

(Original Signature of Member)

113TH CONGRESS  
2D SESSION

**H. R. 4186**

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

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IN THE HOUSE OF REPRESENTATIVES

Mr. BUCSHON (for himself and Mr. SMITH of Texas) introduced the following bill; which was referred to the Committee on

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**A BILL**

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

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “Frontiers in Innovation, Research, Science, and Tech-  
6 nology Act of 2014” or the “FIRST Act of 2014”.

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

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

#### TITLE I—NATIONAL SCIENCE FOUNDATION

- Sec. 101. Authorization of appropriations.  
 Sec. 102. Findings.  
 Sec. 103. Policy objectives.  
 Sec. 104. Definitions.  
 Sec. 105. Accountability and transparency.  
 Sec. 106. Greater accountability in Federal funding for research.  
 Sec. 107. Obligation of major research equipment and facilities construction funds.  
 Sec. 108. Graduate student support.  
 Sec. 109. Permissible support.  
 Sec. 110. Expanding STEM opportunities.  
 Sec. 111. Prohibition.  
 Sec. 112. Review of education programs.  
 Sec. 113. Recompetition of awards.  
 Sec. 114. Sense of the Congress regarding industry investment in STEM education.  
 Sec. 115. Misrepresentation of research results.  
 Sec. 116. Citations supporting research grant applications.  
 Sec. 117. Research grant conditions.  
 Sec. 118. Computing resources study.  
 Sec. 119. Scientific breakthrough prizes.  
 Sec. 120. Rotating personnel.  
 Sec. 121. Report of the NSB Task Force on Administrative Burden.  
 Sec. 122. Sense of Congress regarding Innovation Corps.  
 Sec. 123. United States-Israeli cooperation.  
 Sec. 124. Sense of Congress regarding agricultural and drug interdisciplinary research.  
 Sec. 125. Brain Research through Advancing Innovative Neurotechnologies Initiative.

#### TITLE II—SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

- Sec. 201. Findings; sense of Congress.  
 Sec. 202. STEM Education Advisory Panel.  
 Sec. 203. Committee on STEM education.  
 Sec. 204. STEM Education Coordinating Office.

#### TITLE III—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

- Sec. 301. Authorization of appropriations.  
 Sec. 302. Regulatory efficiency.  
 Sec. 303. Public access to research articles and data.  
 Sec. 304. Strategic plan for advanced manufacturing research and development.  
 Sec. 305. Coordination of international science and technology partnerships.  
 Sec. 306. Alternative research funding models.  
 Sec. 307. Amendments to prize competitions.

## TITLE IV—INNOVATION AND TECHNOLOGY TRANSFER

## Subtitle A—NIST Reauthorization

- Sec. 401. Authorization of appropriations.
- Sec. 402. Standards and conformity assessment and other transaction authority.
- Sec. 403. Visiting Committee on Advanced Technology.
- Sec. 404. Police and security authority.
- Sec. 405. International activities.
- Sec. 406. Education and outreach.
- Sec. 407. Programmatic planning report.
- Sec. 408. Assessments by the National Research Council.
- Sec. 409. Hollings Manufacturing Extension Partnership.
- Sec. 410. Elimination of obsolete reports.
- Sec. 411. Modifications to grants and cooperative agreements.

## Subtitle B—Innovative Approaches to Technology Transfer

- Sec. 421. Innovative approaches to technology transfer.

TITLE V—NETWORKING AND INFORMATION TECHNOLOGY  
RESEARCH AND DEVELOPMENT

- Sec. 501. Short title.
- Sec. 502. Program planning and coordination.
- Sec. 503. Large-scale research in areas of national importance.
- Sec. 504. Cyber-physical systems.
- Sec. 505. Cloud computing services for research.
- Sec. 506. National Coordination Office.
- Sec. 507. Improving networking and information technology education.
- Sec. 508. Conforming and technical amendments.

1 **SEC. 2. DEFINITIONS.**

2 In this Act—

3 (1) the term “STEM” means the subjects of  
4 science, technology, engineering, and mathematics;  
5 and

6 (2) the term “STEM education” means edu-  
7 cation in the subjects of STEM, including other aca-  
8 demic subjects that build on these disciplines such  
9 as computer science and other academic subjects  
10 that a State identifies as important to the workforce  
11 of the State.

1       **TITLE I—NATIONAL SCIENCE**  
2                                   **FOUNDATION**

3   **SEC. 101. AUTHORIZATION OF APPROPRIATIONS.**

4       (a) FISCAL YEAR 2014.—

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

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

10           (A) \$5,808,918,000 shall be made avail-  
11       able to carry out research and related activities,  
12       including—

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

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

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

20           (iv) \$1,265,840,000 for the Geo-  
21       sciences Directorate;

22           (v) \$1,367,940,000 for the Mathe-  
23       matical and Physical Science Directorate;

24           (vi) \$150,000,000 for the Social, Be-  
25       havioral, and Economics Directorate;

1 (vii) \$400,000,000 for the Inter-  
2 national and Integrative Activities Direc-  
3 torate; and

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

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

8 (C) \$200,000,000 shall be made available  
9 for major research equipment and facilities con-  
10 struction;

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

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

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

17 (b) FISCAL YEAR 2015.—

18 (1) IN GENERAL.—There are authorized to be  
19 appropriated to the Foundation \$7,279,496,770 for  
20 fiscal year 2015.

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

23 (A) \$5,900,496,770 shall be made avail-  
24 able to carry out research and related activities,  
25 including—

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

3 (ii) \$963,186,770 for the Computer  
4 and Information Science and Engineering  
5 Directorate;

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

8 (iv) \$1,265,840,000 for the Geo-  
9 sciences Directorate;

10 (v) \$1,399,400,000 for the Mathe-  
11 matical and Physical Science Directorate;

12 (vi) \$150,000,000 for the Social, Be-  
13 havioral, and Economics Directorate;

14 (vii) \$400,000,000 for the Inter-  
15 national and Integrative Activities Direc-  
16 torate; and

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

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

21 (C) \$203,000,000 shall be made available  
22 for major research equipment and facilities con-  
23 struction;

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

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

3 (F) \$15,200,000 shall be made available  
4 for the Office of Inspector General.

5 **SEC. 102. FINDINGS.**

6 Congress finds the following:

7 (1) Taxpayer-supported research investments  
8 administered by the Foundation should serve the na-  
9 tional interest.

10 (2) The Foundation has made major contribu-  
11 tions for more than 50 years to strengthen and sus-  
12 tain the Nation's academic research enterprise.

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

17 (4) Providing support for basic research is an  
18 investment in our Nation's future security and eco-  
19 nomic prosperity.

20 (5) Congress applauds the Foundation's rec-  
21 ognition that wise stewardship of taxpayer dollars is  
22 necessary to maintain and ensure the public's trust  
23 for funding of fundamental scientific and engineer-  
24 ing research.

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

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

9           (8) Redundant regulations and reporting re-  
10          quirements imposed by Federal agencies on research  
11          institutions and researchers increase costs by tens of  
12          millions of dollars annually.

13          (9) The Foundation carries out important func-  
14          tions by supporting basic research in all science and  
15          engineering disciplines and in supporting science,  
16          mathematics, engineering, and technology education  
17          at all levels.

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



1           (11) The Foundation should meet the highest  
2 standards of efficiency, transparency, and account-  
3 ability in its stewardship of public funds.

4           (12) The Foundation is charged with the re-  
5 sponsibilities—

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

9                 (B) to initiate, support, and conduct basic  
10 scientific research and to appraise the impact of  
11 research on industrial development and the gen-  
12 eral welfare;

13                (C) to initiate, support, and conduct sci-  
14 entific research activities in connection with  
15 matters relating to the national defense, at the  
16 request of the Secretary of Defense;

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

19                (E) to foster the interchange of scientific  
20 information among scientists and across sci-  
21 entific disciplines;

22                (F) to evaluate scientific research pro-  
23 grams undertaken by agencies of the Federal  
24 Government, and to correlate the Foundation's  
25 scientific research with that undertaken by indi-

1           viduals and by public and private research  
2           groups;

3                   (G) to communicate effectively to Amer-  
4           ican citizens the relevance of public investments  
5           in scientific discovery and technological innova-  
6           tion to the Nation's security, prosperity, and  
7           welfare; and

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

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

16           (14) Commercial application of the results of  
17           Federal investment in basic and computing science  
18           is consistent with longstanding United States tech-  
19           nology transfer policy for cybersecurity and other  
20           homeland security applications, because of the ur-  
21           gent needs of commercial, academic, and individual  
22           users, as well as the Federal and State Govern-  
23           ments.

1 **SEC. 103. POLICY OBJECTIVES.**

2 In allocating resources made available under this  
3 title, the Foundation shall have the following policy objec-  
4 tives:

5 (1) To renew and maintain the Nation's inter-  
6 national leadership in science and technology by—

7 (A) increasing the national investment in  
8 general scientific research and increasing inter-  
9 disciplinary investment in strategic areas vital  
10 to the national interest;

11 (B) balancing the Nation's research port-  
12 folio among the life sciences, mathematics, the  
13 physical sciences, computer and information  
14 science, geosciences, engineering, and social, be-  
15 havioral, and economic sciences, all of which are  
16 important for the continued development of en-  
17 abling technologies necessary for sustained eco-  
18 nomic competitiveness;

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

22 (D) expanding the pool of scientists and  
23 engineers in the United States, including among  
24 segments of the population that have been his-  
25 torically underrepresented in STEM fields; and

1 (E) modernizing the Nation's research in-  
2 frastructure and establishing and maintaining  
3 cooperative international relationships with pre-  
4 mier research institutions.

5 (2) To increase overall workforce skills by—

6 (A) improving the quality of STEM edu-  
7 cation and tools provided both inside and out-  
8 side of the classroom, particularly in kinder-  
9 garten through grade 12; and

10 (B) expanding STEM training opportuni-  
11 ties at institutions of higher education.

12 (3) To strengthen innovation by expanding the  
13 focus of competitiveness and innovation at the re-  
14 gional and local level.

15 **SEC. 104. DEFINITIONS.**

16 In this title:

17 (1) BOARD.—The term “Board” means the Na-  
18 tional Science Board.

19 (2) DIRECTOR.—The term “Director” means  
20 the Director of the Foundation.

21 (3) FOUNDATION.—The term “Foundation”  
22 means the National Science Foundation established  
23 under section 2 of the National Science Foundation  
24 Act of 1950 (42 U.S.C. 1861).

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

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

11           (6) UNITED STATES.—The term “United  
12 States” means the several States, the District of Co-  
13 lumbia, the Commonwealth of Puerto Rico, the Vir-  
14 gin Islands, Guam, American Samoa, the Common-  
15 wealth of the Northern Mariana Islands, and any  
16 other territory or possession of the United States.

17 **SEC. 105. ACCOUNTABILITY AND TRANSPARENCY.**

18 It is the sense of Congress that—

19           (1) sustained, predictable Federal funding is es-  
20 sential to United States leadership in science and  
21 technology;

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

1           (3) the Foundation should commit itself fully to  
2           transparency and accountability and to clear, con-  
3           sistent public communication regarding the national  
4           interest for each Foundation-awarded grant and co-  
5           operative agreement.

