

science, plasma physics, and related materials sciences;

(B) identify opportunities to stimulate international cooperation and leverage research and knowledge from sources outside of the United States, including the ITER project;

(C) ensure coordination between the Department of Energy Office of Science, National Nuclear Security Administration, Advanced Research Projects Agency-Energy, National Aeronautics and Space Administration, Foundation, and Department of Defense regarding fusion energy sciences and plasma physics; and

(D) formulate overall scientific goals for the future of fusion energy sciences and plasma physics.

SEC. 107. LABORATORY PROGRAM IMPROVEMENTS.

(a) IN GENERAL.—The Director of NIST, acting through the Associate Director for Laboratory Programs, shall develop and implement a comprehensive strategic plan for laboratory programs that expands—

(1) interactions with academia, international researchers, and industry; and

(2) commercial and industrial applications.

(b) OPTIMIZING COMMERCIAL AND INDUSTRIAL APPLICATIONS.—In accordance with the purpose under section 1(b)(3) of the National Institute of Standards and Technology Act (15 U.S.C. 271(b)(3)), the comprehensive strategic plan shall—

(1) include performance metrics for the dissemination of fundamental research results, measurements, and standards research results to industry, including manufacturing, and other interested parties;

(2) document any positive benefits of research on the competitiveness of the interested parties described in paragraph (1);

(3) clarify the current approach to the technology transfer activities of NIST; and

(4) consider recommendations from the National Academy of Sciences.

SEC. 108. STANDARD REFERENCE DATA ACT UPDATE.

Section 2 of the Standard Reference Data Act (15 U.S.C. 290a) is amended to read as follows:

"SEC. 2. DEFINITIONS.

"For the purposes of this Act:

"(1) STANDARD REFERENCE DATA.—The term 'standard reference data' means data that is—

"(A) either—

"(i) quantitative information related to a measurable physical, or chemical, or biological property of a substance or system of substances of known composition and structure;

"(ii) measurable characteristics of a physical artifact or artifacts;

"(iii) engineering properties or performance characteristics of a system; or

"(iv) 1 or more digital data objects that serve—

"(I) to calibrate or characterize the performance of a detection or measurement system; or

"(II) to interpolate or extrapolate, or both, data described in subparagraph (A) through (C); and

"(B) that is critically evaluated as to its reliability under section 3 of this Act.

"(2) SECRETARY.—The term 'Secretary' means the Secretary of Commerce.".

SEC. 109. NSF MID-SCALE PROJECT INVESTMENTS.

(a) FINDINGS.—Congress makes the following findings:

(1) The Foundation funds major research facilities, infrastructure, and instrumentation that provide unique capabilities at the frontiers of science and engineering.

(2) Modern and effective research facilities, infrastructure, and instrumentation are critical to maintaining United States leadership in science and engineering.

(3) The costs of some proposed research instrumentation, equipment, and upgrades to major research facilities fall between programs currently funded by the Foundation, creating a gap between the established parameters of the Major Research Instrumentation and Major Research Equipment and Facilities Construction programs, including projects that have been identified as cost-effective additions of high priority to the advancement of scientific understanding.

(4) The 2010 Astronomy and Astrophysics Decadal Survey recommended a mid-scale innovations program.

(b) MID-SCALE PROJECTS.—

(1) IN GENERAL.—The Foundation shall evaluate the existing and future needs, across all dis-

ciplines supported by the Foundation, for mid-scale projects.

(2) STRATEGY.—The Director of the Foundation shall develop a strategy to address the needs identified in paragraph (1).

(3) BRIEFING.—Not later than 180 days after the date of enactment of this Act, the Director of the Foundation shall provide a briefing to the appropriate committees of Congress on the evaluation under paragraph (1) and the strategy under paragraph (2).

(4) DEFINITION OF MID-SCALE PROJECTS.—In this subsection, the term ''mid-scale projects'' means research instrumentation, equipment, and upgrades to major research facilities or other research infrastructure investments that exceed the maximum award funded by the major research instrumentation program and are below the minimum award funded by the major research equipment and facilities construction program as described in section 507 of the AMERICA Competes Reauthorization Act of 2010 (Public Law 111–358; 124 Stat. 4008).

SEC. 110. OVERSIGHT OF NSF MAJOR MULTI-USER RESEARCH FACILITY PROJECTS.

(a) FACILITIES OVERSIGHT.—

(1) IN GENERAL.—The Director of the Foundation shall strengthen oversight and accountability over the full life-cycle of each major multi-user research facility project, including planning, development, procurement, construction, operations, and support, and shut-down of the facility, in order to maximize research investment.

(2) REQUIREMENTS.—In carrying out paragraph (1), the Director shall—

(A) prioritize the scientific outcomes of a major multi-user research facility project and the internal management and financial oversight of the major multi-user research facility project;

(B) clarify the roles and responsibilities of all organizations, including offices, panels, committees, and directorates, involved in supporting a major multi-user research facility project, including the role of the Major Research Equipment and Facilities Construction Panel;

(C) establish policies and procedures for the planning, management, and oversight of a major multi-user research facility project at each phase of the life-cycle of the major multi-user research facility project;

(D) ensure that policies for estimating and managing costs and schedules are consistent with the best practices described in the Government Accountability Office Cost Estimating and Assessment Guide, the Government Accountability Office Schedule Assessment Guide, and the Office of Management and Budget Uniform Guidance (2 C.F.R. Part 200);

(E) establish the appropriate project management and financial management expertise required for Foundation staff to oversee each major multi-user research facility project effectively, including by improving project management training and certification;

(F) coordinate the sharing of the best management practices and lessons learned from each major multi-user research facility project;

(G) continue to maintain a Large Facilities Office to support the research directorates in the development, implementation, and oversight of each major multi-user research facility project, including by—

(i) serving as the Foundation's primary resource for all policy or process issues related to the development, imple-

mentation, and oversight of a major multi-user research facility project;

(ii) 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;

(iii) coordinating and collaborating with research directorates to share best management practices and lessons learned from prior major multi-user research facility projects; and

(iv) assessing each major multi-user research facility project for cost and schedule risk; and

(II) appoint a senior agency official whose responsibility is oversight of the development, construction, and operations of major multi-user research facilities across the Foundation.

(b) FACILITIES FULL LIFE-CYCLE COSTS.—

(1) IN GENERAL.—Subject to subsection (c)(1), the Director of the Foundation shall require that any pre-award analysis of a major multi-user research facility project includes the development and

consideration of the full life-cycle cost (as defined in section 2 of the National Science Foundation Authorization Act of 1998 (42 U.S.C. 1862k note)) in accordance with section 14 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n-4).

(2) IMPLEMENTATION.—Based on the pre-award analysis described in paragraph (1), the Director of the Foundation shall include projected operational costs within the Foundation's out-years as part of the President's annual budget submission to Congress under section 1105 of title 31, United States Code.

(c) COST OVERSIGHT.—

(1) PRE-AWARD ANALYSIS.—

(A) IN GENERAL.—The Director of the Foundation and the National Science Board may not approve or execute any agreement to start construction on any proposed major multi-user research facility project unless—

(i) an external analysis of the proposed budget has been conducted to ensure the proposal is complete and reasonable;

(ii) the analysis under clause (i) follows the Government Accountability Office Cost Estimating and Assessment Guide;

(iii) except as provided under subparagraph (C), an analysis of the accounting systems has been conducted;

(iv) an independent cost estimate of the construction of the project has been conducted using the same detailed technical information as the project proposal estimate to determine whether the estimate is well-supported and realistic; and

(v) the Foundation and the National Science Board have considered the analyses under clauses (i) and (iii) and the independent cost estimate under clause (iv) and resolved any major issues identified therein.

(B) AUDITS.—An external analysis under subparagraph (A)(i) may include an audit.

(C) EXCEPTION.—The Director of the Foundation, at the Director's discretion, may waive the requirement under subparagraph (A)(iii) if a similar analysis of the accounting systems was conducted in the prior years.

(2) CONSTRUCTION OVERSIGHT.—The Director of the Foundation shall require for each major multi-user research facility project—

(A) periodic external reviews on project management and performance;

(B) adequate internal controls, policies, and procedures, and reliable accounting systems in preparation for the incurred cost audits under subparagraph (D);

(C) annual incurred cost submissions of financial expenditures; and

(D) an incurred cost audit of the major multi-user research facility project in accordance with Government Accountability Office Government Auditing Standards—

(i) at least once during construction at a time determined based on risk analysis and length of the award, except that the length of time between audits may not exceed 3 years; and

(ii) at the completion of the construction phase.

(3) OPERATIONS COST ANALYSIS.—The Director of the Foundation shall require an independent

cost analysis of the operational proposal for each major multi-user research facility project.

(d) CONTINGENCY.—

(1) IN GENERAL.—The Director of the Foundation shall strengthen internal controls to improve oversight of contingency on a major multi-user research facility project.

(2) REQUIREMENTS.—In carrying out paragraph (1), the Director of the Foundation shall—

(A) only include contingency amounts in an award in accordance with section 200.433 of title 2, Code of Federal Regulations (relating to contingency provisions), or any successor regulation;

(B) retain control over funds budgeted for contingency, except that the Director may disburse budgeted contingency funds incrementally to the awardee to ensure project stability and continuity;

(C) track contingency use; and

(D) ensure that contingency amounts allocated to the performance baseline are reasonable and allowable.

(e) USE OF FEES.—

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

(A) the use of taxpayer-funded award fees should be transparent and explicable; and

(B) the Foundation should implement an award fee policy that ensures more transparency and accountability in the funding of necessary and appropriate expenses directly related to the construction and operation of major multi-user research facilities.

(2) REPORTING AND RECORDKEEPING.—The Director of the Foundation shall establish guidelines for awardees regarding inappropriate expenditures associated with all fee types used in cooperative agreements, including for alcoholic beverages, lobbying, meals or entertainment for non-business purposes, non-business travel, and any other purpose the Director determines is inappropriate.

(f) OVERSIGHT IMPLEMENTATION PROGRESS.—The Director of the Foundation shall—

(1) not later than 90 days after the date of enactment of this Act, and periodically thereafter until the completion date, provide a briefing to the appropriate committees of Congress on the response to or progress made toward implementation of—

(A) this section;

(B) all of the issues and recommendations identified in cooperative agreement audit reports and memoranda issued by the Inspector General of the Foundation in the last 5 years; and

(C) all of the issues and recommendations identified by a panel of the National Academy of Public Administration in the December 2015 report entitled "National Science Foundation: Use of Cooperative Agreements to Support Large Scale Investment in Research"; and

(2) not later than 1 year after the date of enactment of this Act, notify the appropriate committees of Congress when the Foundation has implemented the recommendations identified in a panel of the National Academy of Public Administration report issued December 2015.

(g) DEFINITIONS.—In this section:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term "appropriate committees of Congress" means the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate and the Committee on

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

(2) MAJOR MULTI-USER RESEARCH FACILITY PROJECT.—The term "'major multi-user research facility project'" means a science and engineering facility project that—

(A) exceeds the lesser of—

(i) 10 percent of a Directorate's annual budget; or

(ii) $100,000,000 in total project costs; or

(B) is funded by the major research equipment and facilities construction account, or any successor account.

SEC. 111. PERSONNEL OVERSIGHT.

(a) CONFLICTS OF INTEREST.—The Director of the Foundation shall update the policy and procedure of the Foundation relating to conflicts of interest to improve documentation and management of any known conflict of interest of an individual on temporary assignment at the Foundation, including an individual on assignment under the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4701 et seq.).

(b) JUSTIFICATIONS.—The Deputy Director of the Foundation shall submit annually to the appropriate com-

mittees of Congress written justification for each rotator employed under the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4701 et seq.), or other rotator employed, by the Foundation that year that is paid at a rate that exceeds the maximum rate of pay for the Senior Executive Service, including, if applicable, the level of adjustment for the certified Senior Executive Service Performance Appraisal System.

(c) REPORT.—Not later than 1 year after the date of enactment of this Act, the Director of the Foundation shall submit to the appropriate committees of Congress a report on the Foundation's efforts to control costs associated with employing rotators, including the results of and participation in the Foundation's cost-sharing pilot program and the Foundation's progress in responding to the findings and implementing the recommendations of the Office of Inspector General of the Foundation related to the employment of rotators.

SEC. 112. MANAGEMENT OF THE U.S. ANTARCTIC PROGRAM.

(a) REVIEW.—

(1) IN GENERAL.—The Director of the Foundation shall continue to review the efforts by the Foundation to sustain and strengthen scientific efforts in

the face of logistical challenges for the United States Antarctic Program.

(2) ISSUES TO BE EXAMINED.—In conducting the review, the Director shall examine, at a minimum, the following:

(A) Implementation by the Foundation of issues and recommendations identified by—

(i) the Inspector General of the National Science Foundation in audit reports and memoranda on the United States Antarctic Program in the last 4 years;

(ii) the U.S. Antarctic Program Blue Ribbon Panel report, More and Better Science in Antarctica through Increased Logistical Effectiveness, issued July 23, 2012; and

(iii) the National Research Council report, Future Science Opportunities in Antarctica and the Southern Ocean, issued September 2011.