6 **SEC. 106. GREATER ACCOUNTABILITY IN FEDERAL FUND-**  
7 **ING FOR RESEARCH.**

8           (a) STANDARD FOR AWARD OF GRANTS.—The Foun-  
9           dation shall award Federal funding for basic research and  
10          education in the sciences through a new research grant  
11          or cooperative agreement only if an affirmative determina-  
12          tion is made by the Foundation under subsection (b) and  
13          written justification relating thereto is published under  
14          subsection (c).

15          (b) DETERMINATION.—A determination referred to  
16          in subsection (a) is a determination by the responsible  
17          Foundation official as to why the research grant or coop-  
18          erative agreement—

19                 (1) is worthy of Federal funding; and

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

22                         (A) increased economic competitiveness in  
23                         the United States;

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

1 (C) development of a STEM workforce and  
2 increased public scientific literacy in the United  
3 States;

4 (D) increased partnerships between aca-  
5 demia and industry in the United States;

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

8 (F) promotion of the progress of science in  
9 the United States.

10 (c) WRITTEN JUSTIFICATION.—Public announce-  
11 ment of each award of Federal funding described in sub-  
12 section (a) shall include a written justification from the  
13 responsible Foundation official that a grant or cooperative  
14 agreement meets the requirements of subsection (b).

15 (d) IMPLEMENTATION.—A determination under sub-  
16 section (b) shall be made after a research grant or cooper-  
17 ative agreement proposal has satisfied the Foundation's  
18 reviews for Merit and Broader Impacts. Nothing in this  
19 section shall be construed as altering the Foundation's in-  
20 tellectual merit or broader impacts criteria for evaluating  
21 grant applications.

22 (e) POLICY.—Not later than 6 months after the date  
23 of enactment of this Act, the Board shall develop and the  
24 Director shall implement a policy for carrying out sub-  
25 sections (a), (b), and (c) that provides for educating pro-

1 fessional staff at the Foundation and applicants for Foun-  
2 dation research grants on the policies developed.

3 (f) NATIONAL SCIENCE BOARD REPORT.—Not later  
4 than 6 months after the date of enactment of this Act,  
5 the Board shall transmit a report to the Committee on  
6 Science, Space, and Technology of the House of Rep-  
7 resentatives and to the Committee on Commerce, Science,  
8 and Transportation of the Senate describing plans for im-  
9 plementing subsections (a), (b), (c), and (d).

10 (g) ANNUAL REPORT.—

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

17 (2) NATIONAL SCIENCE BOARD REVIEW.—Not  
18 later than 30 days after the transmission of an an-  
19 nual report under this subsection, the Board shall  
20 transmit in writing its review of the findings of the  
21 Director's report to the Committee on Science,  
22 Space, and Technology of the House of Representa-  
23 tives and the Committee on Commerce, Science, and  
24 Transportation of the Senate.



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

3 No funds may be obligated for a fiscal year for a con-  
4 struction project for the Foundation that has not com-  
5 menced before the date of enactment of this Act until 30  
6 days after the report required with respect to each such  
7 fiscal year under section 14(a)(2) of the National Science  
8 Foundation Authorization Act of 2002 (42 U.S.C. 1862n-  
9 4(a)(2)) is transmitted to the Congress.

10 **SEC. 108. GRADUATE STUDENT SUPPORT.**

11 Section 510(b) of the America COMPETES Reau-  
12 thorization Act of 2010 (42 U.S.C. 1869 note) is amended  
13 to read as follows:

14 “(b) EQUAL TREATMENT OF IGERT AND GRF.—

15 “(1) RATE OF FUNDING INCREASES.—For any  
16 fiscal year, the Director may only increase funding  
17 for the Foundation’s Graduate Research Fellowship  
18 program (or any successor thereto) over the previous  
19 fiscal year’s funding level at the same rate as a cor-  
20 responding funding increase for the Foundation’s  
21 Integrative Graduate Education and Research  
22 Traineeship program (or any successor thereto).

23 “(2) ESSENTIAL ELEMENTS OF IGERT.—The  
24 essential elements of the Foundation’s Integrative  
25 Graduate Education and Research Traineeship pro-

1       gram (or any successor thereto) shall be maintained,  
2       including—

3               “(A) collaborative research that transcends  
4       traditional disciplinary boundaries to solve large  
5       and complex research problems of significant  
6       scientific and societal importance; and

7               “(B) providing students the opportunity to  
8       become leaders in the science and engineering  
9       of the future.”.

10   **SEC. 109. PERMISSIBLE SUPPORT.**

11       A grant made by the Education and Human Re-  
12   sources Directorate to support informal education may be  
13   used—

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

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

21                       (B) incentives and stipends for teachers  
22       and instructional leaders who are involved in  
23       assisting students and preparing students for  
24       such competitions, if such activities fall outside

1 the regular duties and responsibilities of such  
2 teachers and instructional leaders; and

3 (2) to broaden secondary school students' ac-  
4 cess to, and interest in, careers that require aca-  
5 demic preparation in STEM subjects.

6 **SEC. 110. EXPANDING STEM OPPORTUNITIES.**

7 (a) IN GENERAL.—Within the Directorate for Edu-  
8 cation and Human Resources (or any successor thereto),  
9 under existing programs targeting broadening participa-  
10 tion such as, but not limited to, Innovative Technology Ex-  
11 periences for Students and Teachers, Advancing Informal  
12 Stem Learning, and ADVANCE, the Director shall pro-  
13 vide grants on a merit-reviewed, competitive basis for re-  
14 search on programming that engages underrepresented  
15 students in grades kindergarten through 8 in STEM in  
16 order to prepare these students to pursue undergraduate  
17 and graduate degrees or careers in STEM.

18 (b) USE OF FUNDS.—

19 (1) IN GENERAL.—Grants awarded under this  
20 section shall be used toward research to advance the  
21 engagement of underrepresented students grades  
22 kindergarten through 8 in STEM through providing  
23 before-school, after-school, out-of-school, or summer  
24 activities, including programs (if applicable to the  
25 target population) provided in a single-gender envi-

1       ronment, that are designed to encourage interest,  
2       engagement, and skills development of underrep-  
3       resented students in STEM. Such research shall be  
4       conducted in learning environments that actively  
5       provide programming to underrepresented students  
6       in grades kindergarten through 8 in STEM.

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

9           (A) the provision of programming de-  
10       scribed in subsection (a) for the purpose of re-  
11       search;

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

15          (C) exposure of underrepresented youth to  
16       role models in the fields of STEM and nearpeer  
17       mentors;

18          (D) training of informal learning educators  
19       and youth-serving professionals using evidence-  
20       based methods consistent with the target stu-  
21       dent population being served;

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

1 designed to help students make real-world con-  
2 nections to STEM content activities;

3 (F) the attendance of underrepresented  
4 youth at events, competitions, and academic  
5 programs to provide content expertise and en-  
6 courage career exposure in STEM;

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

9 (H) innovative strategies to engage under-  
10 represented youth, such as using leadership  
11 skill outcome measures to encourage youth with  
12 the confidence to pursue STEM coursework and  
13 academic study;

14 (I) coordination with STEM-rich environ-  
15 ments, including other nonprofit, nongovern-  
16 mental organizations, classroom and out-of-  
17 classroom settings, institutions of higher edu-  
18 cation, vocational facilities, corporations, muse-  
19 ums, or science centers; and

20 (J) the acquisition of instructional mate-  
21 rials or technology-based tools to conduct appli-  
22 cable grant activity.

23 (c) APPLICATION.—An applicant seeking funding  
24 under the section shall submit an application at such time,  
25 in such manner, and containing such information as may

1 be required. The application shall include, at a minimum,  
2 the following:

3 (1) A description of the target audience to be  
4 served by the program, including an explanation and  
5 justification for why the target group ought to be  
6 considered as underrepresented students in one or  
7 more of the STEM fields.

8 (2) A description of the process for recruitment  
9 and selection of students.

10 (3) A description of how such research activity  
11 may inform programming that engages underrep-  
12 resented students in grades kindergarten through 8  
13 in STEM.

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

17 (5) An evaluation plan that includes, at a min-  
18 imum, the use of outcome-oriented measures to de-  
19 termine the impact and efficacy of programming  
20 being researched.

21 (d) AWARDS.—In awarding grants under this section,  
22 the Director shall give priority to applicants which, for the  
23 purpose of grant activity, include or partner with a non-  
24 profit, nongovernmental organization that has extensive

1 experience and expertise in increasing the participation of  
2 underrepresented students in STEM.

3 (e) EVALUATIONS.—Each applicant that receives  
4 funds under this section shall provide, at the conclusion  
5 of every year during which the funds are received, an eval-  
6 uation in a form prescribed by the Director. This evalua-  
7 tion shall include both formative and summative evalua-  
8 tion.

9 (f) ACCOUNTABILITY AND DISSEMINATION.—

10 (1) EVALUATION REQUIRED.—Not later than 3  
11 years after the date of enactment of this Act, the  
12 Director shall evaluate the program established  
13 under this section. In addition to evaluating the ef-  
14 fectiveness of the program, such evaluation shall—

15 (A) use a common set of benchmarks and  
16 assessment tools to identify best practices and  
17 materials developed or demonstrated by the re-  
18 search; and

19 (B) to the extent practicable, combine the  
20 research resulting from the grant activity with  
21 the current research on serving underrep-  
22 resented students in grades kindergarten  
23 through 8.

24 (2) REPORT ON EVALUATIONS.—Not later than  
25 180 days after the completion of the evaluation

1 under paragraph (1), the Director shall submit to  
2 Congress and make widely available to the public a  
3 report that includes—

4 (A) the results of the evaluation; and

5 (B) any recommendations for administra-  
6 tive and legislative action that could optimize  
7 the effectiveness of the program.

8 (g) COORDINATION.—In carrying out this section, the  
9 Director shall consult, cooperate, and coordinate, to en-  
10 hance program effectiveness and to avoid duplication, with  
11 the programs and policies of other relevant Federal agen-  
12 cies.

13 **SEC. 111. PROHIBITION.**

14 The Foundation may not implement any STEM edu-  
15 cation program and activity changes proposed for the  
16 Foundation in the budget for fiscal year 2014 transmitted  
17 to Congress under section 1105(a) of title 31, United  
18 States Code.

19 **SEC. 112. REVIEW OF EDUCATION PROGRAMS.**

20 (a) IN GENERAL.—The Director shall review the edu-  
21 cation programs of the Foundation that are in operation  
22 as of the date of enactment of this Act to determine—

23 (1) whether any of such programs duplicate tar-  
24 get groups, services provided, fields of focus, or ob-  
25 jectives; and



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

3           (b) REPORT.—Not later than 1 year after the date  
4 of enactment of this Act, and annually thereafter as part  
5 of the annual budget submission to Congress, the Director  
6 shall complete a report on the review carried out under  
7 this section and shall submit the report to the Committee  
8 on Science, Space, and Technology and the Committee on  
9 Appropriations of the House of Representatives, and to  
10 the Committee on Commerce, Science, and Transpor-  
11 tation, the Committee on Health, Education, Labor, and  
12 Pensions, and the Committee on Appropriations of the  
13 Senate.

14 **SEC. 113. RECOMPETITION OF AWARDS.**

15           (a) FINDINGS.—The Congress finds that—

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

19           (2) the majority of Foundation-funded  
20           multiuser facilities have transitioned to five-year co-  
21           operative agreements, and every five years the pro-  
22           gram officer responsible for the facility makes a rec-  
23           ommendation to the National Science Board as to  
24           the renewal, recompetition, or termination of sup-  
25           port for the facility; and

1           (3) requiring the recompetition of expiring  
2 awards is based on the conviction that competition  
3 is most likely to ensure the effective stewardship of  
4 Foundation funds for supporting research and edu-  
5 cation.

6           (b) RECOMPETITION.—The Director shall ensure that  
7 the system for recompetition of Maintenance and Oper-  
8 ations of facilities, equipment and instrumentation is fair,  
9 consistent, and transparent and is applied in a manner  
10 that renews grants and awards in a timely manner. The  
11 Director shall periodically evaluate whether the criteria of  
12 the system are being applied in a manner that is trans-  
13 parent, reliable, and valid.

14 **SEC. 114. SENSE OF THE CONGRESS REGARDING INDUSTRY**

15 **INVESTMENT IN STEM EDUCATION.**

16 It is the sense of Congress that—

17           (1) in order to bolster the STEM workforce  
18 pipeline, many industry sectors are becoming in-  
19 volved in K-12 initiatives and supporting under-  
20 graduate and graduate work in STEM subject areas  
21 and fields;

22           (2) partnerships with education providers,  
23 STEM focused competitions, and other opportunities  
24 have become important aspects of private sector ef-  
25 forts to strengthen the STEM workforce;

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

5           (4) successful private sector STEM initiatives,  
6 as reflected by measurements of relevant outcomes,  
7 should be encouraged and supported by the Founda-  
8 tion.

9 **SEC. 115. MISREPRESENTATION OF RESEARCH RESULTS.**

10          (a) **CERTIFICATION.**—As a condition of receiving a  
11 research grant from the Foundation, a principal investi-  
12 gator shall sign a statement certifying that the findings  
13 and conclusions of any article authored by such principal  
14 investigator, using the results of the research conducted  
15 under the grant, that is published in a peer-reviewed publi-  
16 cation, otherwise made publicly available, or incorporated  
17 in an application for a research grant or grant extension  
18 from the Foundation, will contain no falsification or fab-  
19 rication and will be free of any plagiarism.

20          (b) **INVESTIGATION.**—The Inspector General of the  
21 Foundation shall investigate suspected violations of a cer-  
22 tification signed under subsection (a), and shall submit to  
23 the Director the results of such investigation, along with  
24 a recommendation with respect to whether a violation has  
25 occurred.

1 (c) DETERMINATION.—Based on the results of the in-  
2 vestigation conducted under subsection (b), the Director  
3 shall make a determination of whether the principal inves-  
4 tigator knowingly violated a certification signed pursuant  
5 to subsection (a).

6 (d) 10-Year BAN.—If the Director determines under  
7 subsection (c) that a principal investigator knowingly vio-  
8 lated a certification signed pursuant to subsection (a), the  
9 Foundation shall not, for a period determined by the Di-  
10 rector of no less than 5 years and no more than 10 years,  
11 provide a research grant or research extension to such  
12 principal investigator, except as provided in subsection (f).

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

17 (f) APPEAL.—The Director shall establish a process  
18 by which a principal investigator may, within 30 days after  
19 receipt of a notification under subsection (e), appeal a de-  
20 termination made under subsection (c) and a ban under  
21 subsection (d). If the Director concludes that the deter-  
22 mination under subsection (c) was not correct, the Direc-  
23 tor may reduce or eliminate the period of the ban under  
24 subsection (d) based on information provided in the appeal  
25 process under this subsection. A ban may not be reduced

1 under this subsection to a period less than 5 years, unless  
2 it is eliminated.

3 (g) PUBLICATION.—The Director shall not make  
4 publicly available any determination made under sub-  
5 section (c) that a knowing violation has occurred until  
6 after the later of the expiration of the 30-day period de-  
7 scribed in subsection (f) or the end of an appeal process  
8 under subsection (f). At such time, the Director shall  
9 make publicly available any such determination, which  
10 shall include the name of the principal investigator.

11 **SEC. 116. CITATIONS SUPPORTING RESEARCH GRANT AP-**  
12 **PLICATIONS.**

13 The portion of a peer-reviewed research grant appli-  
14 cation to the Foundation supporting the credentials of the  
15 principal investigator may not include more than 5 cita-  
16 tions to articles published by the principal investigator in  
17 a peer-reviewed publication. The Foundation may not con-  
18 sider more than 5 citations to such articles in determining  
19 whether to award such a research grant.

20 **SEC. 117. RESEARCH GRANT CONDITIONS.**

21 The Foundation shall establish procedures to ensure  
22 that—

23 (1) a research grant awarded by the Founda-  
24 tion to a principal investigator does not duplicate the

1 scientific aims and scope of any grant awarded to  
2 the same investigator by another Federal agency;

3 (2) a principal investigator includes in any ap-  
4 plication for a research grant awarded by the Foun-  
5 dation a list of all Federal research funding received  
6 by the principal investigator, as well as any funding  
7 that is being requested as of that time;

8 (3) unpublished research results used to sup-  
9 port a grant proposal made to the Foundation do  
10 not include any knowing misrepresentations of data;

11 (4) principal investigators who have received  
12 more than 5 years of Foundation funding at any  
13 point in their careers, other than graduate and post-  
14 doctoral traineeship awards, are only awarded addi-  
15 tional research grants by the Foundation if they will  
16 be contributing original, creative, and transformative  
17 research under the grant; and

18 (5) principal investigators who receive Founda-  
19 tion research grant funding under more than one  
20 grant at the same time have sufficient resources to  
21 conduct the proposed research under each of those  
22 grants appropriately under the terms of the grant.

23 **SEC. 118. COMPUTING RESOURCES STUDY.**

24 Not later than 1 year after the date of enactment  
25 of this Act, the Comptroller General shall transmit to the

1 Congress a report detailing the results of a study on the  
2 use of scientific computing resources funded by the Foun-  
3 dation at institutions of higher education. Such study shall  
4 assess—

5 (1) efficiencies that can be achieved by using  
6 shared scientific computing resources for projects  
7 that have similar scientific computing requirements  
8 or projects where specialized software solutions could  
9 be shared with other practitioners in the scientific  
10 community;

11 (2) efficiencies that can be achieved by using  
12 shared hardware that can be cost effectively pro-  
13 cured from cloud computing services;

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

17 (4) cost savings that could be achieved by po-  
18 tential sharing of scientific computing resources  
19 across all Foundation grants.

20 **SEC. 119. SCIENTIFIC BREAKTHROUGH PRIZES.**

21 The Director shall place a high priority on designing  
22 and administering pilot programs for scientific break-  
23 through prizes, in conjunction with private entities, that  
24 are consistent with Office of Science and Technology Pol-  
25 icy guidelines. Breakthrough prizes shall center around

1 technological breakthroughs that are of strategic impor-  
2 tance to the Nation, and have the capacity to spur new  
3 economic growth.

4 **SEC. 120. ROTATING PERSONNEL.**

5       The Director shall ensure that the cost to the Foun-  
6 dation of employing individuals who are not permanent  
7 employees of the Foundation, including individuals em-  
8 ployed pursuant to the Intergovernmental Personnel Act  
9 of 1970 (42 U.S.C. 4701 note), does not exceed 110 per-  
10 cent of the cost of employing permanent employees of the  
11 Foundation to perform the same functions.

12 **SEC. 121. REPORT OF THE NSB TASK FORCE ON ADMINIS-**  
13 **TRATIVE BURDEN.**

14       The National Science Board Task Force on Adminis-  
15 trative Burden shall provide a report to Congress on its  
16 activities, findings, and recommendations not later than  
17 90 days after the date of enactment of this Act.

18 **SEC. 122. SENSE OF CONGRESS REGARDING INNOVATION**  
19 **CORPS.**

20       It is the sense of Congress that—

21           (1) the Foundation's Innovation Corps (I-  
22 Corps) was established to foster a national innova-  
23 tion ecosystem by encouraging institutions, sci-  
24 entists, engineers, and entrepreneurs to identify and  
25 explore the innovation and commercial potential of



1 Foundation-funded research well beyond the labora-  
2 tory;

3 (2) the Foundation's I-Corps includes invest-  
4 ment in entrepreneurship and commercialization  
5 education, training, and mentoring, ultimately lead-  
6 ing to the practical deployment of technologies,  
7 products, processes, and services that improve the  
8 Nation's competitiveness, promote economic growth,  
9 and benefit society; and

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

15 **SEC. 123. UNITED STATES-ISRAELI COOPERATION.**

16 Section 917(a) of the Energy Independence and Se-  
17 curity Act of 2007 (42 U.S.C. 17337(a)) is amended—

18 (1) by striking “and” at the end of paragraph  
19 (6);

20 (2) by striking the period at the end of para-  
21 graph (7) and inserting “; and”; and

22 (3) by adding at the end the following:

23 “(8) the National Science Foundation of the  
24 United States should collaborate with the Israel  
25 Science Foundation.”.

1 **SEC. 124. SENSE OF CONGRESS REGARDING AGRICUL-**  
2 **TURAL AND DRUG INTERDISCIPLINARY RE-**  
3 **SEARCH.**

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

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

9 (2) interdisciplinary research to understand im-  
10 portant basic research problems in the plant  
11 sciences.

12 **SEC. 125. BRAIN RESEARCH THROUGH ADVANCING INNO-**  
13 **VATIVE NEUROTECHNOLOGIES INITIATIVE.**

14 The Foundation shall support research activities re-  
15 lated to the Brain Research through Advancing Innovative  
16 Neurotechnologies Initiative.

17 **TITLE II—SCIENCE, TECH-**  
18 **NOLOGY, ENGINEERING, AND**  
19 **MATHEMATICS**

20 **SEC. 201. FINDINGS; SENSE OF CONGRESS.**

21 (a) FINDINGS.—Congress finds the following:

22 (1) According to the National Science Board's  
23 Science and Engineering Indicators, the science and  
24 engineering workforce has shown sustained growth  
25 for more than half a century, and workers with

1 science and engineering degrees tend to earn more  
2 than comparable workers in other fields.

3 (2) According to the Program for International  
4 Student Assessment 2012 results, America lags be-  
5 hind many other nations in STEM education. Amer-  
6 ican students rank 21st in science and 26th in  
7 mathematics.

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

11 (4) According to a 2007 report from the De-  
12 partment of Labor, industries and firms dependent  
13 on a strong science and mathematics workforce have  
14 launched a variety of programs that target K-12  
15 students and undergraduate and graduate students  
16 in STEM fields.

17 (5) The Federal Government spends nearly \$3  
18 billion annually on STEM education related program  
19 and activities, but encouraging STEM education ac-  
20 tivities beyond the scope of the Federal Government,  
21 including privately sponsored competitions and pro-  
22 grams in our schools, is crucial to the future tech-  
23 nical and economic competitiveness of the United  
24 States.