(B) Efforts by the Foundation to track its progress in addressing the issues and recommendations under subparagraph (A).

(C) Efforts by the Foundation to address other opportunities and challenges, including ef-

forts on scientific research, coordination with other Federal agencies and international partners, logistics and transportation, health and safety of participants, oversight and financial management of awardees and contractors, and resources and policy challenges.

(b) BRIEFING.—Not later than 180 days after the date of enactment of this Act, the Director shall brief the appropriate committees of Congress on the ongoing review, including findings and any recommendations.

SEC. 113. NIST CAMPUS SECURITY.

(a) SUPERVISORY AUTHORITY.—The Department of Commerce Office of Security shall directly manage the law enforcement and site security programs of NIST through an assigned Director of Security for NIST without increasing the number of full-time equivalent employees of the Department of Commerce, including NIST.

(b) REPORTS.—The Director of Security for NIST shall provide an activities and security report on a quarterly basis for the first year after the date of enactment of this Act, and on an annual basis thereafter, to the Under Secretary for Standards and Technology and the appropriate committees of Congress.

SEC. 114. COORDINATION OF SUSTAINABLE CHEMISTRY RESEARCH AND DEVELOPMENT.

(a) IMPORTANCE OF SUSTAINABLE CHEMISTRY.—It is the sense of Congress that—

(1) the science of chemistry is vital to improving the quality of human life and plays an important role in addressing critical global challenges, including water quality, energy, health care, and agriculture;

(2) sustainable chemistry can reduce risks to human health and the environment, reduce waste, improve pollution prevention, promote safe and efficient manufacturing, and promote efficient use of resources in developing new materials, processes, and technologies that support viable long-term solutions to a significant number of challenges;

(3) sustainable chemistry can stimulate innovation, encourage new and creative approaches to problems, create jobs, and save money; and

(4) a coordinated effort on sustainable chemistry will allow for a greater return on research investment in this area.

(b) SUSTAINABLE CHEMISTRY BASIC RESEARCH.—Subject to the availability of appropriated funds, the Director of the Foundation may continue to carry out the Sustainable Chemistry Basic Research program author-

ized under section 509 of the National Science Foundation Authorization Act of 2010 (42 U.S.C. 1862p–3).

SEC. 115. MISREPRESENTATION OF RESEARCH RESULTS.

(a) PROHIBITION.—The Director of the Foundation may revise the regulations under part 689 of title 45, Code of Federal Regulations (relating to research misconduct) to ensure that the findings and conclusions of any article authored by a principal investigator, using the results of research conducted under a Foundation grant, that is published in a peer-reviewed publication, made publicly available, or incorporated in an application for a research grant or grant extension from the Foundation, does not contain any falsification, fabrication, or plagiarism.

(b) INTERAGENCY COMMUNICATION.—Upon a finding that research misconduct ~~is~~ has occurred, the Foundation shall, in addition to any possible final action under section 689.3 of title 45, Code of Federal Regulations, notify other Federal science agencies of the finding.

SEC. 116. RESEARCH REPRODUCIBILITY AND REPLICATION.

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

(1) the gold standard of good science is the ability of a researcher or research laboratory to re-

produce a published research finding, including methods;

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

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

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

(b) REPORT.—

(1) IN GENERAL.—Not later than 45 days after the date of enactment of this Act, the Director of the Foundation shall enter into an agreement with the National Research Council—

(A) to assess research and data reproducibility and replicability issues in interdisciplinary research;

(B) to make recommendations for improving rigor and transparency in scientific research; and

(C) to submit to the Director of the Foundation a report on the assessment, including its

findings and recommendations, not later than 1 year after the date of enactment of this Act.

(2) SUBMISSION TO CONGRESS.—Not later than 60 days after the date the Director of the Foundation receives the report under paragraph (1)(C), the Director shall submit the report to the appropriate committees of Congress, including a response from the Director of the Foundation and the Chair of the National Science Board as to whether they agree with each of the findings and recommendations in the report.

SEC. 117. BRAIN RESEARCH THROUGH ADVANCING INNOVATIVE NEUROTECHNOLOGIES INITIATIVE.

(a) IN GENERAL.—The Foundation shall support research activities related to the interagency Brain Research through Advancing Innovative Neurotechnologies Initiative.

(b) SENSE OF CONGRESS.—It is the sense of Congress that the Foundation should work in conjunction with the Interagency Working Group on Neuroscience established by the National Science and Technology Council, Committee on Science to determine how to use the data infrastructure of the Foundation and other applicable Federal science agencies to help neuroscientists collect, standardize, manage, and analyze the large amounts of

data that result from research attempting to understand how the brain functions.

TITLE II—ADMINISTRATIVE AND REGULATORY BURDEN REDUCTION

SEC. 201. INTERAGENCY WORKING GROUP ON RESEARCH REGULATION.

(a) SHORT TITLE.—This section may be cited as the "Research and Development Efficiency Act".

(b) FINDINGS.—Congress makes the following findings:

(1) Scientific and technological advancement have been the largest drivers of economic growth in the last 50 years, with the Federal Government being the largest investor in basic research.

(2) Substantial and increasing administrative burdens and costs in Federal research administration, particularly in the higher education sector where most federally funded research is performed, are eroding funds available to carry out basic scientific research.

(3) Federally funded grants are increasingly competitive, with the Foundation funding only approximately 1 in every 5 grant proposals.

(4) Progress has been made over the last decade in streamlining the pre-award grant application process through the Federal Government's Grants.gov website.

(5) Post-award administrative costs have increased as Federal research agencies have continued to impose agency-unique compliance and reporting requirements on researchers and research institutions.

(6) Researchers spend as much as 42 percent of their time complying with Federal regulations, including administrative tasks such as applying for grants or meeting reporting requirements.

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

(1) administrative burdens faced by researchers may be reducing the return on investment of federally funded research and development; and

(2) it is a matter of critical importance to United States competitiveness that administrative costs of federally funded research be streamlined so that a higher proportion of federal funding is applied to direct research activities.

(d) ESTABLISHMENT.—The Director of the Office of Management and Budget, in coordination with the Office

of Science and Technology Policy, shall establish an interagency working group (referred to in this section as the "Working Group") for the purpose of reducing administrative burdens on federally funded researchers while protecting the public interest through the transparency of and accountability for federally funded activities.

(c) RESPONSIBILITIES.—

(1) IN GENERAL.—The Working Group shall—

(A) regularly review relevant, administration-related regulations imposed on federally funded researchers;

(B) recommend those regulations or processes that may be eliminated, streamlined, or otherwise improved for the purpose described in subsection (d);

(C) recommend ways to minimize the regulatory burden on United States institutions of higher education performing federally funded research while maintaining accountability for federal funding; and

(D) recommend ways to identify and update specific regulations to refocus on performance-based goals rather than on process while achieving the outcome described in subparagraph (C).

(2) GRANT REVIEW.—

(A) IN GENERAL.—The Working Group shall—

(i) conduct a comprehensive review of Federal science agency grant proposal documents; and

(ii) develop, to the extent practicable, a simplified, uniform grant format to be used by all Federal science agencies.

(B) CONSIDERATIONS.—In developing the uniform grant format, the Working Group shall consider whether to implement—

(i) procedures for preliminary project proposals in advance of peer-review selection;

(ii) increased use of "Just-In-Time" procedures for documentation that does not bear directly on the scientific merit of a proposal;

(iii) simplified initial budget proposals in advance of peer review selection; and

(iv) detailed budget proposals for applicants that peer review selection identifies as likely to be funded.

(3) CENTRALIZED RESEARCHER PROFILE DATABASE.—

(A) ESTABLISHMENT.—The Working Group shall establish, to the extent practicable, a secure, centralized database for investigator biosketches, curriculum vitae, licenses, lists of publications, and other documents considered relevant by the Working Group.

(B) CONSIDERATIONS.—In establishing the centralized profile database under subparagraph (A), the Working Group shall consider incorporating existing investigator databases.

(C) GRANT PROPOSALS.—To the extent practicable, all grant proposals shall utilize the centralized investigator profile database established under subparagraph (A).

(D) REQUIREMENTS.—Each investigator shall—

(i) be responsible for ensuring the investigator's profile is current and accurate; and

(ii) be assigned a unique identifier linked to the database and accessible to all Federal funding agencies.

(4) CENTRALIZED ASSURANCES REPOSITORY.—The Working Group shall—

(A) establish a central repository for all of the assurances required for Federal research grants; and

(B) provide guidance to institutions of higher education and Federal science agencies on the use of the centralized assurances repository.

(5) COMPREHENSIVE REVIEW.—

(A) IN GENERAL.—The Working Group shall—

(i) conduct a comprehensive review of the mandated progress reports for federally funded research; and

(ii) develop a strategy to simplify investigator progress reports.

(B) CONSIDERATIONS.—In developing the strategy, the Working Group shall consider limiting progress reports to performance outcomes.

(f) CONSULTATION.—In carrying out its responsibilities under subsection (e)(1), the Working Group shall consult with academic researchers outside the Federal Government, including—

(1) federally funded researchers;

(2) non-federally funded researchers;

(3) institutions of higher education and their representative associations;

(4) scientific and engineering disciplinary societies and associations;

(5) nonprofit research institutions;

(6) industry, including small businesses;

(7) federally funded research and development centers; and

(8) members of the public with a stake in ensuring effectiveness, efficiency, and accountability in the performance of scientific research.

(g) REPORTS.—Not later than 1 year after the date of enactment of this Act, and annually thereafter for 3 years, the Working Group shall submit to the appropriate committees of Congress a report on its responsibilities under this section, including a discussion of the considerations described in paragraphs (2)(B), (3)(B), and (5)(B) of subsection (e) and recommendations made under subsection (e)(1).

SEC. 202. SCIENTIFIC AND TECHNICAL COLLABORATION.

(a) DEFINITION OF SCIENTIFIC AND TECHNICAL WORKSHOP.—In this section, the term "scientific and technical workshop" means a symposium, seminar, or any other organized, formal gathering where scientists or engi-

neers working in STEM research and development fields assemble to coordinate, exchange and disseminate information or to explore or clarify a defined subject, problem or area of knowledge in the STEM fields.

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

(1) the United States should encourage broad dissemination of Federal research findings and engagement of Federal researchers with the scientific and technical community; and

(2) laboratory, test center, and field center directors and other similar heads of offices should approve scientific and technical workshop attendance if—

(A) that attendance would meet the mission of the laboratory or test center; and

(B) sufficient laboratory or test center funds are available for that purpose.

(c) ATTENDANCE POLICIES.—Not later than 180 days after the date of enactment of this Act, the heads of the Federal science agencies shall each develop an action plan for the implementation of revisions and updates to their policies on attendance at scientific and technical workshops.

(d) NIST WORKSHOPS.—Section 2(c) of the National Institute of Standards and Technology Act (15 U.S.C. 272(c)), as amended by section 104 of this Act, is further amended—

(1) by redesignating paragraphs (19) through (24) as paragraphs (22) through (27), respectively; and

(2) by inserting after paragraph (18) the following:

"(19) host, participate in, and support scientific and technical workshops (as defined in section 202 of the American Innovation and Competitiveness Act);

"(20) collect and retain any fees charged by the Secretary for hosting a scientific and technical workshop described in paragraph (19);

"(21) notwithstanding title 31 of the United States Code, use the fees described in paragraph (20) to pay for any related expenses, including subsistence expenses for participants;".

SEC. 203. NIST GRANTS AND COOPERATIVE AGREEMENTS UPDATE.

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 coopera-

tive agreement may not exceed 75 percent of the total cost of the program.".

SEC. 204. REPEAL OF CERTAIN OBSOLETE REPORTS.

(a) REPEAL OF CERTAIN OBSOLETE REPORTS.—

(1) NIST REPORTS.—

(A) REPORT ON DONATION OF EDUCATIONALLY USEFUL FEDERAL EQUIPMENT TO SCHOOLS.—Section 6(b) of the Technology Administration Act of 1998 (15 U.S.C. 272 note) is amended—

(i) in paragraph (1), by striking "(1) IN GENERAL.—" and indenting appropriately; and

(ii) by striking paragraph (2).

(B) THREE-YEAR PROGRAMMATIC PLANNING DOCUMENT.—

(i) IN GENERAL.—Section 23 of the National Institute of Standards and Technology Act (15 U.S.C. 278i) is amended by striking subsections (c) and (d).

(ii) CONFORMING AMENDMENT.—Section 10(h)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278(h)(1)) is amended by striking the last sentence.

(2) MULTIAGENCY REPORT ON INNOVATION ACCELERATION RESEARCH.—Section 1008 of the America COMPETES Act (42 U.S.C. 6603) is amended—

(A) by striking subsection (e); and

(B) by redesignating subsection (d) as subsection (e).

(3) NSF REPORTS.—

(A) FUNDING FOR SUCCESSFUL STEM EDUCATION PROGRAMS; REPORT TO CONGRESS.—Section 7012 of the America COMPETES Act (42 U.S.C. 1862o-4) is amended by striking subsection (c).