1 (b) SENSE OF CONGRESS.—It is the sense of Con-  
2 gress that—

3 (1) more effective coordination and adoption of  
4 performance measurement based on objective out-  
5 comes for federally supported STEM programs is  
6 needed;

7 (2) leveraging private and nonprofit invest-  
8 ments in STEM education will be essential to  
9 strengthening the Federal STEM portfolio;

10 (3) strengthening the Federal STEM portfolio  
11 may require program consolidations and termi-  
12 nations, but such changes should be based on evi-  
13 dence with stakeholder input;

14 (4) the President's fiscal year 2014 budget pro-  
15 posal did not adequately explain proposed program  
16 consolidations and terminations in the Federal  
17 STEM portfolio, nor did it elicit stakeholder input  
18 and outside expertise, resulting in the need for Con-  
19 gress to limit the Administration's implementation  
20 of that proposal; and

21 (5) coordinating STEM programs and activities  
22 across the Federal Government in order to limit du-  
23 plication and engage stakeholders in STEM pro-  
24 grams and related activities for which objective out-  
25 comes can be measured will bolster results of Fed-

1 eral STEM education programs, improve the return  
2 on taxpayers' investments in STEM education pro-  
3 grams, and in turn strengthen the United States  
4 economy.

5 **SEC. 202. STEM EDUCATION ADVISORY PANEL.**

6 (a) ESTABLISHMENT.—The President shall establish  
7 or designate a STEM Education Advisory Panel that in-  
8 corporates key stakeholders from the education and indus-  
9 try sectors within the President's Council of Advisors on  
10 Science and Technology.

11 (b) QUALIFICATIONS.—The Advisory Panel estab-  
12 lished or designated by the President under subsection (a)  
13 shall consist primarily of members from academic institu-  
14 tions and industry and shall include in-school, out-of-  
15 school, and informal educational practitioners. Members  
16 of the Advisory Panel shall be qualified to provide advice  
17 and information on STEM education research, develop-  
18 ment, training, implementation, interventions, professional  
19 development, or workforce needs or concerns. In selecting  
20 or designating an Advisory Panel, the President may also  
21 seek and give consideration to recommendations from the  
22 Congress, industry, the scientific community (including  
23 the National Academy of Sciences, scientific professional  
24 societies, and academia), State and local governments, and  
25 other appropriate organizations.

- 1 (c) DUTIES.—The Advisory Panel shall advise the  
2 President, the committee on STEM education established  
3 under the National Science and Technology Council, and  
4 the STEM Education Coordinating Office on matters re-  
5 lating to STEM education, and shall each year provide  
6 general guidance to every Federal agency with STEM edu-  
7 cation programs or activities, including in the preparation  
8 of requests for appropriations for activities related to  
9 STEM education. The Advisory Panel shall also assess—
- 10 (1) trends and developments in STEM edu-  
11 cation;
  - 12 (2) progress made in STEM education both in-  
13 side and outside of the classroom;
  - 14 (3) criteria for evaluating the effectiveness of  
15 Federal STEM education programs and activities;
  - 16 (4) ways to encourage public private-partner-  
17 ships to strengthen STEM education;
  - 18 (5) ways to leverage private and nonprofit in-  
19 vestments and utilize expertise resulting from  
20 STEM-related competitions to help build the STEM  
21 education and workforce pipeline;
  - 22 (6) ways to incorporate workforce needs into  
23 Federal STEM education programs;
  - 24 (7) the management, coordination, implementa-  
25 tion, and activities of the STEM Education Coordi-

1 nating Office and the committee on STEM edu-  
2 cation established under the National Science and  
3 Technology Council; and

4 (8) whether societal and workforce concerns are  
5 adequately addressed by current Federal STEM  
6 education programs and activities.

7 (d) REPORTS.—The Advisory Panel shall report, not  
8 less frequently than once every 2 fiscal years, to the Presi-  
9 dent and Congress on its assessments under subsection  
10 (c) and its recommendations for ways to improve Federal  
11 STEM education programs. The first report under this  
12 subsection shall be submitted within 1 year after the date  
13 of enactment of this Act.

14 (e) TRAVEL EXPENSES OF NON-FEDERAL MEM-  
15 BERS.—Non-Federal members of the Advisory Panel,  
16 while attending meetings of the Advisory Panel or while  
17 otherwise serving at the request of the head of the Advi-  
18 sory Panel away from their homes or regular places of  
19 business, may be allowed travel expenses, including per  
20 diem in lieu of subsistence, as authorized by section 5703  
21 of title 5, United States Code, for individuals in the Gov-  
22 ernment serving without pay. Nothing in this subsection  
23 shall be construed to prohibit members of the Advisory  
24 Panel who are officers or employees of the United States

1 from being allowed travel expenses, including per diem in  
2 lieu of subsistence, in accordance with existing law.

3 **SEC. 203. COMMITTEE ON STEM EDUCATION.**

4 Section 101(b) of the America COMPETES Reau-  
5 thorization Act of 2010 (42 U.S.C. 6621(b)) is amended  
6 to read as follows:

7 “(b) RESPONSIBILITIES.—The committee described  
8 in subsection (a) shall develop recommendations for the  
9 STEM Education Coordinating office to consider. These  
10 recommendations shall focus on—

11 “(1) priority areas for Federal funding in  
12 STEM education, which may include student en-  
13 gagement, student retention, informal education,  
14 and teaching;

15 “(2) access to innovations and expertise derived  
16 from agency activities across the Federal Govern-  
17 ment;

18 “(3) significant links among K-12 education,  
19 higher education, and industry; and

20 “(4) the teaching of innovation and entrepre-  
21 neurship as part of STEM education activities.”.

22 **SEC. 204. STEM EDUCATION COORDINATING OFFICE.**

23 (a) ESTABLISHMENT.—The Director of the National  
24 Science Foundation shall establish within the Directorate  
25 for Education and Human Resources a STEM Education



1 Coordinating Office, which shall have a Director and staff  
2 that shall include career employees detailed from Federal  
3 agencies that fund STEM education programs and activi-  
4 ties.

5 (b) RESPONSIBILITIES.—The STEM Education Co-  
6 ordinating Office shall—

7 (1) coordinate the STEM education activities  
8 and programs of the Federal Government, including  
9 at the National Science Foundation, the Department  
10 of Energy, the National Aeronautics and Space Ad-  
11 ministration, the National Oceanic and Atmospheric  
12 Administration, the National Institute of Standards  
13 and Technology, the Environmental Protection  
14 Agency, and any other Federal agency with STEM  
15 education programs or activities;

16 (2) coordinate STEM education activities and  
17 programs with the Office of Management and Budg-  
18 et;

19 (3) review STEM education activities and pro-  
20 grams to ensure they are not redundant, overlap-  
21 ping, or duplicative of similar efforts within the Fed-  
22 eral Government;

23 (4) periodically update and maintain the inven-  
24 tory of federally sponsored STEM education pro-  
25 grams and activities conducted by the committee on

1       STEM education established under the National  
2       Science and Technology Council, including docu-  
3       mentation of assessments of the outcome-oriented ef-  
4       fectiveness of such programs and activities and  
5       metrics used to evaluate those programs and activi-  
6       ties;

7           (5) provide technical and administrative support  
8       to the committee on STEM education established  
9       under the National Science and Technology Council  
10       and the Advisory Panel established under section  
11       202; and

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

18       (c) 3-Year STRATEGIC PLAN.—

19           (1) IN GENERAL.—The STEM Education Co-  
20       ordinating Office shall—

21           (A) at the time of the President's budget  
22       request, and every 3 years thereafter, in con-  
23       sultation with Federal agencies having STEM  
24       education programs or activities, the committee  
25       on STEM education established under the Na-

1 tional Science and Technology Council, and the  
2 Advisory Panel established under section 202,  
3 update the Federal Government STEM edu-  
4 cation strategic plan established in May 2013  
5 by the committee on STEM education estab-  
6 lished under the National Science and Tech-  
7 nology Council; and

8 (B) coordinate the implementation of such  
9 plan through such agencies.

10 (2) CONTENTS.—The strategic plan shall—

11 (A) specify and prioritize annual and long-  
12 term objectives, including a description of the  
13 role of each agency in supporting programs and  
14 activities designed to achieve the objectives;

15 (B) specify the common metrics that will  
16 be used to assess progress toward achieving the  
17 objectives; and

18 (C) describe the approaches that will be  
19 taken by each agency to assess the effectiveness  
20 of its STEM education programs and activities.

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

1 (1) a description of the STEM education pro-  
2 grams and activities across the Federal Government  
3 for the previous and current fiscal years, and the  
4 proposed programs and activities under the Presi-  
5 dent's budget request, of every Federal agency with  
6 STEM education programs or activities;

7 (2) an evaluation of the extent of duplication  
8 and fragmentation of the programs and activities de-  
9 scribed under paragraph (1), and any recommenda-  
10 tions for consolidations or terminations to remedy  
11 those problems;

12 (3) a description of ways the Federal Govern-  
13 ment is leveraging private and nonprofit investments  
14 and utilizing expertise resulting from STEM-related  
15 competitions to build the STEM education workforce  
16 pipeline; and

17 (4) a description of the progress made in car-  
18 rying out the 3-year strategic plan, including a de-  
19 scription of the outcome of any program assessments  
20 completed in the previous year, and any changes  
21 made to that plan since the previous annual report.

22 (e) RESPONSIBILITIES OF NSF.—The Director of the  
23 National Science Foundation shall encourage and monitor  
24 the efforts of the STEM Education Coordinating Office  
25 to ensure that the strategic plan under subsection (c) is

1 implemented effectively and that the objectives of the stra-  
2 tegic plan are met.

3 **TITLE III—OFFICE OF SCIENCE**  
4 **AND TECHNOLOGY POLICY**

5 **SEC. 301. AUTHORIZATION OF APPROPRIATIONS.**

6 There are authorized to be appropriated for the Of-  
7 fice of Science and Technology Policy—

8 (1) \$5,555,000 for fiscal year 2014; and

9 (2) \$5,555,000 for fiscal year 2015.

10 **SEC. 302. REGULATORY EFFICIENCY.**

11 (a) SENSE OF CONGRESS.—It is the sense of Con-  
12 gress that—

13 (1) high and increasing administrative burdens  
14 and costs in Federal research administration, par-  
15 ticularly in the higher education sector where most  
16 federally sponsored research is performed, are erod-  
17 ing funds available to carry out basic scientific re-  
18 search;

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

23 (3) post-award administrative costs have grown  
24 as Federal research agencies have continued to im-

1       pose agency-unique compliance and reporting re-  
2       quirements on researchers and research institutions;

3           (4) facilities and administration costs at re-  
4       search universities can exceed 50 percent of the total  
5       value of Federal research grants, and it is estimated  
6       that nearly 30 percent of the funds invested annu-  
7       ally in federally funded research is consumed by pa-  
8       perwork and other administrative processes required  
9       by Federal agencies;

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

16           (6) it is a matter of critical importance to  
17       American competitiveness that administrative costs  
18       of federally funded research be streamlined so that  
19       a higher proportion of taxpayer dollars flow into di-  
20       rect research activities.

21       (b) IN GENERAL.—The Director of the Office of  
22       Science and Technology Policy shall establish a working  
23       group under the authority of the National Science and  
24       Technology Council, to include the Office of Management  
25       and Budget. The working group shall be responsible for

1 reviewing Federal regulations affecting research and re-  
2 search universities and making recommendations on how  
3 to—

4 (1) harmonize, streamline, and eliminate dupli-  
5 cative Federal regulations and reporting require-  
6 ments; and

7 (2) minimize the regulatory burden on United  
8 States institutions of higher education performing  
9 federally funded research while maintaining account-  
10 ability for Federal tax dollars.

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

19 **SEC. 303. PUBLIC ACCESS TO RESEARCH ARTICLES AND**  
20 **DATA.**

21 (a) PUBLIC ACCESS POLICIES AND PROCEDURES.—

22 (1) PLAN.—Not later than 18 months after the  
23 date of enactment of this Act, the National Science  
24 and Technology Council shall deliver a plan to Con-  
25 gress containing policies, procedures, and standards

1 for the Federal science agencies to enable archiving  
2 and retrieving covered material in digital form for  
3 public availability in perpetuity. The plan shall—

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

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

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

13 (D) draw on information developed under  
14 section 103 of the America COMPETES Reau-  
15 thorization Act of 2010 (42 U.S.C. 6623).

16 (2) REQUIREMENTS.—Such policies, proce-  
17 dures, and standards shall—

18 (A) use existing information technology in-  
19 frastructure to the extent practicable, including  
20 infrastructure of the National Center for Bio-  
21 technology Information, the National Center for  
22 Atmospheric Research, and the private sector  
23 that facilitate public access to covered material;

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



1 (C) minimize the burden of providing arti-  
2 cles and data archiving, and of retrieving arti-  
3 cles and data.

4 (3) STAKEHOLDER INPUT.—In developing poli-  
5 cies, procedures, and standards under paragraph  
6 (1), the National Science and Technology Council  
7 shall use a transparent process for soliciting views  
8 from stakeholders, including federally funded re-  
9 searchers, institutions of higher education, libraries,  
10 publishers, users of federally funded research re-  
11 sults, and civil science society groups.

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

18 (c) FEDERAL SCIENCE AGENCY REQUIREMENTS.—  
19 In implementing the policies, procedures, and standards  
20 established pursuant to subsection (a), each Federal  
21 science agency shall provide for—

22 (1) submission of, or linking to, an electronic  
23 version of covered material by or on behalf of recipi-  
24 ents of research grants made by the agency;

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

3 (A) in the case of a research article, con-  
4 sistent with appropriate embargo periods but  
5 not later than 24 months after publication of  
6 the research article in a peer-reviewed publica-  
7 tion; and

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

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

15 (4) production of an online bibliography of all  
16 research papers that are publicly accessible in its re-  
17 pository, with each entry linking to the cor-  
18 responding free online full text and supporting data;  
19 and

20 (5) access to all data that is used directly or in-  
21 directly by the agency to support the promulgation  
22 of a Federal regulation.

23 (d) REVIEW.—At least once every 5 years, the Na-  
24 tional Science and Technology Council shall review the  
25 policies, procedures, and standards established under sub-

1 section (a) and revise such policies, procedures, and stand-  
2 ards as appropriate.

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

10 (f) PATENT OR COPYRIGHT LAW.—Except as pro-  
11 vided in this section, nothing in this section shall be con-  
12 strued to affect any right under the provisions of title 17  
13 or title 35, United States Code.

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

15 (1) COVERED MATERIAL.—The term “covered  
16 material” means—

17 (A) a manuscript of an article accepted for  
18 publication in a peer-reviewed publication that  
19 results from research funded by a grant from a  
20 Federal science agency; and

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

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

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

6           (B) preliminary work and analyses;

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

9           (D) plans for future research.

10          (3) FEDERAL SCIENCE AGENCY.—The term  
11 “Federal science agency” means—

12          (A) the National Aeronautics and Space  
13 Administration;

14          (B) the National Science Foundation;

15          (C) the National Institute of Standards  
16 and Technology; and

17          (D) the National Weather Service.

18          (4) PEER-REVIEWED PUBLICATION.—The term  
19 “peer-reviewed publication” means a publication for  
20 which articles are assigned to at least 1 external re-  
21 viewer to assess the validity of the articles’ scientific  
22 findings and conclusions.

1 **SEC. 304. STRATEGIC PLAN FOR ADVANCED MANUFAC-**  
2 **TURING RESEARCH AND DEVELOPMENT.**

3 Section 102 of the America COMPETES Reauthor-  
4 ization Act of 2010 (42 U.S.C. 6622) is amended to read  
5 as follows:

6 **“SEC. 102. COORDINATION OF ADVANCED MANUFACTURING**  
7 **RESEARCH AND DEVELOPMENT.**

8 “(a) **INTERAGENCY COMMITTEE.**—The Director shall  
9 establish or designate a Committee on Technology under  
10 the National Science and Technology Council. The Com-  
11 mittee shall be responsible for planning and coordinating  
12 Federal programs and activities in advanced manufac-  
13 turing research and development.

14 “(b) **RESPONSIBILITIES OF COMMITTEE.**—The Com-  
15 mittee shall—

16 “(1) coordinate the advanced manufacturing re-  
17 search and development programs and activities of  
18 the Federal agencies, in consultation with the Na-  
19 tional Economic Council;

20 “(2) establish goals and priorities for advanced  
21 manufacturing research and development that will  
22 strengthen United States manufacturing;

23 “(3) work with industry organizations, Federal  
24 agencies, and Federally Funded Research and Devel-  
25 opment Centers not represented on the Committee,  
26 to identify and reduce regulatory, logistical, and fis-

1       cal barriers within the Federal Government and  
2       State governments that inhibit United States ad-  
3       vanced manufacturing;

4               “(4) facilitate the transfer of intellectual prop-  
5       erty and technology based on federally supported  
6       university research into commercialization and man-  
7       ufacturing;

8               “(5) identify technological, market, or business  
9       challenges that may best be addressed by public-pri-  
10      vate partnerships, and are likely to attract both par-  
11      ticipation and primary funding from industry;

12              “(6) encourage the formation of public-private  
13      partnerships to respond to those challenges for tran-  
14      sition for United States advanced manufacturing;  
15      and

16              “(7) develop, and update every 4 years, a stra-  
17      tegic plan to guide Federal programs and activities  
18      in support of advanced manufacturing research and  
19      development, which shall—

20                      “(A) specify and prioritize near-term and  
21                      long-term research and development objectives,  
22                      the anticipated time frame for achieving the ob-  
23                      jectives, and the metrics for use in assessing  
24                      progress toward the objectives;

1           “(B) describe the progress made in achiev-  
2           ing the objectives from the National Strategic  
3           Plan for Advanced Manufacturing issued in  
4           February 2012 and any subsequent updates, in-  
5           cluding a discussion of why specific objectives  
6           were not met;

7           “(C) specify the role and budget resources  
8           of each Federal agency in carrying out or spon-  
9           soring research and development to meet the  
10          objectives of the strategic plan;

11          “(D) describe how the Federal agencies  
12          and Federally Funded Research and Develop-  
13          ment Centers supporting advanced manufac-  
14          turing research and development will foster the  
15          transfer of research and development results  
16          into new manufacturing technologies and  
17          United States based manufacturing of new  
18          products and processes for the benefit of society  
19          to ensure national, energy, and economic secu-  
20          rity;

21          “(E) describe how Federal agencies and  
22          Federally Funded Research and Development  
23          Centers supporting advanced manufacturing re-  
24          search and development will strengthen all lev-  
25          els of manufacturing education and training

1 programs to ensure an adequate, well-trained  
2 workforce;

3 “(F) describe how the Federal agencies  
4 and Federally Funded Research and Develop-  
5 ment Centers supporting advanced manufac-  
6 turing research and development will assist  
7 small and medium-sized manufacturers in devel-  
8 oping and implementing new products and proc-  
9 esses;

10 “(G) analyze factors that impact innova-  
11 tion and competitiveness for United States ad-  
12 vanced manufacturing, including—

13 “(i) technology transfer and commer-  
14 cialization activities;

15 “(ii) the adequacy of the national se-  
16 curity industrial base;

17 “(iii) the capabilities of the domestic  
18 manufacturing workforce;

19 “(iv) export opportunities and trade  
20 policies;

21 “(v) financing, investment, and tax-  
22 ation policies and practices;

23 “(vi) emerging technologies and mar-  
24 kets; and



1                   “(vii) advanced manufacturing re-  
2                   search and development undertaken by  
3                   competing nations; and

4                   “(H) elicit and consider the recommenda-  
5                   tions of a wide range of stakeholders, including  
6                   representatives from diverse manufacturing  
7                   companies, academia, and other relevant orga-  
8                   nizations and institutions.

9                   “(c) REPORT.—Not later than 1 year after the date  
10                  of enactment of the FIRST Act of 2014, the Director shall  
11                  transmit the initial strategic plan developed under sub-  
12                  section (b)(7) to the Committee on Commerce, Science,  
13                  and Transportation of the Senate, and the Committee on  
14                  Science, Space, and Technology of the House of Rep-  
15                  resentatives, which shall update the National Strategic  
16                  Plan for Advanced Manufacturing issued in February  
17                  2012. Subsequent updates of this strategic plan shall be  
18                  transmitted to those committees and posted on a public  
19                  website not later than May 1, 2018, and every 4 years  
20                  thereafter.

21                  “(d) ADVISORY COMMITTEE.—The President’s Coun-  
22                  cil of Advisors for Science and Technology shall appoint  
23                  an advisory committee of private sector leaders to provide  
24                  input, perspective, and recommendations to assist in the  
25                  development of the strategic plan and subsequent updates

1 reported under subsection (c). Such panel shall have no  
2 more than 15 members, and shall include representatives  
3 of manufacturing businesses, the manufacturing work-  
4 force, academia, and groups representing interests af-  
5 fected by manufacturing activities.

6 “(e) REQUIREMENT TO CONSIDER STRATEGY IN THE  
7 BUDGET.—In preparing the budget for a fiscal year under  
8 section 1105(a) of title 31, United States Code, the Presi-  
9 dent shall include information regarding the consistency  
10 of the budget with the goals and recommendations for  
11 United States advanced manufacturing that are developed  
12 under this section.”

13 **SEC. 305. COORDINATION OF INTERNATIONAL SCIENCE**  
14 **AND TECHNOLOGY PARTNERSHIPS.**

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

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

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

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

5 (1) plan and coordinate interagency inter-  
6 national science and technology cooperative research  
7 and training activities and partnerships supported or  
8 managed by Federal agencies and work with other  
9 National Science and Technology Council commit-  
10 tees to help plan and coordinate the international  
11 component of national science and technology prior-  
12 ities;

13 (2) establish Federal priorities and policies for  
14 aligning, as appropriate, international science and  
15 technology cooperative research and training activi-  
16 ties and partnerships supported or managed by Fed-  
17 eral agencies with the foreign policy goals of the  
18 United States;

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

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

1 technology stakeholders, including universities, sci-  
2 entific and professional societies, industry, and rel-  
3 evant organizations and institutions; and

4 (5) identify broad issues that influence the abil-  
5 ity of United States scientists and engineers to col-  
6 laborate with foreign counterparts, including bar-  
7 riers to collaboration and access to scientific infor-  
8 mation.

9 (d) REPORT TO CONGRESS.—The Director of the Of-  
10 fice of Science and Technology Policy shall transmit a re-  
11 port, to be updated annually, to the Committee on Science,  
12 Space, and Technology and the Committee on Foreign Af-  
13 fairs of the House of Representatives, and to the Com-  
14 mittee on Commerce, Science, and Transportation and the  
15 Committee on Foreign Relations of the Senate. The report  
16 shall also be made available to the public on the reporting  
17 agency's website. The report shall contain a description  
18 of—

19 (1) the priorities and policies established under  
20 subsection (c)(2);

21 (2) the ongoing and new partnerships estab-  
22 lished since the last update to the report;

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

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

4 **SEC. 306. ALTERNATIVE RESEARCH FUNDING MODELS.**

5 (a) PILOT PROGRAM AUTHORITY.—The heads of  
6 Federal science agencies, in consultation with the Director  
7 of the Office of Science and Technology Policy, shall con-  
8 duct appropriate pilot programs to validate alternative re-  
9 search funding models, including—

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

13 (2) novel mechanisms of funding including ob-  
14 taining non-Federal funds through crowd source  
15 funding.