(B) ENCOURAGING PARTICIPATION; EVALUATION AND REPORT.—Section 7031 of the America COMPETES Act (42 U.S.C. 1862o-11) is amended by striking subsection (b).

(C) MATH AND SCIENCE PARTNERSHIPS PROGRAM COORDINATION REPORT.—Section 9(c) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(c)) is amended—

(i) by striking paragraph (4); and

(ii) by redesignating paragraph (5) as paragraph (4).

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

(1) by amending section 2(c)(4) (15 U.S.C. 7501(c)(4)) to read as follows:

"(4) develop, not later than 5 years after the date of the release of the most-recent strategic plan, and update every 5 years thereafter, a strategic plan to guide the activities described under subsection (b) that describes—

"(A) the near-term and long-term objectives for the Program;

"(B) the anticipated schedule for achieving the near-term objectives; and

"(C) the metrics that will be used to assess progress toward the near-term and long-term objectives;

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

"(E) the Program's support for long-term funding for interdisciplinary research and development in nanotechnology; and

"(F) the allocation of funding for interagency nanotechnology projects;";

(2) by amending section 4(d) (15 U.S.C. 7503(d)) to read as follows:

"(d) REPORTS.—Not later than 4 years after the date of the most recent assessment under subsection (c), and quadrennially thereafter, the Advisory Panel shall submit to the President, 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 its assessments under subsection (c) and its recommendations for ways to improve the Program."; and

(3) in section 5 (15 U.S.C. 7504)—

(A) in the heading, by striking "**TRIENNIAL**" and inserting "**QUADRENNIAL**";

(B) in subsection (a), in the matter preceding paragraph (1), by striking "triennial" and inserting "quadrennial";

(C) in subsection (b), by striking "triennial" and inserting "quadrennial";

(D) in subsection (e), by striking "triennial" and inserting "quadrennial"; and

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

"(d) REPORT.—

"(1) IN GENERAL.—Not later than 30 days after the date the first evaluation under subsection (a) is received, and quadrennially thereafter, the Director of the National Nanotechnology Coordination Office shall report to the President its assessments under subsection (c) and its recommendations for ways to improve the Program.

"(2) CONGRESS.—Not later than 30 days after the date the President receives the report under paragraph (1), the Director of the Office of Science and Technology Policy shall transmit a copy of the report to Congress.".

(c) MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—Section 14 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n-4) is amended—

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

"(a) PRIORITIZATION OF PROPOSED MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—

"(1) DEVELOPMENT OF PRIORITIES.—The Director shall—

"(A) develop a list indicating by number the relative priority for funding under the major research equipment and facilities con-

struction account that the Director assigns to each project the Board has approved for inclusion in a future budget request; and

"(B) submit the list described in subparagraph (A) to the Board for approval.

"(2) CRITERIA.—The Director shall include in the criteria for developing the list under paragraph (1) the readiness of plans for construction and operation, including confidence in the estimates of the full life-cycle cost (as defined in section 2 of the National Science Foundation Authorization Act of 1998 (42 U.S.C. 1862k note)) and the proposed schedule of completion.

"(3) UPDATES.—The Director shall update the list prepared under paragraph (1) each time the Board approves a new project that would receive funding under the major research equipment and facilities construction account and periodically submit any updated list to the Board for approval.";

(2) by striking subsection (c);

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

(4) by amending subsection (c), as redesignated, to read as follows:

"(c) BOARD APPROVAL OF MAJOR RESEARCH EQUIPMENT AND FACILITIES PROJECTS.—The Board shall explicitly approve any project to be funded out of the major research equipment and facilities construction account before any funds may be obligated from such account for such project.".

SEC. 205. REPEAL OF CERTAIN PROVISIONS.

(a) TECHNOLOGY INNOVATION PROGRAM.—

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

(2) CONFORMING AMENDMENTS.—

(A) ADDITIONAL AWARD CRITERIA.—Section 4226(b) of the Small Business Jobs Act of 2010 (15 U.S.C. 278n note) is repealed.

(B) MANAGEMENT COSTS.—Section 2(d) of the National Institute of Standards and Technology Act (15 U.S.C. 272(d)) is amended by striking "sections 25, 26, and 28" and inserting "sections 25 and 26".

(C) ANNUAL AND OTHER REPORTS TO SECRETARY AND CONGRESS.—Section 10(h)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278(h)(1)) is

amended by striking ", including the Program established under section 28,".

(b) TEACHERS FOR A COMPETITIVE TOMORROW.—Sections 6111 through 6116 of the America COMPETES Act (20 U.S.C. 9811, 9812, 9813, 9814, 9815, 9816) and the items relating to those sections in the table of contents under section 2 of that Act (Public Law 110-69; 121 Stat. 572) are repealed.

SEC. 206. GRANT SUBRECIPIENT TRANSPARENCY AND OVERSIGHT.

(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Inspector General of the Foundation shall prepare and submit to the appropriate committees of Congress an audit of the Foundation's policies and procedures governing the monitoring of pass-through entities with respect to subrecipients.

(b) CONTENTS.—The audit shall include the following:

(1) Information regarding the Foundation's process to oversee—

(A) the compliance of pass-through entities under section 200.331 and subpart F of part 200 of chapter II of subtitle A of title 2, Code of Federal Regulations, and the other requirements of that title for subrecipients;

(B) whether pass-through entities have processes and controls in place regarding financial compliance of subrecipients, where appropriate; and

(C) whether pass-through entities have processes and controls in place to maintain approved grant objectives for subrecipients, where appropriate.

(2) Recommendations, if necessary, to increase transparency and oversight while balancing administrative burdens.

SEC. 207. MICRO-PURCHASE THRESHOLD FOR PROCUREMENT SOLICITATIONS BY RESEARCH INSTITUTIONS.

(a) MICRO-PURCHASE THRESHOLD.—The micro-purchase threshold for procurement activities administered under sections 6303 through 6305 of title 31, United States Code, awarded by the Foundation, the National Aeronautics and Space Administration, or the National Institute of Standards and Technology to institutions of higher education, or related or affiliated nonprofit entities, or to nonprofit research organizations or independent research institutes is—

(1) $10,000 (as adjusted periodically to account for inflation); or

(2) such higher threshold as determined appropriate by the head of the relevant executive agency and consistent with audit findings under chapter 75 of title 31, United States Code, internal institutional risk assessment, or State law.

(b) UNIFORM GUIDANCE.—The Uniform Guidance shall be revised to conform with the requirements of this section. For purposes of the preceding sentence, the term "Uniform Guidance" means the uniform administrative requirements, cost principles, and audit requirements for Federal awards contained in part 200 of title 2 of the Code of Federal Regulations.

SEC. 208. COORDINATION OF INTERNATIONAL SCIENCE AND TECHNOLOGY PARTNERSHIPS.

(a) SHORT TITLE.—This section may be cited as the "International Science and Technology Cooperation Act of 2016".

(b) 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.

(c) NSTC BODY LEADERSHIP.—The body established under subsection (b) shall be co-chaired by senior level officials from the Office of Science and Technology Policy and the Department of State.

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

(1) plan and coordinate interagency international science and technology cooperative research and training activities and partnerships supported or managed by Federal agencies;

(2) work with other National Science and Technology Council committees to help plan and coordinate the international component of national science and technology priorities;

(3) 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;

(4) 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;

(5) in carrying out paragraph (4), solicit input and recommendations from non-Federal science and technology stakeholders, including institutions of higher education, scientific and professional societies, industry, and other relevant organizations and institutions; and

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

(e) REPORT TO CONGRESS.—The Director of the Office of Science and Technology Policy shall submit to the Committee on Commerce, Science, and Transportation and the Committee on Foreign Relations of the Senate and the Committee on Science, Space, and Technology and the Committee on Foreign Affairs of the House of Representatives a biennial report on the requirements of this section.

(f) WEBSITE.—The Director shall make each report available to the public on the Office of Science and Technology Policy website.

(g) TERMINATION.—The body established under subsection (b) shall terminate on the date that is 10 years after the date of enactment of this Act.

(h) ADDITIONAL REPORTS TO CONGRESS.—The Director of the Office of Science and Technology Policy shall submit, not later than 60 days after the date of enactment of this Act and annually thereafter, to the Committee on Commerce, Science, and Transportation and the Committee on Foreign Relations of the Senate and the Committee on Science, Space, and Technology and the Committee on Foreign Affairs of the House of Representatives a report that lists and describes the details of all foreign travel by Office of Science and Technology Policy staff and detailees.

TITLE III—SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH EDUCATION

SEC. 301. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM UPDATE.

Section 10A of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1a) is amended by adding at the end the following:

"(k) STEM TEACHER SERVICE AND RETENTION.—

"(1) IN GENERAL.—The Director shall develop and implement practices for increasing the proportion of individuals receiving fellowships under this section who—

"(A) fulfill the service obligation required under subsection (h); and

"(B) remain in the teaching profession in a high need local educational agency beyond the service obligation.

"(2) PRACTICES.—The practices described under paragraph (1) may include—

"(A) partnering with nonprofit or professional associations or with other government entities to provide individuals receiving fellowships under this section with opportunities for professional development, including mentorship programs that pair those individuals with currently employed and recently retired science, technology, engineering, mathematics, or computer science professionals;

"(B) increasing recruitment from high need districts;

"(C) establishing a system to better collect, track, and respond to data on the career decisions of individuals receiving fellowships under this section;

"(D) conducting research to better understand factors relevant to teacher service and retention, including factors specifically impacting

the retention of teachers who are individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b); and

"(E) conducting pilot programs to improve teacher service and retention.".

SEC. 302. SPACE GRANTS.

(a) SENSE OF CONGRESS.—It is the sense of Congress that the National Space Grant College and Fellowship Program has been an important program by which the Federal Government has partnered with universities, colleges, industry, and other organizations to provide hands-on STEM experiences, fostering of multidisciplinary space research, and supporting graduate fellowships in space-related fields, among other purposes.

(b) ADMINISTRATIVE COSTS.—Section 40303 of title 51, United States Code, is amended by adding at the end the following:

"(d) PROGRAM ADMINISTRATION COSTS.—In carrying out the provisions of this chapter, the Administrator—

"(1) shall maximize appropriated funds for grants and contracts made under section 40304 in each fiscal year; and

"(2) in each fiscal year, the Administrator shall limit its program administration costs to no more than 5 percent of funds appropriated for this program for that fiscal year.

"(e) REPORTS.—For any fiscal year in which the Administrator cannot meet the administration cost target under subsection (d)(2), if the Administration is unable to limit program costs under subsection (b), the Administrator shall submit to the appropriate committees of Congress a report, including—

"(1) a description of why the Administrator did not meet the cost target under subsection (d); and

"(2) the measures the Administrator will take in the next fiscal year to meet the cost target under subsection (d) without drawing upon other Federal funding.".

SEC. 303. STEM EDUCATION ADVISORY PANEL.

(a) ESTABLISHMENT.—Not later than 180 days after the date of enactment this Act, the Director of the Foundation, Secretary of Education, Administrator of the National Aeronautics and Space Administration, and Administrator of the National Oceanic and Atmospheric Administration shall jointly establish an advisory panel (referred to in this section as the "STEM Education Advisory Panel") to advise the Committee on STEM Education of

the National Science and Technology Council (referred to in this section as "CoSTEM") on matters relating to STEM education.

(b) MEMBERS.—

(1) IN GENERAL.—The STEM Education Advisory Panel shall be composed of not less than 11 members.

(2) APPOINTMENT.—

(A) IN GENERAL.—Subject to subparagraph (B), the Director of the Foundation, in consultation with the Secretary of Education and the heads of the Federal science agencies, shall appoint the members of the STEM Education Advisory Panel.

(B) CONSIDERATION.—In selecting individuals to appoint under subparagraph (A), the Director of the Foundation shall seek and give consideration to recommendations from Congress, industry, the scientific community, including the National Academy of Sciences, scientific professional societies, academia, State and local governments, organizations representing individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a,

1885b), and such other organizations as the Director considers appropriate.

(C) QUALIFICATIONS.—Members shall—

(i) primarily be individuals from academic institutions, nonprofit organizations, and industry, including in-school, out-of-school, and informal education practitioners; and

(ii) be individuals who are qualified to provide advice and information on STEM education research, development, training, implementation, interventions, professional development, or workforce needs or concerns.

(e) RESPONSIBILITIES.—

(1) IN GENERAL.—The STEM Education Advisory Panel shall—

(A) advise CoSTEM;

(B) periodically assess CoSTEM's progress in carrying out its responsibilities under section 101(b) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621(b)); and

(C) help identify any need or opportunity to update the strategic plan under section 101(b) of that Act.

(2) CONSIDERATIONS.—In its advisory role, the STEM Education Advisory Panel shall consider—

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

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

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

(D) how Federal agencies can incentivize institutions of higher education to improve retention of STEM students;

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

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

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

(H) the extent to which Federal STEM education programs and activities are contributing to recruitment and retention of individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b) in the STEM education and workforce pipelines; and

(I) ways to encourage geographic diversity in the STEM education and the workforce pipelines.

(3) RECOMMENDATIONS.—The STEM Education Advisory Panel shall make recommendations to improve Federal STEM education programs and activities based on each assessment under paragraph (1)(B).