16 (b) NON-FEDERAL PARTNERS.—A pilot program  
17 may be conducted under this section through an agree-  
18 ment, grant, or contractual relationship with a non-Fed-  
19 eral entity regarding the design, administration, and fund-  
20 ing of the program.

21 (c) PRIZE COMPETITION JUDGES.—

22 (1) REQUIREMENTS.—Judges for a prize com-  
23 petition carried out under this section shall not be  
24 required to be Federal employees. An individual who  
25 serves as a judge for a prize competition carried out

1 under this section who is not a Federal employee  
2 shall be required to sign an agreement, developed by  
3 the Office of Science and Technology Policy, with re-  
4 spect to nondisclosure, conflict of interest, and judg-  
5 ing code of conduct requirements. All judges shall be  
6 required to disclose all personal financial interests.

7 (2) REPORT TO CONGRESS.—Not later than 30  
8 days after the Office of Science and Technology Pol-  
9 icy completes development of an agreement under  
10 paragraph (1), it shall transmit a report to Congress  
11 describing the requirements of such agreement.

12 (d) PUBLIC NOTICE.—The heads of Federal science  
13 agencies shall widely advertise prize competitions to be  
14 conducted under this section to ensure maximum partici-  
15 pation.

16 (e) DEFINITION.—For purposes of this section, the  
17 term “Federal science agency” means—

18 (1) the National Aeronautics and Space Admin-  
19 istration;

20 (2) the National Science Foundation;

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

23 (4) the National Weather Service.

24 (f) REPORT TO CONGRESS.—Not later than 1 year  
25 after the date of enactment of this Act, and annually

1 thereafter as part of the annual budget submission to Con-  
2 gress, the Director of the Office of Science and Technology  
3 Policy shall transmit to the Congress a report on pro-  
4 grams identified and conducted under subsection (a).

5 **SEC. 307. AMENDMENTS TO PRIZE COMPETITIONS.**

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

8 (1) in subsection (e)—

9 (A) by inserting “competition” after “sec-  
10 tion, a prize”;

11 (B) by inserting “types” after “following”;  
12 and

13 (C) in paragraph (4), by striking “prizes”  
14 and inserting “prize competitions”;

15 (2) in subsection (f)—

16 (A) by striking “in the Federal Register”  
17 and inserting “on a publicly accessible Govern-  
18 ment website, such as [www.challenge.gov](http://www.challenge.gov),”; and

19 (B) in paragraph (4), by striking “prize”  
20 and inserting “cash prize purse”;

21 (3) in subsection (g), by striking “prize” and  
22 inserting “cash prize purse”;

23 (4) in subsection (h), by inserting “prize” be-  
24 fore “competition” both places it appears;

25 (5) in subsection (i)—

1 (A) in paragraph (1)(B), by inserting  
2 “prize” before “competition”;

3 (B) in paragraph (2)(A), by inserting  
4 “prize” before “competition” both places it ap-  
5 pears;

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

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

10 “(3) WAIVER.—An agency may waive the re-  
11 quirement under paragraph (2). The annual report  
12 under subsection (p) shall include a list of such  
13 waivers granted during the preceding fiscal year,  
14 along with a detailed explanation of the reasons for  
15 granting the waivers.”;

16 (6) in subsection (k)—

17 (A) in paragraph (2)(A), by inserting  
18 “prize” before “competition”; and

19 (B) in paragraph (3), by inserting “prize”  
20 before “competitions” both places it appears;

21 (7) in subsection (l), by striking all after “may  
22 enter into” and inserting “a grant, contract, cooper-  
23 ative agreement, or other agreement with a private  
24 sector for-profit or nonprofit entity to administer the



1 prize competition, subject to the provisions of this  
2 section.”;

3 (8) in subsection (m)—

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

6 “(1) IN GENERAL.—Support for a prize com-  
7 petition under this section, including financial sup-  
8 port for the design and administration of a prize  
9 competition or funds for a cash prize purse, may  
10 consist of Federal appropriated funds and funds  
11 provided by private sector for-profit and nonprofit  
12 entities. The head of an agency may accept funds  
13 from other Federal agencies, private sector for-profit  
14 entities, and nonprofit entities to support such prize  
15 competitions. The head of an agency may not give  
16 any special consideration to any private sector for-  
17 profit or nonprofit entity in return for a donation.”;

18 (B) in paragraph (2), by striking “prize  
19 awards” and inserting “cash prize purses”;

20 (C) in paragraph (3)(A)—

21 (i) by striking “No prize” and insert-  
22 ing “No prize competition”; and

23 (ii) by striking “the prize” and insert-  
24 ing “the cash prize purse”;

1 (D) in paragraph (3)(B), by striking “a  
2 prize” and inserting “a cash prize purse”;

3 (E) in paragraph (3)(B)(i), by inserting  
4 “competition” after “prize”;

5 (F) in paragraph (4)(A), by striking “a  
6 prize” and inserting “a cash prize purse”; and

7 (G) in paragraph (4)(B), by striking “cash  
8 prizes” and inserting “cash prize purses”;

9 (9) in subsection (n), by inserting “for both for-  
10 profit and nonprofit entities,” after “contract vehi-  
11 cle”;

12 (10) in subsection (o)(1), by striking “or pro-  
13 viding a prize” and insert “a prize competition or  
14 providing a cash prize purse”; and

15 (11) in subsection (p)(2)(C), by striking “cash  
16 prizes” both places it occurs and inserting “cash  
17 prize purses”.

## 18 **TITLE IV—INNOVATION AND**

## 19 **TECHNOLOGY TRANSFER**

### 20 **Subtitle A—NIST Reauthorization**

#### 21 **SEC. 401. AUTHORIZATION OF APPROPRIATIONS.**

22 (a) FISCAL YEAR 2014.—

23 (1) IN GENERAL.—There are authorized to be  
24 appropriated to the Secretary of Commerce

1       \$850,000,000 for the National Institute of Stand-  
2       ards and Technology for fiscal year 2014.

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

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

8           (B) \$56,000,000 shall be for the construc-  
9       tion and maintenance of facilities; and

10          (C) \$143,000,000 shall be for industrial  
11       technology services activities, of which  
12       \$128,000,000 shall be for the Manufacturing  
13       Extension Partnership program under sections  
14       25 and 26 of the National Institute of Stand-  
15       ards and Technology Act (15 U.S.C. 278k and  
16       278l).

17       (b) FISCAL YEAR 2015.—

18           (1) IN GENERAL.—There are authorized to be  
19       appropriated to the Secretary of Commerce  
20       \$862,750,000 for the National Institute of Stand-  
21       ards and Technology for fiscal year 2015.

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

1 (A) \$660,765,000 shall be for scientific  
2 and technical research and services laboratory  
3 activities;

4 (B) \$56,840,000 shall be for the construc-  
5 tion and maintenance of facilities; and

6 (C) \$145,145,000 shall be for industrial  
7 technology services activities, of which  
8 \$129,920,000 shall be for the Manufacturing  
9 Extension Partnership program under sections  
10 25 and 26 of the National Institute of Stand-  
11 ards and Technology Act (15 U.S.C. 278k and  
12 278l).

13 **SEC. 402. STANDARDS AND CONFORMITY ASSESSMENT AND**  
14 **OTHER TRANSACTION AUTHORITY.**

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

17 (1) in subsection (b)—

18 (A) in the matter preceding paragraph (1),  
19 by striking “authorized to take” and inserting  
20 “authorized to serve as the President’s principal  
21 adviser on standards policy pertaining to the  
22 Nation’s technological competitiveness and in-  
23 novation ability and to take”;

24 (B) in paragraph (3), by striking “compare  
25 standards” and all that follows through “Fed-

1 eral Government” and inserting “facilitate  
2 standards-related information sharing and co-  
3 operation between Federal agencies”;

4 (C) by striking paragraph (4) and insert-  
5 ing the following:

6 “(4) to enter into and perform such contracts,  
7 cooperative research and development arrangements,  
8 grants, cooperative agreements, leases, or other  
9 transactions as may be necessary in the conduct of  
10 its work and on such terms as it may consider ap-  
11 propriate in furtherance of the purposes of this  
12 Act;”; and

13 (D) in paragraph (13), by striking “Fed-  
14 eral, State, and local” and all that follows  
15 through “private sector” and inserting “tech-  
16 nical standards activities and conformity assess-  
17 ment activities of Federal, State, and local gov-  
18 ernments with private sector”; and

19 (2) in subsection (c)—

20 (A) in paragraph (21), by striking “and”  
21 after the semicolon;

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

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

1           “(22) participate in and support scientific and  
2 technical conferences;

3           “(23) perform pre-competitive measurement  
4 science and technology research in partnership with  
5 institutions of higher education and industry to pro-  
6 mote United States industrial competitiveness; and”.

7 **SEC. 403. VISITING COMMITTEE ON ADVANCED TECH-**  
8 **NOLOGY.**

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

11           (1) in subsection (a)—

12                 (A) by striking “15 members” and insert-  
13 ing “not fewer than 9 members”;

14                 (B) by striking “at least 10” and inserting  
15 “at least three-fifths”; and

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

20           (2) in subsection (h)(1), by striking “, including  
21 the Program established under section 28,”.

22 **SEC. 404. POLICE AND SECURITY AUTHORITY.**

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

1 (1) by striking “of the Government; and” and  
2 inserting “of the Government;”; and

3 (2) by striking “United States Code.” and in-  
4 sserting “United States Code; and (i) for the protec-  
5 tion of Institute buildings and other plant facilities,  
6 equipment, and property, and of employees, associ-  
7 ates, visitors, or other persons located therein or as-  
8 sociated therewith, notwithstanding any other provi-  
9 sion of law, the direction of such of the officers and  
10 employees of the Institute as the Secretary considers  
11 necessary in the public interest to carry firearms  
12 while in the conduct of their official duties, and the  
13 authorization of employees of contractors and sub-  
14 contractors of the Institute who are engaged in the  
15 protection of property owned by the United States,  
16 and located at facilities owned by, leased by, used  
17 by, or under the control of the United States, to  
18 carry firearms while in the conduct of their official  
19 duties, and, under regulations prescribed by the Sec-  
20 retary and approved by the Attorney General, the  
21 authorization of officers and employees of the Insti-  
22 tute and of its contractors and subcontractors au-  
23 thorized to carry firearms to arrest without warrant  
24 for any offense against the United States committed  
25 in their presence, or for any felony cognizable under

1 the laws of the United States if they have reasonable  
2 grounds to believe that the person to be arrested has  
3 committed or is committing such felony, provided  
4 that such authority to make arrests may be exer-  
5 cised only while guarding and protecting buildings  
6 and other plant facilities, equipment, and property  
7 owned or leased by, used by, or under the control of  
8 the United States under the administration and con-  
9 trol of the Secretary”.