(d) FUNDING.—The Director of the Foundation, the Secretary of Education, the Administrator of the National Aeronautics and Space Administration, and the Adminis-

trator of the National Oceanic and Atmospheric Administration shall jointly make funds available on an annual basis to support the activities of the STEM Education Advisory Panel.

(e) REPORTS.—Not later than 1 year after the date of enactment of this Act, and after each assessment under subsection (c)(1)(B), the STEM Education Advisory Panel shall submit to the appropriate committees of Congress and CoSTEM a report on its assessment under that subsection and its recommendations under subsection (c)(3).

(f) TRAVEL EXPENSES OF NON-FEDERAL MEMBERS.—

(1) IN GENERAL.—Non-Federal members of the STEM Education Advisory Panel, while attending meetings of the panel or while otherwise serving at the request of a co-chairperson 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.

(2) RULE OF CONSTRUCTION.—Nothing in this subsection shall be construed to prohibit members of the STEM Advisory Panel who are officers or em-

ployees of the United States from being allowed travel expenses, including per diem in lieu of subsistence, in accordance with existing law.

(g) TERMINATION.—The STEM Education Advisory Panel established under subsection (a) shall terminate on the date that is 5 years after the date that it is established.

SEC. 304. COMMITTEE ON STEM EDUCATION.

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

(1) in paragraph (5)(D), by striking "; and" and inserting a semicolon;

(2) in paragraph (6), by striking the period at the end and inserting a semicolon; and

(3) by adding at the end the following:

"(7) collaborate with the STEM Education Advisory Panel established under section 303 of the American Innovation and Competitiveness Act and other outside stakeholders to ensure the engagement of the STEM education community;

"(8) review the measures used by a Federal agency to evaluate its STEM education activities and programs;

"(9) request and review feedback from States on how the States are utilizing Federal STEM education programs and activities; and

"(10) recommend the reform, termination, or consolidation of Federal STEM education activities and programs, taking into consideration the recommendations of the STEM Education Advisory Panel.".

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

(1) by striking "(e) REPORT.—" and inserting "(d) REPORTS.—";

(2) by striking "(b) RESPONSIBILITIES OF OSTP.—" and inserting "(c) RESPONSIBILITIES OF OSTP.—"; and

(3) in subsection (d), as redesignated—

(A) in paragraph (4), by striking "; and" and inserting a semicolon;

(B) in paragraph (5), by striking the period at the end and inserting a semicolon; and

(C) by adding at the end the following:

"(6) a description of all consolidations and terminations of Federal STEM education programs and activities implemented in the previous fiscal

year, including an explanation for the consolidations and terminations;

"(7) recommendations for reforms, consolidations, and terminations of STEM education programs or activities in the upcoming fiscal year; and

"(8) a description of any significant new STEM education public-private partnerships.".

SEC. 305. PROGRAMS TO EXPAND STEM OPPORTUNITIES.

(a) FINDINGS.—Congress makes the following findings:

(1) Economic projections by the Bureau of Labor Statistics indicate that by 2018, there could be 2,400,000 unfilled STEM jobs.

(2) Women represent slightly more than half the United States population, and projections indicate that 54 percent of the population will be a member of a racial or ethnic minority group by 2050.

(3) Despite representing half the population, women comprise only about 30 percent of STEM workers according to a 2015 report by the National Center for Science and Engineering Statistics.

(4) A 2014 National Center for Education Statistics study found that underrepresented popu-

lations leave the STEM fields at higher rates than their counterparts.

(5) The representation of women in STEM drops significantly at the faculty level. Overall, women hold only 25 percent of all tenured and tenure-track positions and 17 percent of full professor positions in STEM fields in our Nation's universities and 4-year colleges.

(6) Black and Hispanic faculty together hold about 6.5 percent of all tenured and tenure-track positions and 5 percent of full professor positions.

(7) Many of the numbers in the American Indian or Alaskan Native and Native Hawaiian or Other Pacific Islander categories for different faculty ranks were too small for the Foundation to report publicly without potentially compromising confidential information about the individuals being surveyed.

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

(1) it is critical to our Nation's economic leadership and global competitiveness that the United States educate, train, and retain more scientists, engineers, and computer scientists;

(2) there is currently a disconnect between the availability of and growing demand for STEM-skilled workers;

(3) historically, underrepresented populations are the largest untapped STEM talent pools in the United States; and

(4) given the shifting demographic landscape, the United States should encourage full participation of individuals from underrepresented populations in STEM fields.

(c) REAFFIRMATION.—The Director of the Foundation shall continue to support programs designed to broaden participation of underrepresented populations in STEM fields.

(d) GRANTS TO BROADEN PARTICIPATION.—

(1) IN GENERAL.—The Director of the Foundation shall award grants on a competitive, merit-reviewed basis, to eligible entities to increase the participation of underrepresented populations in STEM fields, including individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b).

(2) CENTER OF EXCELLENCE.—

(A) IN GENERAL.—Grants awarded under this subsection may include grants for the es-

tablishment of a Center of Excellence to collect, maintain, and disseminate information to increase participation of underrepresented populations in STEM fields.

(B) PURPOSE.—The purpose of a Center of Excellence under this subsection is to promote diversity in STEM fields by building on the success of the INCLUDES programs, providing technical assistance, maintaining best practices, and providing related training at federally funded academic institutions.

(e) ACCOUNTABILITY AND DISSEMINATION.—

(1) EVALUATION.—

(A) IN GENERAL.—Not later than 5 years after the date of enactment of this Act, the Director of the Foundation shall evaluate the grants provided under this section.

(B) REQUIREMENTS.—In conducting the evaluation under subparagraph (A), the Director shall—

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

(ii) to the extent practicable, combine the research resulting from the grant activity under subsection (e) 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 of the Foundation shall submit to the appropriate committees of 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 of the Foundation shall consult and cooperate with the programs and policies of other relevant Federal agencies to avoid duplication with and enhance the effectiveness of the program under this section.

SEC. 306. NIST EDUCATION AND OUTREACH.

(a) REPEAL.—The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by striking section 18 (15 U.S.C. 278g-1).

(b) EDUCATION AND OUTREACH.—The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.), as amended, is further amended by inserting after section 17, the following:

"SEC. 18. EDUCATION AND OUTREACH.

"(a) IN GENERAL.—The Director is authorized to expend funds appropriated for activities of the Institute in any fiscal year, to support, promote, and coordinate activities and efforts to enhance public awareness and understanding of measurement sciences, standards and technology at the national measurement laboratories and otherwise in fulfillment of the mission of the Institute. The Director may carry out activities under this subsection, including education and outreach activities to the general public, industry and academia in support of the Institute's mission.

"(b) HIRING.—The Director, in coordination with the Director of the Office of Personnel Management, may revise the procedures the Director applies when making appointments to laboratory positions within the competitive service—

"(1) to ensure corporate memory of and expertise in the fundamental ongoing work, and on developing new capabilities in priority areas;

"(2) to maintain high overall technical competence;

"(3) to improve staff diversity;

"(4) to balance emphases on the noncore and core areas; or

"(5) to improve the ability of the Institute to compete in the marketplace for qualified personnel.

"(c) VOLUNTEERS.—

"(1) IN GENERAL.—The Director may establish a program to use volunteers in carrying out the programs of the Institute.

"(2) ACCEPTANCE OF PERSONNEL.—The Director may accept, subject to regulations issued by the Office of Personnel Management, voluntary service for the Institute for such purpose if the service—

"(A) is to be without compensation; and

"(B) will not be used to displace any current employee or act as a substitute for any future full-time employee of the Institute.

"(3) FEDERAL EMPLOYEE STATUS.—Any individual who provides voluntary service under this subsection shall not be considered a Federal employee, except for purposes of chapter 81 of title 5, United States Code (relating to compensation for injury),

and sections 2671 through 2680 of title 28, United States Code (relating to tort claims).

"(d) RESEARCH FELLOWSHIPS.—

"(1) IN GENERAL.—The Director may expend funds appropriated for activities of the Institute in any fiscal year, as the Director considers appropriate, for awards of research fellowships and other forms of financial and logistical assistance, including direct stipend awards to—

"(A) students at institutions of higher learning 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, including programs.

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

"(3) FINANCIAL AND LOGISTICAL ASSISTANCE.—Notwithstanding section 1345 of title 31, United States Code, or any other law to the contrary, the Director may include as a form of finan-

cial or logistical assistance under this subsection temporary housing and transportation to and from Institute facilities.

"(e) EDUCATIONAL OUTREACH ACTIVITIES.—The Director may—

"(1) facilitate education programs for undergraduate and graduate students, postdoctoral researchers, and academic and industry employees;

"(2) sponsor summer workshops for STEM kindergarten through grade 12 teachers as appropriate;

"(3) develop programs for graduate student internships and visiting faculty researchers;

"(4) document publications, presentations, and interactions with visiting researchers and sponsoring interns as performance metrics for improving and continuing interactions with those individuals; and

"(5) facilitate laboratory tours and provide presentations for educational, industry, and community groups.".

(c) POST-DOCTORAL FELLOWSHIP PROGRAM.—Section 19 of the National Institute of Standards and Technology Act (15 U.S.C. 278g-2) is amended to read as follows:

"SEC. 19. POST-DOCTORAL FELLOWSHIP PROGRAM.

"(a) IN GENERAL.—The Institute and the National Academy of Sciences, jointly, shall establish and conduct a post-doctoral fellowship program, subject to the availability of appropriations.

"(b) ORGANIZATION.—The post-doctoral fellowship program shall include not less than 20 new fellows per fiscal year.

"(c) EVALUATIONS.—In evaluating applications for post-doctoral fellowships under this section, the Director of the Institute and the President of the National Academy of Sciences shall give consideration to the goal of promoting the participation of individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b) in research areas supported by the Institute.".

(d) SAVINGS CLAUSES.—

(1) RESEARCH FELLOWSHIPS AND OTHER FINANCIAL ASSISTANCE TO STUDENTS AT INSTITUTES OF HIGHER EDUCATION.—The repeal made by subsection (a) of this section shall not affect any award of a research fellowship or other form of financial assistance made under section 18 of the National Institute of Standards and Technology Act (15 U.S.C. 278g-1) before the date of enactment of this Act. Such award shall continue to be subject to the re-

quirements to which such funds were subject under that section before the date of enactment of this Act.

(2) POST-DOCTORAL FELLOWSHIP PROGRAM.—The amendment made by subsection (e) of this section shall not affect any award of a post-doctoral fellowship or other form of financial assistance made under section 19 of the National Institute of Standards and Technology Act (15 U.S.C. 278g-2) before the date of enactment of this Act. Such awards shall continue to be subject to the requirements to which such funds were subject under that section before the date of enactment of this Act.

SEC. 307. PRESIDENTIAL AWARDS FOR EXCELLENCE IN STEM MENTORING.

(a) IN GENERAL.—The Director of the Foundation shall continue to administer awards on behalf of the Office of Science and Technology Policy to recognize outstanding mentoring in STEM fields.

(b) ANNUAL AWARD RECIPIENTS.—The Director of the Foundation shall provide Congress with a list of award recipients, including the name, institution, and a brief synopsis of the impact of the mentoring efforts.

SEC. 308. WORKING GROUP ON INCLUSION IN STEM FIELDS.

(a) ESTABLISHMENT.—The Office of Science and Technology Policy, in collaboration with Federal departments and agencies, shall establish an interagency working group to compile and summarize available research and best practices on how to promote diversity and inclusions in STEM fields and examine whether barriers exist to promoting diversity and inclusion within Federal agencies employing scientists and engineers.

(b) RESPONSIBILITIES.—The working group shall be responsible for reviewing and assessing research, best practices, and policies across Federal science agencies related to the inclusion of individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b) in the Federal STEM workforce, including available research and best practices on how to promote diversity and inclusion in STEM fields, including—

(1) policies providing flexibility for scientists and engineers that are also caregivers, particularly on the timing of research grants;

(2) policies to address the proper handling of claims of sexual harassment;

(3) policies to minimize the effects of implicit bias and other systemic factors in hiring, promotion, evaluation and the workplace in general; and

(4) other evidence-based strategies that the working group considers effective for promoting diversity and inclusion in the STEM fields.

(c) STAKEHOLDER INPUT.—In carrying out the responsibilities under section (b), the working group shall solicit and consider input and recommendations from non-Federal stakeholders, including—

(1) the Council of Advisors on Science and Technology;

(2) federally funded and non-federally funded researchers, institutions of higher education, scientific disciplinary societies, and associations;

(3) nonprofit research institutions;

(4) industry, including small businesses;

(5) federally funded research and development centers;

(6) non-governmental organizations; and

(7) such other members of the public interested in promoting a diverse and inclusive Federal STEM workforce.

(d) PUBLIC REPORTS.—Not later than 1 year after the date of enactment of this Act, and periodically there-

after, the working group shall publish a report on the review and assessment under subsection (b), including a summary of available research and best practices, any recommendations for Federal actions to promote a diverse and inclusive Federal STEM workforce, and updates on the implementation of previous recommendations for Federal actions.

(c) TERMINATION.—The interagency working group established under subsection (a) shall terminate on the date that is 10 years after the date that it is established.

SEC. 309. IMPROVING UNDERGRADUATE STEM EXPERIENCES.

(a) SENSE OF CONGRESS.—It is the sense of Congress that each Federal science agency should invest in and expand research opportunities for undergraduate students attending institutions of higher education during the undergraduate students' first 2 academic years of postsecondary education.

(b) IDENTIFICATION OF RESEARCH PROGRAMS.—Not later than 1 year after the date of enactment of this Act, the head of each Federal agency shall submit to the President recommendations regarding how the agency could best fulfill the goals described in subsection (a).

SEC. 310. COMPUTER SCIENCE EDUCATION RESEARCH.

(a) FINDINGS.—Congress finds that as the lead Federal agency for building the research knowledge base for computer science education, the Foundation is well positioned to make investments that will accelerate ongoing efforts to enable rigorous and engaging computer science throughout the Nation as an integral part of STEM education.

(b) GRANT PROGRAM.—

(1) IN GENERAL.—The Director of the Foundation shall award grants to eligible entities to research computer science education and computational thinking.

(2) RESEARCH.—The research described in paragraph (1) may include the development or adaptation, piloting or full implementation, and testing of—

(A) models of preservice preparation for teachers who will teach computer science and computational thinking;

(B) scalable and sustainable models of professional development and ongoing support for the teachers described in subparagraph (A);

(C) tools and models for teaching and learning aimed at supporting student success and inclusion in computing within and across

diverse populations, particularly poor, rural, and tribal populations and other populations that have been historically underrepresented in computer science and STEM fields; and

(D) high-quality learning opportunities for teaching computer science and, especially in poor, rural, or tribal schools at the elementary school and middle school levels, for integrating computational thinking into STEM teaching and learning.

(c) COLLABORATIONS.—In carrying out the grants established in subsection (b), eligible entities may collaborate and partner with local or remote schools to support the integration of computing and computational thinking within pre-kindergarten through grade 12 STEM curricula and instruction.

(d) METRICS.—The Director of the Foundation shall develop metrics to measure the success of the grant program funded under this section in achieving program goals.

(e) REPORT.—The Director of the Foundation shall report, in the annual budget submission to Congress, on the success of the program as measured by the metrics in subsection (d).

(f) DEFINITION OF ELIGIBLE ENTITY.—In this section, the term "eligible entity" means an institution of higher education or a nonprofit research organization.

SEC. 311. INFORMAL STEM EDUCATION.

(a) NATIONAL STEM PARTNERSHIP GRANTS.—Section 3(a) of the STEM Education Act of 2015 (42 U.S.C. 1862q(a)) is amended—

(1) in paragraph (1), by striking "; and" and inserting a semicolon;

(2) in paragraph (2), by striking the period at the end and inserting "; and"; and

(3) by adding at the end the following:

"(3) a national partnership of institutions involved in informal STEM learning.".

(b) USE OF FUNDS.—Section 3(b) of the STEM Education Act of 2015 (42 U.S.C. 1862q(b)) is amended—

(1) in paragraph (1), by striking "; and" and inserting a semicolon;

(2) in paragraph (2), by striking the period at the end and inserting a semicolon; and

(3) by adding at the end the following:

"(3) fostering on-going partnerships between institutions involved in informal STEM learning, in-

stitutions of higher education, and education research centers; and

"(4) developing, and making available informal STEM education activities and educational materials.".

SEC. 312. DEVELOPING STEM APPRENTICESHIPS.

(a) FINDINGS.—Congress makes the following findings:

(1) The lack of data on the return on investment for United States employers using registered apprenticeships makes it difficult—

(A) to communicate the value of these programs to businesses; and

(B) to expand registered apprenticeships.

(2) The lack of data on the value and impact of employer-provided worker training, which is likely substantial, hinders the ability of the Federal Government to formulate policy related to workforce training.

(3) The Secretary of Commerce has initiated—

(A) the first study on the return on investment for United States employers using registered apprenticeships through case studies of firms in various sectors, occupations, and geographic locations to provide the business com-

munity with data on employer benefits and costs; and

(B) discussions with officials at relevant Federal agencies about the need to collect comprehensive data on—

(i) employer-provided worker training; and

(ii) existing tools that could be used to collect such data.

(b) DEVELOPMENT OF APPRENTICESHIP INFORMATION.—The Secretary of Commerce shall continue to research the value to businesses of utilizing apprenticeship programs, including—

(1) evidence of return on investment of apprenticeships, including estimates for the average time it takes a business to recover the costs associated with training apprentices; and

(2) data from the United States Census Bureau and other statistical surveys on employer-provided training, including apprenticeships and other on-the-job training and industry-recognized certification programs.

(c) DISSEMINATION OF APPRENTICESHIP INFORMATION.—The Secretary of Commerce shall disseminate

findings from research on apprenticeships to businesses and other relevant stakeholders, including—

(1) institutions of higher education;

(2) State and local chambers of commerce; and

(3) workforce training organizations.

(d) NEW APPRENTICESHIP PROGRAM STUDY.—The Secretary of Commerce may collaborate with the Secretary of Labor to study approaches for reducing the cost of creating new apprenticeship programs and hosting apprentices for businesses, particularly small businesses, including—

(1) training sharing agreements;

(2) group training models; and

(3) pooling resources and best practices.

(e) ECONOMIC DEVELOPMENT ADMINISTRATION GRANTS.—The Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.) is amended by adding at the end the following:

"SEC. 28. STEM APPRENTICESHIP PROGRAMS.

"(a) IN GENERAL.—The Secretary of Commerce may carry out a grant program to identify the need for skilled science, technology, engineering, and mathematics (referred to in this section as 'STEM') workers and to expand STEM apprenticeship programs.

"(b) ELIGIBLE RECIPIENT DEFINED.—In this section, the term 'eligible recipient' means—

"(1) a State;

"(2) an Indian tribe;

"(3) a city or other political subdivision of a State;

"(4) an entity that—

"(A) is a nonprofit organization, an institution of higher education, a public-private partnership, a science or research park, a Federal laboratory, or an economic development organization or similar entity; and

"(B) has an application that is supported by a State, a political subdivision of a State, or a native organization; or

"(5) a consortium of any of the entities described in paragraphs (1) through (5).

"(c) NEEDS ASSESSMENT GRANTS.—The Secretary of Commerce may provide a grant to an eligible recipient to conduct a needs assessment to identify—

"(1) the unmet need of a region's employer base for skilled STEM workers;

"(2) the potential of STEM apprenticeships to address the unmet need described in paragraph (1); and

"(3) any barriers to addressing the unmet need described in paragraph (1).

"(d) APPRENTICESHIP EXPANSION GRANTS.—The Secretary of Commerce may provide a grant to an eligible recipient that has conducted a needs assessment as described in subsection (c)(1) to develop infrastructure to expand STEM apprenticeship programs.".

SEC. 313. NSF REPORT ON BROADENING PARTICIPATION.

Section 204(e) of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1885c(e)) is amended to read as follows:

"(e) BIENNIAL REPORT.—Every 2 years, the Committee shall prepare and submit to the Director a report on its activities during the previous 2 years and proposed activities for the next 2 years. The Director shall submit to Congress the report, unaltered, together with such comments as the Director considers appropriate, including—

"(1) review data on the participation in Foundation activities of institutions serving populations that are underrepresented in STEM disciplines, including poor, rural, and tribal populations; and

"(2) recommendations regarding how the Foundation could improve outreach and inclusion of these populations in Foundation activities.".

SEC. 314. NOAA ~~OCEAN AND ATMOSPHERIC~~ SCIENCE EDUCATION PROGRAMS.

(a) IN GENERAL.—Section 4002(a) of the America COMPETES Act (33 U.S.C. 893a(a)) is amended by striking "agency, with consideration given to the goal of promoting the participation of individuals from underrepresented groups" and inserting "the agency, with consideration given to the goal of promoting the participation of individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b)".

(b) EDUCATIONAL PROGRAM GOALS.—Section 4002(b)(4) of the America COMPETES Act (33 U.S.C. 893a(b)(4)) is amended—

(1) in subparagraph (B), by striking "and" at the end;

(2) by redesignating subparagraph (C) and subparagraph (D);

(3) by inserting after subparagraph (B) the following:

"(C) are designed considering the unique needs of underrepresented ~~populations~~ groups, translating such materials and other resources ~~into appropriate multi-lingual curricula~~;"; and

(4) by adding at the end the following:

"(E) are promoted widely, especially among individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b); and".

(c) METRICS.—Section 4002 of the America COMPETES Act (33 U.S.C. 893a) is amended—

(1) by redesignating subsections (d) and (e) as subsections (e) and (f), respectively; and

(2) by adding after section (c) the following:

"(d) METRICS.—In executing the National Oceanic and Atmospheric Administration science education plan under subsection (c), the Administrator shall maintain a comprehensive system for evaluating the Administration's educational programs and activities. In so doing, the Administrator shall ensure that such education programs have measurable objectives and milestones as well as clear, documented metrics for evaluating programs. For each such education program or portfolio of similar programs, the Administrator shall—

"(1) encourage the collection of evidence as relevant to the measurable objectives and milestones; and

"(2) ensure that program or portfolio evaluations focus on educational outcomes and not just in-

puts, activities completed, or the number of participants.".

SEC. 315. HISPANIC-SERVING INSTITUTIONS UNDERGRADUATE PROGRAM UPDATE.

(a) IN GENERAL.—Section 7033(a) of the America COMPETES Act (42 U.S.C. 1862o–12(a)) is amended as follows:

"(a) IN GENERAL.—The Director shall award grants on a competitive, merit-reviewed basis to Hispanic-serving institutions (as defined in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a)) to enhance the quality of undergraduate STEM education at such institutions and to increase the retention and graduation rates of students pursuing associate's or baccalaureate degrees in science, technology, engineering, and mathematics.".

(b) SAVINGS PROVISION.—The amendment made by subsection (a) of this section shall not affect any award of a grant or other form of financial assistance made under section 7033 of the America COMPETES Act (42 U.S.C. 1862o–12) before the date of enactment of this Act. Such awards shall continue to be subject to the requirements to which such funds were subject under that section before the date of enactment of this Act.

TITLE IV—LEVERAGING THE PRIVATE SECTOR

SEC. 401. PRIZE COMPETITION AUTHORITY UPDATE.

(a) SHORT TITLE.—This section may be cited as the "Science Prize Competition Act".

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

(1) in subsection (c)—

(A) in the subsection heading, by striking "PRIZES" and by inserting "PRIZE COMPETITIONS";

(B) in the matter preceding paragraph (1), by striking "prize may be one or more of the following" and inserting "prize competition may be 1 or more of the following types of activities";

(C) in paragraph (2), by inserting "competition" after "prize"; and

(D) in paragraphs (3) and (4), by striking "prizes" and inserting "prize competitions";

(2) in subsection (f)—

(A) in the matter preceding paragraph (1), by striking "in the Federal Register" and in-

serting "on a publicly accessible Government website, such as www.challenge.gov,";

(B) in paragraphs (1), (2), and (3), by inserting "prize" before "competition"; and

(C) in paragraph (4), by striking "prize" and inserting "cash prize purse or non-cash prize award";

(3) in subsection (g)—

(A) in the matter preceding paragraph (1), by striking "prize" and inserting "cash prize purse"; and

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

(4) in subsection (h), by inserting "prize" before "competition" each place 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" each place it appears;

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

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

"(3) WAIVERS.—

"(A) IN GENERAL.—An agency may waive the requirement under paragraph (2).