10 **SEC. 405. INTERNATIONAL ACTIVITIES.**

11 Section 17(a) of the National Institute of Standards  
12 and Technology Act (15 U.S.C. 278g(a)) is amended—

13 (1) by striking “financial assistance,” and in-  
14 serting “financial and logistical assistance,”; and

15 (2) by adding at the end the following: “Finan-  
16 cial and logistical assistance may include transpor-  
17 tation to and from the Institute of foreign dig-  
18 nitaries and representatives of foreign national me-  
19 trolgy institutes.”

20 **SEC. 406. EDUCATION AND OUTREACH.**

21 (a) **IN GENERAL.**—The National Institute of Stand-  
22 ards and Technology Act is (15 U.S.C. 271 et seq.) is  
23 amended by striking sections 18, 19, and 19A and insert-  
24 ing the following:



1 **“SEC. 18. EDUCATION AND OUTREACH.**

2       “(a) IN GENERAL.—The Director may support, pro-  
3 mote, and coordinate activities and efforts to enhance pub-  
4 lic awareness and understanding of measurement sciences,  
5 standards, and technology by the general public, industry,  
6 and academia in support of the Institute’s mission.

7       “(b) RESEARCH FELLOWSHIPS.—

8               “(1) IN GENERAL.—The Director may award  
9 research fellowships and other forms of financial and  
10 logistical assistance, including direct stipend awards,  
11 to—

12                       “(A) students at institutions of higher edu-  
13 cation within the United States who show  
14 promise as present or future contributors to the  
15 mission of the Institute; and

16                       “(B) United States citizens for research  
17 and technical activities of the Institute.

18       “(2) SELECTION.—The Director shall select  
19 persons to receive such fellowships and assistance on  
20 the basis of ability and of the relevance of the pro-  
21 posed work to the mission and programs of the In-  
22 stitute.

23       “(3) DEFINITION.—For the purposes of this  
24 subsection, financial and logistical assistance in-  
25 cludes, notwithstanding section 1345 of title 31,  
26 United States Code, or any contrary provision of

1 law, temporary housing and local transportation to  
2 and from the Institute facilities.

3 “(c) POST-DOCTORAL FELLOWSHIP PROGRAM.—The  
4 Director shall establish and conduct a post-doctoral fellow-  
5 ship program, subject to the availability of appropriations,  
6 that shall include not less than 20 nor more than 120 new  
7 fellows per fiscal year. In evaluating applications for fel-  
8 lowships under this subsection, the Director shall give con-  
9 sideration to the goal of promoting the participation of  
10 underrepresented minorities in research areas supported  
11 by the Institute.”.

12 (b) PROHIBITION.—The National Institute of Stand-  
13 ards and Technology may not implement any STEM edu-  
14 cation program and activity changes proposed for the In-  
15 stitute in the budget for fiscal year 2014 transmitted to  
16 Congress under section 1105(a) of title 31, United States  
17 Code.

18 **SEC. 407. PROGRAMMATIC PLANNING REPORT.**

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

1 **SEC. 408. ASSESSMENTS BY THE NATIONAL RESEARCH**  
2 **COUNCIL.**

3 Section 24 of the National Institute of Standards and  
4 Technology Act (15 U.S.C. 278j) is amended to read as  
5 follows:

6 **“SEC. 24. ASSESSMENTS BY THE NATIONAL RESEARCH**  
7 **COUNCIL.**

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

12 “(b) **SCHEDULE.**—Individual assessments shall be  
13 completed biennially by conducting annual assessments of  
14 at least 3 laboratories.

15 “(c) **SUMMARY REPORT.**—In the second year of each  
16 biennial period under subsection (b), the Institute shall  
17 contract with the National Research Council to prepare  
18 a report that summarizes the findings common across the  
19 individual assessment reports.

20 “(d) **ADDITIONAL ASSESSMENTS.**—The Institute, at  
21 the discretion of the Director, also may contract with the  
22 National Research Council to conduct additional assess-  
23 ments of Institute programs and projects that involve col-  
24 laboration across the Institute laboratories and centers  
25 and assessments of selected scientific and technical topics.

1           “(e) CONSULTATION WITH VISITING COMMITTEE ON  
2   ADVANCED TECHNOLOGY.—The National Research Coun-  
3   cil may consult with the Visiting Committee on Advanced  
4   Technology established under section 10 in performing the  
5   assessments under this section.

6           “(f) REPORTS.—Not later than 30 days after the  
7   completion of each assessment, the Institute shall transmit  
8   the report on such assessment to the Committee on  
9   Science, Space, and Technology of the House of Rep-  
10   resentatives and the Committee on Commerce, Science,  
11   and Transportation of the Senate.”.

12   **SEC. 409. HOLLINGS MANUFACTURING EXTENSION PART-**  
13                           **nership.**

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

17   **“SEC. 25. HOLLINGS MANUFACTURING EXTENSION PART-**  
18                           **nership.**

19           “(a) ESTABLISHMENT AND PURPOSE.—

20           “(1) IN GENERAL.—The Secretary, through the  
21   Director and, if appropriate, through other officials,  
22   shall provide assistance for the creation and support  
23   of manufacturing extension centers, to be known as  
24   the ‘Hollings Manufacturing Extension Centers’, for  
25   the transfer of manufacturing technology and best

1 business practices (in this Act referred to as the  
2 ‘Centers’). The program under this section shall be  
3 known as the ‘Hollings Manufacturing Extension  
4 Partnership’.

5 “(2) AFFILIATIONS.—Such Centers shall be af-  
6 filiated with any United States-based public or non-  
7 profit institution or organization, or group thereof,  
8 that applies for and is awarded financial assistance  
9 under this section.

10 “(3) OBJECTIVE.—The objective of the Centers  
11 is to enhance competitiveness, productivity, and  
12 technological performance in United States manufac-  
13 turing through—

14 “(A) the transfer of manufacturing tech-  
15 nology and techniques developed at the Insti-  
16 tute to Centers and, through them, to manufac-  
17 turing companies throughout the United States;

18 “(B) the participation of individuals from  
19 industry, institutions of higher education, State  
20 governments, other Federal agencies, and, when  
21 appropriate, the Institute in cooperative tech-  
22 nology transfer activities;

23 “(C) efforts to make new manufacturing  
24 technology and processes usable by United

1 States-based small and medium-sized compa-  
2 nies;

3 “(D) the active dissemination of scientific,  
4 engineering, technical, and management infor-  
5 mation about manufacturing to industrial firms,  
6 including small and medium-sized manufac-  
7 turing companies;

8 “(E) the utilization, when appropriate, of  
9 the expertise and capability that exists in Fed-  
10 eral laboratories other than the Institute; and

11 “(F) the provision to community colleges  
12 of information about the job skills needed in  
13 small and medium-sized manufacturing busi-  
14 nesses in the regions they serve.

15 “(b) ACTIVITIES.—The activities of the Centers shall  
16 include—

17 “(1) the establishment of automated manufac-  
18 turing systems and other advanced production tech-  
19 nologies, based on Institute-supported research, for  
20 the purpose of demonstrations and technology trans-  
21 fer; and

22 “(2) the active transfer and dissemination of re-  
23 search findings and Center expertise to a wide range  
24 of companies and enterprises, particularly small and  
25 medium-sized manufacturers.

1 “(c) OPERATIONS.—

2 “(1) FINANCIAL SUPPORT.—The Secretary may  
3 provide financial support to any Center created  
4 under subsection (a). The Secretary may not provide  
5 to a Center more than 50 percent of the capital and  
6 annual operating and maintenance funds required to  
7 create and maintain such Center.

8 “(2) REGULATIONS.—The Secretary shall im-  
9 plement, review, and update the sections of the Code  
10 of Federal Regulations related to this section at  
11 least once every 3 years.

12 “(3) APPLICATION.—

13 “(A) IN GENERAL.—Any nonprofit institu-  
14 tion, or consortium thereof, or State or local  
15 government, may submit to the Secretary an  
16 application for financial support under this sec-  
17 tion, in accordance with the procedures estab-  
18 lished by the Secretary.

19 “(B) COST-SHARING.—In order to receive  
20 assistance under this section, an applicant for  
21 financial assistance under subparagraph (A)  
22 shall provide adequate assurances that non-  
23 Federal assets obtained from the applicant and  
24 the applicant’s partnering organizations will be  
25 used as a funding source to meet not less than

1           50 percent of the costs incurred for the first 3  
2           years and an increasing share for each of the  
3           next 3 years. For purposes of the preceding  
4           sentence, the costs incurred means the costs in-  
5           curred in connection with the activities under-  
6           taken to improve the competitiveness, manage-  
7           ment, productivity, and technological perform-  
8           ance of small and medium-sized manufacturing  
9           companies.

10           “(C) AGREEMENTS WITH OTHER ENTI-  
11           TIES.—In meeting the 50 percent requirement,  
12           it is anticipated that a Center will enter into  
13           agreements with other entities such as private  
14           industry, institutions of higher education, and  
15           State governments to accomplish programmatic  
16           objectives and access new and existing resources  
17           that will further the impact of the Federal in-  
18           vestment made on behalf of small and medium-  
19           sized manufacturing companies.

20           “(D) LEGAL RIGHTS.—Each applicant  
21           under subparagraph (A) shall also submit a  
22           proposal for the allocation of the legal rights as-  
23           sociated with any invention which may result  
24           from the proposed Center’s activities.



1           “(4) MERIT REVIEW.—The Secretary shall sub-  
2           ject each such application to merit review. In mak-  
3           ing a decision whether to approve such application  
4           and provide financial support under this section, the  
5           Secretary shall consider, at a minimum, the fol-  
6           lowing:

7                   “(A) The merits of the application, par-  
8                   ticularly those portions of the application re-  
9                   garding technology transfer, training and edu-  
10                  cation, and adaptation of manufacturing tech-  
11                  nologies to the needs of particular industrial  
12                  sectors.

13                   “(B) The quality of service to be provided.

14                   “(C) Geographical diversity and extent of  
15                  service area.

16                   “(D) The percentage of funding and  
17                  amount of in-kind commitment from other  
18                  sources.

19           “(5) EVALUATION.—

20                   “(A) IN GENERAL.—Each Center that re-  
21                  ceives financial assistance under this section  
22                  shall be evaluated during its third year of oper-  
23                  ation by an evaluation panel appointed by the  
24                  Secretary.

1           “(B) COMPOSITION.—Each such evalua-  
2           tion panel shall be composed of private experts,  
3           none of whom shall be connected with the in-  
4           volved Center, and Federal officials.

5           “(C) CHAIR.—An official of the Institute  
6           shall chair the panel.

7           “(D) PERFORMANCE MEASUREMENT.—  
8           Each evaluation panel shall measure the in-  
9           volved Center’s performance against the objec-  
10          tives specified in this section.

11          “(E) POSITIVE EVALUATION.—If the eval-  
12          uation is positive, the Secretary may provide  
13          continued funding through the sixth year at de-  
14          clining levels.

15          “(F) PROBATION.—The Secretary shall  
16          not provide funding unless the evaluation is  
17          positive. A Center that has not received a posi-  
18          tive evaluation by the evaluation panel shall be  
19          notified by the panel of the deficiencies in its  
20          performance and shall be placed on probation  
21          for one year, after which time the panel shall  
22          reevaluate the Center. If the Center has not ad-  
23          dressed the deficiencies identified by the panel,  
24          or shown a significant improvement in its per-  
25          formance, the Director shall conduct a new

1 competition to select an operator for the Center  
2 or may close the Center.