"(B) LIST.—The Director shall include a list of all of the waivers granted under this paragraph during the preceding fiscal year, including a detailed explanation of the reason for granting the waiver.";

(6) in subsection (j)—

(A) in paragraph (1), by inserting "prize" before "competition"; and

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

"(2) LICENSES.—As appropriate and to further the goals of a prize competition, the Federal Government may negotiate a license for the use of intellectual property developed by a registered participant in a prize competition.";

(7) in subsection (k)—

(A) in paragraph (1), by striking "each competition" and inserting "each prize competition" each place it appears;

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

(C) in paragraph (3), by inserting "prize" before "competitions" each place it appears;

(8) in subsection (l), by striking "an agreement with" and all that follows through the period at the end and inserting "a grant, contract, cooperative agreement, or other agreement with a private sector for-profit or nonprofit entity or State or local government agency to administer the prize competition, subject to the provisions of this section.";

(9) in subsection (m)—

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

"(1) IN GENERAL.—Support for a prize competition under this section, including financial support for the design and administration of a prize competition or funds for a cash prize purse, may consist of Federal appropriated funds and funds provided by private sector for-profit and nonprofit entities. The head of an agency may request and accept funds from other Federal agencies, State, United States territory, local, or tribal government agencies, private sector for-profit entities, and nonprofit entities, to be available to the extent provided by appropriations Acts, to support such prize competitions. The head of an agency may not give any

special consideration to any agency or entity in return for a donation.";

(B) in paragraph (2), by striking "prize awards" and inserting "cash prize purses or non-cash prize awards";

(C) in paragraph (3)—

(i) by amending subparagraph (A) to read as follows:

"(A) ANNOUNCEMENT.—No prize competition may be announced under subsection (f) until all the funds needed to pay out the announced amount of the cash prize purse have been appropriated or committed in writing by a private or State, United States territory, local, or tribal government source."; and

(ii) in subparagraph (B)—

(I) in the matter preceding clause (i), by striking "a prize" and inserting "a cash prize purse or non-cash prize award";

(II) in clause (i), by inserting "competition" after "prize"; and

(III) in clause (ii), by inserting "or State, United States territory,

local, or tribal government" after "private"; and

(D) in paragraph (4)—

(i) in subparagraph (A)—

(I) by striking "a prize" and inserting "a cash prize purse or a non-cash prize award"; and

(II) by striking "Science and Technology" and inserting "Science, Space, and Technology"; and

(ii) in subparagraph (B), by striking "cash prizes" and inserting "cash prize purses or non-cash prize awards";

(10) in subsection (n)—

(A) in the heading, by striking "SERVICE" and inserting "SERVICES";

(B) by striking "the date of the enactment of the America COMPETES Reauthorization Act of 2010," and inserting "the date of enactment of the American Innovation and Competitiveness Act,"; and

(C) by inserting "for both for-profit and nonprofit entities and State, United States territory, local, and tribal government entities," after "contract vehicle";

(11) in subsection (o)(1), by striking "or providing a prize" and inserting "a prize competition or providing a cash prize purse or non-cash prize award"; and

(12) in subsection (p)—

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

(B) in paragraph (1)—

(i) by striking "each year" and inserting "every other year";

(ii) by striking "Science and Technology" and inserting "Science, Space, and Technology"; and

(iii) by striking "fiscal year" and inserting "2 fiscal years"; and

(C) in paragraph (2)—

(i) by striking "The report for a fiscal year" and inserting "A report";

(ii) in subparagraph (C)—

(I) in the heading, by striking "PRIZES" and inserting "PRIZE PURSES OR NON-CASH PRIZE AWARDS"; and

(II) by striking "cash prizes" each place it appears and inserting

"cash prize purses or non-cash prize awards"; and

(iii) by adding at the end the following:

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

SEC. 402. CROWDSOURCING AND CITIZEN SCIENCE.

(a) SHORT TITLE.—This section may be cited as the "Crowdsourcing and Citizen Science Act".

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

(1) the authority granted to Federal agencies under the America COMPETES Reauthorization Act of 2010 (Public Law 111–358; 124 Stat. 3982) to pursue the use of incentive prizes and challenges has yielded numerous benefits;

(2) crowdsourcing and citizen science projects have a number of additional unique benefits, including accelerating scientific research, increasing cost effectiveness to maximize the return on taxpayer dollars, addressing societal needs, providing hands-on learning in STEM, and connecting members of the

public directly to Federal science agency missions and to each other; and

(3) granting Federal science agencies the direct, explicit authority to use crowdsourcing and citizen science will encourage its appropriate use to advance Federal science agency missions and stimulate and facilitate broader public participation in the innovation process, yielding numerous benefits to the Federal Government and citizens who participate in such projects.

(c) DEFINITIONS.—In this section:

(1) CITIZEN SCIENCE.—The term "citizen science" means a form of open collaboration in which individuals or organizations participate voluntarily in the scientific process in various ways, including—

(A) enabling the formulation of research questions;

(B) creating and refining project design;

(C) conducting scientific experiments;

(D) collecting and analyzing data;

(E) interpreting the results of data;

(F) developing technologies and applications;

(G) making discoveries; and

(II) solving problems.

(2) CROWDSOURCING.—The term "crowdsourcing" means a method to obtain needed services, ideas, or content by soliciting voluntary contributions from a group of individuals or organizations, especially from an online community.

(3) PARTICIPANT.—The term "participant" means any individual or other entity that has volunteered in a crowdsourcing or citizen science project under this section.

(d) CROWDSOURCING AND CITIZEN SCIENCE.—

(1) IN GENERAL.—The head of each Federal science agency, or the heads of multiple Federal science agencies working cooperatively, may utilize crowdsourcing and citizen science to conduct projects designed to advance the mission of the respective Federal science agency or the joint mission of Federal science agencies, as applicable.

(2) VOLUNTARY SERVICES.—Notwithstanding section 1342 of title 31, United States Code, the head of a Federal science agency may accept, subject to regulations issued by the Director of the Office of Personnel Management, in coordination with the Director of the Office of Science and Technology

Policy, services from participants under this section if such services—

(A) are performed voluntarily as a part of a crowdsourcing or citizen science project authorized under paragraph (1);

(B) are not financially compensated for their time; and

(C) will not be used to displace any employee of the Federal Government.

(3) OUTREACH.—The head of each Federal science agency engaged in a crowdsourcing or citizen science project under this section shall make public and promote such project to encourage broad participation.

(4) CONSENT, REGISTRATION, AND TERMS OF USE.—

(A) IN GENERAL.—Each Federal science agency shall determine the appropriate level of consent, registration, or acknowledgment of the terms of use that are required from participants in crowdsourcing or citizen science projects under this section on a per-project basis.

(B) DISCLOSURES.—In seeking consent, conducting registration, or developing terms of use for a project under this subsection, a Fed-

eral science agency shall disclose the privacy, intellectual property, data ownership, compensation, service, program, and other terms of use to the participant in a clear and reasonable manner.

(C) MODE OF CONSENT.—A Federal agency or Federal science agencies, as applicable, may obtain consent electronically or in written form from participants under this section.

(5) PROTECTIONS FOR HUMAN SUBJECTS.—Any crowdsourcing or citizen science project under this section that involves research involving human subjects shall be subject to part 46 of title 28, Code of Federal Regulations (or any successor regulation).

(6) DATA.—

(A) IN GENERAL.—A Federal science agency shall, where appropriate and to the extent practicable, make data collected through a crowdsourcing or citizen science project under this section available to the public, in a machine readable format, unless prohibited by law.

(B) NOTICE.—As part of the consent process, the Federal science agency shall notify all participants—

(i) of the expected uses of the data compiled through the project;

(ii) if the Federal science agency will retain ownership of such data;

(iii) if and how the data and results from the project would be made available for public or third party use; and

(iv) if participants are authorized to publish such data.

(7) TECHNOLOGIES AND APPLICATIONS.—Federal science agencies shall endeavor to make technologies, applications, code, and derivations of such intellectual property developed through a crowdsourcing or citizen science project under this section available to the public.

(8) LIABILITY.—Each participant in a crowdsourcing or citizen science project under this section shall agree—

(A) to assume any and all risks associated with such participation; and

(B) to waive all claims against the Federal Government and its related entities, except for claims based on willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits (whether direct, indirect, or

consequential) arising from participation in the project.

(9) RESEARCH MISCONDUCT.—Federal science agencies coordinating crowdsourcing or citizen science projects under this section shall make all practicable efforts to ensure that participants adhere to all relevant Federal research misconduct policies and other applicable ethics policies.

(10) MULTI-SECTOR PARTNERSHIPS.—The head of each Federal science agency engaged in crowdsourcing or citizen science under this section, or the heads of multiple Federal science agencies working cooperatively, may enter into a contract or other agreement to share administrative duties for such projects with—

(A) a for profit or nonprofit private sector entity, including a private institution of higher education;

(B) a State, tribal, local, or foreign government agency, including a public institution of higher education; or

(C) a public-private partnership.

(11) FUNDING.—In carrying out crowdsourcing and citizen science projects under this section, the head of a Federal science agency, or the heads of

multiple Federal science agencies working cooperatively—

(A) may use funds appropriated by Congress;

(B) may publicize projects and solicit and accept funds or in-kind support for such projects, to be available to the extent provided by appropriations Acts, from—

(i) other Federal agencies;

(ii) for profit or nonprofit private sector entities, including private institutions of higher education; or

(iii) State, tribal, local, or foreign government agencies, including public institutions of higher education; and

(C) may not give any special consideration to any entity described in subparagraph (B) in return for such funds or in-kind support.

(12) FACILITATION.—

(A) GENERAL SERVICES ADMINISTRATION ASSISTANCE.—The Administrator of the General Services Administration, in coordination with the Director of the Office of Personnel Management and the Director of the Office of Science and Technology Policy, shall, at no cost

to Federal science agencies, identify and develop relevant products, training, and services to facilitate the use of crowdsourcing and citizen science projects under this section, including by specifying the appropriate contract vehicles and technology and organizational platforms to enhance the ability of Federal science agencies to carry out the projects under this section.

(B) ADDITIONAL GUIDANCE.—The head of each Federal science agency engaged in crowdsourcing or citizen science under this section may—

(i) consult any guidance provided by the Director of the Office of Science and Technology Policy, including the Federal Crowdsourcing and Citizen Science Toolkit;

(ii) designate a coordinator for that Federal science agency's crowdsourcing and citizen science projects; and

(iii) share best practices with other Federal agencies, including participation of staff in the Federal Community of Practice for Crowdsourcing and Citizen Science.

(e) REPORT.—

(1) IN GENERAL.—Not later than 2 years after the date of the enactment of this Act, the Director of the Office of Science and Technology Policy shall include, as a component of an annual report required under section 24(p) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719(p)), a report on the projects and activities carried out under this section.

(2) INFORMATION INCLUDED.—The report required under paragraph (1) shall include—

(A) a summary of each crowdsourcing and citizen science project conducted by a Federal science agency during the most recently completed 2 fiscal years, including a description of the proposed goals of each crowdsourcing and citizen science project;

(B) an analysis of why the utilization of a crowdsourcing or citizen science project summarized in subparagraph (A) was the preferable method of achieving the goals described in subparagraph (A) as opposed to other authorities available to the Federal science agency, such as contracts, grants, cooperative agreements, and prize competitions;

(C) the participation rates, submission levels, number of consents, and any other statistic that might be considered relevant in each crowdsourcing and citizen science project;

(D) a detailed description of—

(i) the resources, including personnel and funding, that were used in the execution of each crowdsourcing and citizen science project;

(ii) the project activities for which such resources were used; and

(iii) how the obligations and expenditures relating to the project's execution were allocated among the accounts of the Federal science agency, including a description of the amount and source of all funds, private, public, and in-kind, contributed to each crowdsourcing and citizen science project;

(E) a summary of the use of crowdsourcing and citizen science by all Federal science agencies, including interagency and multi-sector partnerships;

(F) a description of how each crowdsourcing and citizen science project ad-

vanced the mission of each participating Federal science agency;

(G) an identification of each crowdsourcing or citizen science project where data collected through such project was not made available to the public, including the reasons for such action; and

(H) any other information that the Director of the Office of Science and Technology Policy considers relevant.

(f) SAVINGS PROVISION.—Nothing in this section may be construed—

(1) to affect the authority to conduct crowdsourcing and citizen science authorized by any other provision of law; or

(2) to displace Federal Government resources allocated to the Federal science agencies that use crowdsourcing or citizen science authorized under this section to carry out a project.

~~**SEC. 403. NIST OTHER TRANSACTION AUTHORITY UPDATE.**~~

~~Section 2(b)(4) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)(4)) is amended to read as follows:~~

~~"(4) to enter into and perform such contracts, including cooperative research and development ar-~~

~~rangements, grants, cooperative agreements, real property leases, or other transactions, as may be necessary in furtherance of the purposes of this Act and on such terms as the Director considers appropriate,~~".

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SEC. ~~404.~~ NIST DIRECTOR FUNCTIONS UPDATE.

Section 2(b) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)), as amended by section 403 of this Act, is further amended—

(1) 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";

(2) 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

(3) 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 Fed-

eral, State, and local governments with private sector".

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SEC. ~~405~~. NIST VISITING COMMITTEE ON ADVANCED TECHNOLOGY UPDATE.

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

(1) in subsection (a)—

(A) in the second sentence, by striking "15 members appointed by the Director, at least 10 of whom" and "not fewer than 9 members appointed by the Director, a majority of whom"; and

(B) in the third sentence, by striking "National Bureau of Standards" and inserting "National Institute of Standards and Technology"; and

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

TITLE V—MANUFACTURING

SEC. 501. HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP IMPROVEMENTS.

(a) SHORT TITLE.—This section may be cited as the "Manufacturing Extension Partnership Improvement Act".

(b) IN GENERAL.—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) DEFINITIONS.—In this section:

"(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term 'appropriate committees of Congress' means—

"(A) the Committee on Commerce, Science, and Transportation of the Senate; and

"(B) the Committee on Science, Space, and Technology of the House of Representatives.

"(2) AREA CAREER AND TECHNICAL EDUCATION SCHOOL.—The term 'area career and technical education school' has the meaning given the term in section 3 of the Vocational Education Act of 1963 (20 U.S.C. 2302).

"(3) CENTER.—The term 'Center' means a manufacturing extension center that—

"(A) is created under subsection (b); and

"(B) is affiliated with an eligible entity that applies for and is awarded financial support under subsection (e).

"(4) COMMUNITY COLLEGE.—The term 'community college' means an institution of higher education (as defined under section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))) at which the highest degree that is predominately awarded to students is an associate's degree.

"(5) ELIGIBLE ENTITY.—The term 'eligible entity' means a United States-based nonprofit institution, or consortium thereof, an institution of higher education, or a State, United States territory, local, or tribal government.

"(6) HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP OR PROGRAM.—The term 'Hollings Manufacturing Extension Partnership' or 'Program' means the program established under subsection (b).

"(7) MEP ADVISORY BOARD.—The term 'MEP Advisory Board' means the Manufacturing Extension Partnership Advisory Board established under subsection (n).

"(b) ESTABLISHMENT AND PURPOSE.—The Secretary, acting through the Director and, if appropriate, through other Federal officials, shall establish a program to provide assistance for the creation and support of manufacturing extension centers for the transfer of manufacturing technology and best business practices.

"(c) OBJECTIVE.—The objective of the Program shall be to enhance competitiveness, productivity, and technological performance in United States manufacturing through—

"(1) the transfer of manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States;

"(2) 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;

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

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

"(5) the utilization, when appropriate, of the expertise and capability that exists in Federal agencies, other than the Institute, and federally-sponsored laboratories;

"(6) the provision to community colleges and area career and technical education schools of information about the job skills needed in manufacturing companies, including small and medium-sized manufacturing businesses in the regions they serve;

"(7) the promotion and expansion of certification systems offered through industry, associations, and local colleges when appropriate, including efforts such as facilitating training, supporting new or existing apprenticeships, and providing access to information and experts, to address workforce needs and skills gaps in order to assist small- and medium-sized manufacturing businesses; and

"(8) the growth in employment and wages at United States-based small and medium-sized companies.

"(d) ACTIVITIES.—The activities of a Center 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 , community colleges, and area career and technical education schools, to help those entities better understand the specific needs of manufacturers and to help manufacturers better understand the skill sets that students learn in the programs offered by such colleges and schools.

"(c) FINANCIAL ASSISTANCE.—

"(1) AUTHORIZATION.—Except as provided in paragraph (2), the Secretary may provide financial assistance for the creation and support of a Center through a cooperative agreement with an eligible entity.

"(2) COST SHARING.—The Secretary may not provide more than 50 percent of the capital and annual operating and maintenance funds required to establish and support a Center.

"(3) RULE OF CONSTRUCTION.—For purposes of paragraph (2), any amount received by an eligible entity for a Center under a provision of law other than paragraph (1) shall not be considered an amount provided under paragraph (1).

"(4) REGULATIONS.—The Secretary may revise or promulgate such regulations as necessary to carry out this subsection.

"(f) APPLICATIONS.—

"(1) IN GENERAL.—An eligible entity shall submit an application to the Secretary at such time, in such manner, and containing such information as the Secretary may require.

"(2) PROGRAM DESCRIPTION.—The Secretary shall establish and update, as necessary—

"(A) a description of the Program;

"(B) the application procedures;

"(C) performance metrics;

"(D) criteria for determining qualified applicants; and

"(E) criteria for choosing recipients of financial assistance from among the qualified applicants.

"(F) procedures for determining allowable cost share contributions; and

"(G) such other program policy objectives and operational procedures as the Secretary considers necessary.

"(3) COST SHARING.—

"(A) IN GENERAL.—To be considered for financial assistance under this section, an applicant shall provide adequate assurances that the applicant and if applicable, the applicant's partnering organizations, will obtain funding for not less than 50 percent of the capital and annual operating and maintenance funds required to establish and support the Center from sources other than the financial assistance provided under subsection (e).

"(B) AGREEMENTS WITH OTHER ENTITIES.—In meeting the cost-sharing requirement under subparagraph (A), an eligible entity may enter into an agreement with 1 or more other entities, such as a private industry, institutions of higher education, or a State, United States territory, local, or tribal government for the contribution by that other entity of funding if the Secretary determines the agreement—

"(i) is programmatically reasonable;

"(ii) will help accomplish programmatic objectives; and

"(iii) is allocable under Program procedures under subsection (f)(2).

"(4) LEGAL RIGHTS.—Each applicant shall include in the application a proposal for the allocation of the legal rights associated with any intellectual property which may result from the activities of the Center.

"(5) MERIT REVIEW OF APPLICATIONS.—

"(A) IN GENERAL.—The Secretary shall subject each application to merit review.

"(B) CONSIDERATIONS.—In making a decision whether to approve an application and provide financial assistance under subsection (e), the Secretary shall consider, at a minimum—

"(i) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors;

"(ii) the quality of service to be provided;

"(iii) the geographical diversity and extent of the service area; and

"(iv) the type and percentage of funding and in-kind commitment from other sources under paragraph (3).

"(g) EVALUATIONS.—

"(1) THIRD AND EIGHTH YEAR EVALUATIONS BY PANEL.—

"(A) IN GENERAL.—The Secretary shall ensure that each Center is evaluated during its third and eighth years of operation by an evaluation panel appointed by the Secretary.

"(B) COMPOSITION.—The Secretary shall ensure that each evaluation panel appointed under subparagraph (A) is composed of—

"(i) private experts, none of whom are connected with the Center evaluated by the panel; and

"(ii) Federal officials.

"(C) CHAIRPERSON.—For each evaluation panel appointed under subparagraph (B), the Secretary shall appoint a chairperson who is an official of the Institute.

"(2) FIFTH YEAR EVALUATIONS BY SECRETARY.—In the fifth year of operation of a Center, the Secretary shall conduct a review of the Center.

"(3) PERFORMANCE MEASUREMENT.—In evaluating a Center an evaluation panel or the Secretary, as applicable, shall measure the performance of the Center against—

"(A) the objective specified in subsection (c);

"(B) the performance metrics under subsection (f)(2)(C); and

"(C) such other criterion as considered appropriate by the Secretary.

"(4) POSITIVE EVALUATIONS.—If an evaluation of a Center is positive, the Secretary may continue to provide financial assistance for the Center—

"(A) in the case of an evaluation occurring in the third year of a Center, through the fifth year of the Center;

"(B) in the case of an evaluation occurring in the fifth year of a Center, through the eighth year of the Center; and

"(C) in the case of an evaluation occurring in the eighth year of a Center, through the tenth year of the Center.

"(5) OTHER THAN POSITIVE EVALUATIONS.—

"(A) PROBATION.—If an evaluation of a Center is other than positive, the Secretary

shall put the Center on probation during the period beginning on the date that the Center receives notice under subparagraph (B)(i) and ending on the date that the reevaluation is complete under subparagraph (B)(iii).

"(B) NOTICE AND REEVALUATION.—If a Center receives an evaluation that is other than positive, the evaluation panel or Secretary, as applicable, shall—

"(i) notify the Center of the reason, including any deficiencies in the performance of the Center identified during the evaluation;

"(ii) assist the Center in remedying the deficiencies by providing the Center, not less frequently than once every 3 months, an analysis of the Center, if considered appropriate by the panel or Secretary, as applicable; and

"(iii) reevaluate the Center not later than 1 year after the date of the notice under clause (i).

"(C) CONTINUED SUPPORT DURING PERIOD OF PROBATION.—

"(i) IN GENERAL.—The Secretary may continue to provide financial assistance under subsection (e) for a Center during the probation period.

"(ii) POST PROBATION.—After the period of probation, the Secretary shall not provide any financial assistance unless the Center has received a positive evaluation under subparagraph (B)(iii).

"(6) FAILURE TO REMEDY.—

"(A) IN GENERAL.—If a Center fails to remedy a deficiency or to show significant improvement in performance before the end of the probation period under paragraph (5), the Secretary shall conduct a competition to select an operator for the Center under subsection (h).

"(B) TREATMENT OF CENTERS SUBJECT TO NEW COMPETITION.—Upon the selection of an operator for a Center under subsection (h), the Center shall be considered a new Center and the calculation of the years of operation of that Center for purposes of paragraphs (1) through (5) of this subsection and subsection (h)(1) shall start anew.

"(h) REAPPLICATION COMPETITION FOR FINANCIAL ASSISTANCE AFTER 10 YEARS.—

"(1) IN GENERAL.—If an eligible entity has operated a Center under this section for a period of 10 consecutive years, the Secretary shall conduct a competition to select an eligible entity to operate the Center in accordance with the process plan under subsection (i).

"(2) INCUMBENT ELIGIBLE ENTITIES.—An eligible entity that has received financial assistance under this section for a period of 10 consecutive years and that the Secretary determines is in good standing shall be eligible to compete in the competition under paragraph (1).

"(3) TREATMENT OF CENTERS SUBJECT TO REAPPLICATION COMPETITION.—Upon the selection of an operator for a Center under paragraph (1), the Center shall be considered a new Center and the calculation of the years of operation of that Center for purposes of paragraphs (1) through (5) of subsection (g) shall start anew.

"(i) PROCESS PLAN.—Not later than 180 days after the date of the enactment of the American Innovation and Competitiveness Act, the Secretary shall implement and submit to Congress a plan for how the Institute will con-

duct an evaluation, competition, and reapplication competition under this section.

"(j) OPERATIONAL REQUIREMENTS.—

"(1) PROTECTION OF CONFIDENTIAL INFORMATION OF CENTER CLIENTS.—The following information, if obtained by the Federal Government in connection with an activity of a Center or the Program, shall be exempt from public disclosure under section 552 of title 5, United States Code:

"(A) Information on the business operation of any participant in the Program or of a client of a Center.

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

"(k) OVERSIGHT BOARDS.—

"(1) IN GENERAL.—As a condition on receipt of financial assistance for a Center under subsection (e), an eligible entity shall establish a board to oversee the operations of the Center.

"(2) STANDARDS.—

"(A) IN GENERAL.—The Director shall establish appropriate standards for each board described under paragraph (1).

"(B) CONSIDERATIONS.—In establishing the standards, the Director shall take into ac-

count the type and organizational structure of an eligible entity.

"(C) REQUIREMENTS.—The standards shall address—

"(i) membership;

"(ii) composition;

"(iii) term limits;

"(iv) conflicts of interest; and

"(v) such other requirements as the Director considers necessary.

"(3) MEMBERSHIP.—

"(A) IN GENERAL.—Each board established under paragraph (1) shall be composed of members as follows:

"(i) The membership of each board shall be representative of stakeholders in the region in which the Center is located.

"(ii) A majority of the members of the board shall be selected from among individuals who own or are employed by small or medium-sized manufacturers.

"(B) LIMITATION.—A member of a board established under paragraph (1) may not serve on more than 1 board established under that paragraph.

"(4) BYLAWS.—

"(A) IN GENERAL.—Each board established under paragraph (1) shall adopt and submit to the Director bylaws to govern the operation of the board.

"(B) CONFLICTS OF INTEREST.—Bylaws adopted under subparagraph (A) shall include policies to minimize conflicts of interest, including such policies relating to disclosure of relationships and recusal as may be necessary to minimize conflicts of interest.

"(l) ACCEPTANCE OF FUNDS.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal departments and agencies and from the private sector under section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.

"(m) MEP ADVISORY BOARD.—

"(1) ESTABLISHMENT.—There is established within the Institute a Manufacturing Extension Partnership Advisory Board.

"(2) MEMBERSHIP.—

"(A) COMPOSITION.—

"(i) IN GENERAL.—The MEP Advisory Board shall consist of not fewer than 10 members appointed by the Director and broadly representative of stakeholders.

"(ii) REQUIREMENTS.—Of the members appointed under clause (i)—

"(I) at least 2 members shall be employed by or on an advisory board for a Center;

"(II) at least 5 members shall be from United States small businesses in the manufacturing sector; and

"(III) at least 1 member shall represent a community college.

"(iii) LIMITATION.—No member of the MEP Advisory Board shall be an employee of the Federal Government.

"(B) TERM.—Except as provided in subparagraph (C), 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 2 consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the 1-year period following the expiration of the second such term.

"(3) MEETINGS.—The MEP Advisory Board shall—

"(A) meet not less than biannually; and

"(B) provide to the Director—

"(i) advice on the activities, plans, and policies of the Program;

"(ii) assessments of the soundness of the plans and strategies of the Program; and

"(iii) assessments of current performance against the plans of the Program.

"(4) FACA 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 (5 U.S.C. App.).

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

"(5) ANNUAL REPORT.—

"(A) IN GENERAL.—At a minimum, the MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to Congress not later than 30 days after the submission to Congress of the President's annual budget under section 1105 of title 31, United States Code.

"(B) CONTENTS.—The report shall address the status of the Program and describe 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 (15 U.S.C. 278i).

"(n) SMALL MANUFACTURERS.—

"(1) EVALUATION OF OBSTACLES.—As part of the Program, the Director shall—

"(A) identify obstacles that prevent small manufacturers from effectively competing in the global market;

"(B) implement a comprehensive plan to train the Centers to address the obstacles identified in paragraph (2); and

"(C) facilitate improved communication between the Centers to assist such manufacturers in implementing appropriate, targeted solutions to the obstacles identified in paragraph (2).

"(2) DEVELOPMENT OF OPEN ACCESS RESOURCES.—As part of the Program, the Secretary shall develop open access resources that address best practices related to inventory sourcing, supply chain management, manufacturing techniques, available Federal resources, and other topics to further the competitiveness and profitability of small manufacturers.".

(c) COMPETITIVE AWARDS PROGRAM.—The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by inserting after section 25 the following:

"SEC. 25A. COMPETITIVE AWARDS PROGRAM.

"(a) ESTABLISHMENT.—The Director shall establish within the Hollings Manufacturing Extension Partnership under section 25 (15 U.S.C. 278k) and section 26 (15 U.S.C. 278l) a program of competitive awards among par-

ticipants described in subsection (b) of this section for the purposes described in subsection (c).

"(b) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

"(c) PURPOSE, THEMES, AND REIMBURSEMENT.—

"(1) PURPOSE.—The purpose of the program established under subsection (a) is to add capabilities to the Hollings Manufacturing Extension Partnership, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership, the MEP Advisory Board, other Federal agencies, and small and medium-sized manufacturers.

"(2) THEMES.—The Director may identify 1 or more themes for a competition carried out under this section, which may vary from year to year, as the Director considers appropriate after assessing the needs of manufacturers and the success of previous competitions.

"(3) REIMBURSEMENT.—Centers may be reimbursed for costs incurred by the Centers under this section.

"(d) APPLICATIONS.—Applications for awards under this section 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.

"(e) SELECTION.—

"(1) PEER REVIEW AND COMPETITIVELY AWARDED.—The Director shall ensure that awards under this section are peer reviewed and competitively awarded.

"(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

"(3) CRITERIA.—The Director shall select applications to receive awards that the Director determines will achieve 1 or more of the following:

"(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.

"(C) Promote the transfer and commercialization of research and technology from institutions of higher education, national labora-

tories or other federally funded research programs, and nonprofit research institutes.

"(D) Recruit a diverse manufacturing workforce, including through outreach to underrepresented populations, including individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b).

"(E) Such other result as the Director determines will advance the objective set forth in section 25(c) (15 U.S.C. 278k) or in section 26 (15 U.S.C. 278l).

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

"(g) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, 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.

"(h) DURATION.—The duration of an award under this section shall be for not more than 3 years.

"(i) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25 (15 U.S.C. 278k).".

(d) REPORTS.—

(1) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the Comptroller General of the United States, in consultation with the MEP Advisory Board (as defined in section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k)), shall submit to the appropriate committees of Congress a report analyzing—

(A) the effectiveness of the changes in the cost share to Centers under section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k);

(B) the engagement in services and the characteristics of services provided by 2 types of Centers, including volume and type of service; and

(C) whether the cost-sharing ratio has any effect on the services provided by either type of Center.

(2) INDEPENDENT ASSESSMENT.—

(A) IN GENERAL.—Not later than 3 years after the date of submission of the report under paragraph (1), the Director of NIST shall contract with an independent organization to perform an assessment of the implementation of the reapplication competition process.

(B) CONSULTATION.—The independent organization performing the assessment under subparagraph (A) may consult with the MEP Advisory Board (as defined in section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k)).

(3) COMPARISON OF CENTERS.—

(A) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the Director shall submit to the appropriate committees of Congress a report providing information on the first and second years of operations for Centers (as defined in section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k)) operating from new competitions or recompetition as compared to longstanding Centers.

(B) CONTENTS.—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 appropriate committees of Congress can evaluate whether the cost-sharing ratio has an effect on the services provided at Centers.

(e) CONFORMING AMENDMENTS.—

(1) DEFINITIONS.—Section 2199(3) of title 10, United States Code, is amended—

(A) by striking "regional center" and inserting "manufacturing extension center";

(B) by inserting "and best business practices" before "referred"; and

(C) by striking "25(a)" and inserting "25(b)".

(2) ENTERPRISE INTEGRATION INITIATIVE.—Section 3(a) of the Enterprise Integration Act of 2002 (15 U.S.C. 278g-5(a)) is amended by inserting "Hollings" before "Manufacturing Extension Partnership".

(3) ASSISTANCE TO STATE TECHNOLOGY PROGRAMS.—Section 26(a) of the National Institute of Standards and Technology Act (15 U.S.C. 278l(a)) is amended by striking "Centers program created" and inserting "Hollings Manufacturing Extension Partnership".

(f) SAVINGS PROVISIONS.—Notwithstanding the amendments made by subsections (a) and (b) of this section, the Secretary of Commerce may carry out section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) as that section was in effect on the day before the date of enactment of this Act, with respect to existing grants, agreements, cooperative agreements, or contracts, and with respect to applications for such items that are received by the Secretary prior to the date of enactment of this Act.

(g) PATENT RIGHTS.—The provisions of chapter 18 of title 35, United States Code, shall apply, to the extent not inconsistent with section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) and section 25 of that Act, to the promotion of technology from research by Centers under those sections, except for contracts for such specific technology extension or transfer services as may be specified by the Director of NIST or under other law.

TITLE VI—INNOVATION AND TECHNOLOGY TRANSFER

SEC. 601. INNOVATION CORPS.

(a) FINDINGS.—Congress makes the following findings:

(1) The National Science Foundation Innovation Corps (referred to in this section as the "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 National Science Foundation-funded research well beyond the laboratory.

(2) Through I-Corps, the Foundation invests in entrepreneurship and commercialization education, training, and mentoring that can ultimately lead to the practical deployment of technologies, products, processes, and services that improve the Nation's competitiveness, promote economic growth, and benefit society.

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

(4) By translating federally funded research to a commercial stage more quickly and efficiently, programs like the I-Corps create new jobs and companies, help solve societal problems, and provide tax-

payers with a greater return on their investment in research.

(5) The I-Corps program model has a strong record of success that should be replicated at all Federal science agencies.

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

(1) commercialization of federally funded research can improve the Nation's competitiveness, grow the economy, and benefit society;

(2) I-Corps is a useful tool in promoting the commercialization of federally funded research by training researchers funded by the Foundation in entrepreneurship and commercialization;

(3) I-Corps should continue to build a network of entrepreneurs, educators, mentors, and institutions and support specialized education and training;

(4) researchers other than those funded by the Foundation may also benefit from the education and training described in paragraph (3); and

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

(e) I-CORPS PROGRAM.—

(1) IN GENERAL.—In order to promote a strong, lasting foundation for the national innovation ecosystem and increase the positive economic and social impact of federally funded research, the Director of the Foundation shall set forth eligibility requirements and carry out a program to award grants for entrepreneurship and commercialization education, training, and mentoring.

(2) EXPANSION OF I-CORPS.—

(A) IN GENERAL.—The Director—

(i) shall encourage the development and expansion of I-Corps and other training programs that focus on professional development, including education in entrepreneurship and commercialization; and

(ii) may establish an agreement with another Federal science agency—

(I) to make researchers, students, and institutions funded by that agency eligible to participate in the I-Corps program; or

(II) to assist that agency with the design and implementation of its

own program that is similar to the I-Corps program.

(B) PARTNERSHIP FUNDING.—In negotiating an agreement with another Federal science agency under subparagraph (A)(ii), the Director shall require that Federal science agency to provide funding for—

(i) the training for researchers, students, and institutions selected for the I-Corps program; and

(ii) the locations that Federal science agency designates as regional and national infrastructure for science and engineering entrepreneurship.

(3) FOLLOW-ON GRANTS.—

(A) IN GENERAL.—Subject to subparagraph (B), the Director, in consultation with the Director of the Small Business Innovation Research Program, shall make funds available for competitive grants, including to I-Corps participants, to help support—

(i) prototype or proof-of-concept development; and

(ii) such activities as the Director considers necessary to build local, regional,

and national infrastructure for science and engineering entrepreneurship.

(B) LIMITATION.—Grants under subparagraph (A) shall be limited to participants with innovations that because of the early stage of development are not eligible to participate in a Small Business Innovation Research Program or a Small Business Technology Transfer Program.

(4) STATE AND LOCAL PARTNERSHIPS.—The Director may engage in partnerships with State and local governments, economic development organizations, and nonprofit organizations to provide access to the I-Corps program to support entrepreneurship education and training for researchers, students, and institutions under this subsection.

(5) REPORTS.—The Director shall submit to the appropriate committees of Congress a biennial report on I-Corps program efficacy, including metrics on the effectiveness of the program. Each Federal science agency participating in the I-Corps program or that implements a similar program under paragraph (2)(A) shall contribute to the report.

(6) DEFINITIONS.—In this subsection, the terms "Small Business Innovation Research Program" and "Small Business Technology Transfer Program" have the meanings given those terms in section 9 of the Small Business Act (15 U.S.C. 638).

SEC. 602. TRANSLATIONAL RESEARCH GRANTS.

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

(1) commercialization of federally funded research may benefit society and the economy; and

(2) not-for-profit organizations support the commercialization of federally funded research by providing useful business and technical expertise to researchers.

(b) COMMERCIALIZATION PROMOTION.—The Director of the Foundation shall continue to award grants on a competitive, merit-reviewed basis to eligible entities to promote the commercialization of federally funded research results.

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

(1) identifying Foundation-sponsored research and technologies that have the potential for accelerated commercialization;

(2) supporting prior or current Foundation-sponsored investigators, institutions of higher education, and non-profit organizations that partner with an institution of higher education in undertaking proof-of-concept work, including development of prototypes of technologies that are derived from Foundation-sponsored research and have potential market value;

(3) promoting sustainable partnerships between Foundation-funded institutions, industry, and other organizations within academia and the private sector with the purpose of accelerating the transfer of technology;

(4) developing multi-disciplinary innovation ecosystems which involve and are responsive to specific needs of academia and industry; and

(5) providing professional development, mentoring, and advice in entrepreneurship, project management, and technology and business development to innovators.

(d) ELIGIBILITY.—

(1) IN GENERAL.—The following organizations may be eligible for grants under this section:

(A) Institutions of higher education.

(B) Public or nonprofit technology transfer organizations.

(C) A nonprofit organization that partners with an institution of higher education.

(D) A consortia of 2 or more of the organizations described under subparagraphs (A) through (C).

(2) LEAD ORGANIZATIONS.—Any eligible organization under paragraph (1) may apply as a lead organization.

(c) APPLICATIONS.—An eligible entity seeking a grant under this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

SEC. 603. OPTICS AND PHOTONICS TECHNOLOGY INNOVATIONS.

(a) FINDINGS.—Congress makes the following findings:

(1) The 1998 National Research Council Report, "Harnessing Light" presented a comprehensive overview on the importance of optics and photonics to various sectors of the United States economy.

(2) In 2012, in response to increased coordination and investment by other nations, the National Research Council released a follow up study recom-

mending a national photonics initiative to increase collaboration and coordination among United States industry, Federal and State government, and academia to identify and further advance areas of photonics critical to regaining United States competitiveness and maintaining national security.

(3) Publicly-traded companies focused on optics and photonics in the United States enable more than $3 trillion in revenue annually.

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

(1) optics and photonics research and technologies promote United States global competitiveness in industry sectors, including telecommunications and information technology, energy, healthcare and medicine, manufacturing, and defense;

(2) Federal science agencies, industry, and academia should seek partnerships with each other to develop basic research in optics and photonics into more mature technologies and capabilities; and

(3) each Federal science agency, as appropriate, should—

(A) survey and identify optics and photonics-related programs within that Federal

science agency and share results with other Federal science agencies for the purpose of generating multiple applications and uses;

(B) partner with the private sector and academia to leverage knowledge and resources to maximize opportunities for innovation in optics and photonics;

(C) explore research and development opportunities, including Federal and private sector-sponsored internships, to ensure a highly trained optics and photonics workforce in the United States;

(D) encourage partnerships between academia and industry to promote improvement in the education of optics and photonics technicians at the secondary school level, undergraduate level, and 2-year college level, including through the Foundation's Advanced Technological Education program; and

(E) assess existing programs and explore alternatives to modernize photonics laboratory equipment in undergraduate institutions in the United States to facilitate critical hands-on learning.

SEC. 604. UNITED STATES CHIEF TECHNOLOGY OFFICER.

(a) SHORT TITLE.—This section may be cited as the "United States Chief Technology Officer Act".

(b) IN GENERAL.—Section 203 the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6612) is amended—

(1) by inserting "(b) ASSOCIATE DIRECTORS.—" before "The President is authorized" and indenting appropriately;

(2) by inserting "(a) IN GENERAL.—" before "There shall be" and indenting appropriately; and

(3) by adding at the end the following:

"(c) CHIEF TECHNOLOGY OFFICER.—Subject to subsection (b), the President is authorized to designate 1 of the Associate Directors under that subsection as a United States Chief Technology Officer.".

SEC. 605. NATIONAL RESEARCH COUNCIL STUDY ON TECHNOLOGY FOR EMERGENCY NOTIFICATIONS ON CAMPUSES.

(a) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall enter into an arrangement with the National Research Council to conduct and complete a study to identify and review technologies employed at institutions of higher education to provide ne-

tifications to students, faculty, and other personnel during emergency situations in accordance with law.

(b) CONTENTS.—The study shall address—

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

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

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

(c) REPORT REQUIRED.—Not later than 1 year after the date that the National Research Council enters into the arrangement under subsection (a), the Director of the Office of Science and Technology Policy shall submit to Congress a report on the study, including recommendations for addressing any limitations identified under subsection (b)(3).