3 “(G) ADDITIONAL FINANCIAL SUPPORT.—

4 After the sixth year, a Center may receive addi-  
5 tional financial support under this section if it  
6 has received a positive evaluation through an  
7 independent review, under procedures estab-  
8 lished by the Institute. Funding received for a  
9 fiscal year under this section after the sixth  
10 year of operation shall not exceed one third of  
11 the capital and annual operating and mainte-  
12 nance costs of the Center under the program.

13 “(H) EIGHT-YEAR REVIEW.—A Center  
14 shall undergo an independent review in the 8th  
15 year of operation. Each evaluation panel shall  
16 measure the Center’s performance against the  
17 objectives specified in this section. A Center  
18 that has not received a positive evaluation as a  
19 result of an independent review shall be notified  
20 by the Program of the deficiencies in its per-  
21 formance and shall be placed on probation for  
22 one year, after which time the Program shall  
23 reevaluate the Center. If the Center has not ad-  
24 dressed the deficiencies identified by the review,  
25 or shown a significant improvement in its per-

1 formance, the Director shall conduct a new  
2 competition to select an operator for the Center  
3 or may close the Center.

4 “(I) RECOMPETITION.—If a recipient of a  
5 Center award has received financial assistance  
6 for 10 consecutive years, the Director shall con-  
7 duct a new competition to select an operator for  
8 the Center consistent with the plan required in  
9 this Act. Incumbent Center operators in good  
10 standing shall be eligible to compete for the new  
11 award.

12 “(J) REPORTS.—

13 “(i) PLAN.—Not later than 180 days  
14 after the date of enactment of the FIRST  
15 Act of 2014, the Director shall transmit to  
16 the Committee on Science, Space, and  
17 Technology of the House of Representa-  
18 tives and the Committee on Commerce,  
19 Science, and Transportation of the Senate  
20 a plan as to how the Institute will conduct  
21 reviews, assessments, and reapplication  
22 competitions under this paragraph.

23 “(ii) INDEPENDENT ASSESSMENT.—  
24 The Director shall contract with an inde-  
25 pendent organization to perform an assess-

1           ment of the implementation of the re-  
2           application competition process under this  
3           paragraph within 3 years after the trans-  
4           mittal of the report under clause (i). The  
5           organization conducting the assessment  
6           under this clause may consult with the  
7           MEP Advisory Board.

8           “(iii) COMPARISON OF CENTERS.—

9           Not later than 2 years after the date of en-  
10          actment of the FIRST Act of 2014, the  
11          Director shall transmit to the Committee  
12          on Science, Space, and Technology of the  
13          House of Representatives and the Com-  
14          mittee on Commerce, Science, and Trans-  
15          portation of the Senate a report providing  
16          information on the first and second years  
17          of operations for centers operating from  
18          new competitions or recompetition as com-  
19          pared to longstanding centers. The report  
20          shall provide detail on the engagement in  
21          services provided by Centers and the char-  
22          acteristics of services provided, including  
23          volume and type of services, so that the  
24          Committees can evaluate whether the cost-

1 sharing ratio has an effect on the services  
2 provided at Centers.

3 “(6) PATENT RIGHTS.—The provisions of chap-  
4 ter 18 of title 35, United States Code, shall apply,  
5 to the extent not inconsistent with this section, to  
6 the promotion of technology from research by Cen-  
7 ters under this section except for contracts for such  
8 specific technology extension or transfer services as  
9 may be specified by statute or by the Director.

10 “(7) PROTECTION OF CENTER CLIENT CON-  
11 FIDENTIAL INFORMATION.—Section 552 of title 5,  
12 United States Code, shall apply to the following in-  
13 formation obtained by the Federal Government on a  
14 confidential basis in connection with the activities of  
15 any participant involved in the Hollings Manufac-  
16 turing Extension Partnership:

17 “(A) Information on the business operation  
18 of any participant in a Hollings Manufacturing  
19 Extension Partnership program or of a client of  
20 a Center.

21 “(B) Trade secrets possessed by any client  
22 of a Center.

23 “(8) ADVISORY BOARDS.—Each Center’s advi-  
24 sory boards shall institute a conflict of interest pol-  
25 icy, approved by the Director, that ensures the

1 Board represents local small and medium-sized man-  
2 ufacturers in the Center's region. Board Members  
3 may not serve as a vendor or provide services to the  
4 Center, nor may they serve on more than one Cen-  
5 ter's oversight board simultaneously.

6 “(d) ACCEPTANCE OF FUNDS.—

7 “(1) IN GENERAL.—In addition to such sums  
8 as may be appropriated to the Secretary and Direc-  
9 tor to operate the Hollings Manufacturing Extension  
10 Partnership, the Secretary and Director also may  
11 accept funds from other Federal departments and  
12 agencies and, under section 2(e)(7), from the private  
13 sector for the purpose of strengthening United  
14 States manufacturing.

15 “(2) ALLOCATION OF FUNDS.—

16 “(A) FUNDS ACCEPTED FROM OTHER FED-  
17 ERAL DEPARTMENTS OR AGENCIES.—The Di-  
18 rector shall determine whether funds accepted  
19 from other Federal departments or agencies  
20 shall be counted in the calculation of the Fed-  
21 eral share of capital and annual operating and  
22 maintenance costs under subsection (c).

23 “(B) FUNDS ACCEPTED FROM THE PRI-  
24 VATE SECTOR.—Funds accepted from the pri-  
25 vate sector under section 2(e)(7), if allocated to

1 a Center, may not be considered in the calcula-  
2 tion of the Federal share under subsection (c)  
3 of this section.

4 “(e) MEP ADVISORY BOARD.—

5 “(1) ESTABLISHMENT.—There is established  
6 within the Institute a Manufacturing Extension  
7 Partnership Advisory Board (in this subsection re-  
8 ferred to as the ‘MEP Advisory Board’).

9 “(2) MEMBERSHIP.—

10 “(A) IN GENERAL.—The MEP Advisory  
11 Board shall consist of not fewer than 10 mem-  
12 bers broadly representative of stakeholders, to  
13 be appointed by the Director. At least 2 mem-  
14 bers shall be employed by or on an advisory  
15 board for the Centers, and at least 5 other  
16 members shall be from United States small  
17 businesses in the manufacturing sector. No  
18 member shall be an employee of the Federal  
19 Government.

20 “(B) TERM.—Except as provided in sub-  
21 paragraph (C) or (D), the term of office of each  
22 member of the MEP Advisory Board shall be 3  
23 years.

24 “(C) VACANCIES.—Any member appointed  
25 to fill a vacancy occurring prior to the expira-



1           tion of the term for which his predecessor was  
2           appointed shall be appointed for the remainder  
3           of such term.

4           “(D) SERVING CONSECUTIVE TERMS.—  
5           Any person who has completed two consecutive  
6           full terms of service on the MEP Advisory  
7           Board shall thereafter be ineligible for appoint-  
8           ment during the one-year period following the  
9           expiration of the second such term.

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

13                 “(A) advice on Hollings Manufacturing  
14                 Extension Partnership programs, plans, and  
15                 policies;

16                 “(B) assessments of the soundness of Hol-  
17                 lings Manufacturing Extension Partnership  
18                 plans and strategies; and

19                 “(C) assessments of current performance  
20                 against Hollings Manufacturing Extension  
21                 Partnership program plans.

22          “(4) FEDERAL ADVISORY COMMITTEE ACT AP-  
23          PLICABILITY.—

24                 “(A) IN GENERAL.—In discharging its du-  
25                 ties under this subsection, the MEP Advisory

1 Board shall function solely in an advisory ca-  
2 pacity, in accordance with the Federal Advisory  
3 Committee Act.

4 “(B) EXCEPTION.—Section 14 of the Fed-  
5 eral Advisory Committee Act shall not apply to  
6 the MEP Advisory Board.

7 “(5) REPORT.—The MEP Advisory Board shall  
8 transmit an annual report to the Secretary for  
9 transmittal to Congress within 30 days after the  
10 submission to Congress of the President’s annual  
11 budget request in each year. Such report shall ad-  
12 dress the status of the program established pursuant  
13 to this section and comment on the relevant sections  
14 of the programmatic planning document and updates  
15 thereto transmitted to Congress by the Director  
16 under subsections (c) and (d) of section 23.

17 “(f) COMPETITIVE GRANT PROGRAM.—

18 “(1) ESTABLISHMENT.—The Director shall es-  
19 tablish, within the Hollings Manufacturing Exten-  
20 sion Partnership, under this section and section 26,  
21 a program of competitive awards among participants  
22 described in paragraph (2) for the purposes de-  
23 scribed in paragraph (3).

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

4           “(3) PURPOSE.—The purpose of the program  
5 under this subsection is to add capabilities to the  
6 Hollings Manufacturing Extension Partnership, in-  
7 cluding the development of projects to solve new or  
8 emerging manufacturing problems as determined by  
9 the Director, in consultation with the Director of the  
10 Hollings Manufacturing Extension Partnership pro-  
11 gram, the MEP Advisory Board, and small and me-  
12 dium-sized manufacturers. One or more themes for  
13 the competition may be identified, which may vary  
14 from year to year, depending on the needs of manu-  
15 facturers and the success of previous competitions.  
16 Centers may be reimbursed for costs incurred under  
17 the program.

18           “(4) APPLICATIONS.—Applications for awards  
19 under this subsection shall be submitted in such  
20 manner, at such time, and containing such informa-  
21 tion as the Director shall require, in consultation  
22 with the MEP Advisory Board.

23           “(5) SELECTION.—Awards under this sub-  
24 section shall be peer reviewed and competitively  
25 awarded. The Director shall endeavor to have broad

1 geographic diversity among selected proposals. The  
2 Director shall select proposals to receive awards that  
3 will—

4 “(A) improve the competitiveness of indus-  
5 tries in the region in which the Center or Cen-  
6 ters are located;

7 “(B) create jobs or train newly hired em-  
8 ployees; and

9 “(C) promote the transfer and commer-  
10 cialization of research and technology from in-  
11 stitutions of higher education, national labora-  
12 tories, and nonprofit research institutes.

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

16 “(7) GLOBAL MARKETPLACE PROJECTS.—In  
17 making awards under this subsection, the Director,  
18 in consultation with the MEP Advisory Board and  
19 the Secretary, may take into consideration whether  
20 an application has significant potential for enhanc-  
21 ing the competitiveness of small and medium-sized  
22 United States manufacturers in the global market-  
23 place.

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

1           “(g) EVALUATION OF OBSTACLES UNIQUE TO SMALL  
2 MANUFACTURERS.—The Director shall—

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

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

8           “(3) facilitate improved communication between  
9 the Centers to assist such manufacturers in imple-  
10 menting appropriate, targeted solutions to such ob-  
11 stacles.

12           “(h) COMMUNITY COLLEGE DEFINED.—In this sec-  
13 tion, the term ‘community college’ means an institution  
14 of higher education (as defined under section 101(a) of  
15 the Higher Education Act of 1965 (20 U.S.C. 1001(a)))  
16 at which the highest degree that is predominately awarded  
17 to students is an associate’s degree.”.

18 **SEC. 410. ELIMINATION OF OBSOLETE REPORTS.**

19           (a) ENTERPRISE INTEGRATION STANDARDIZATION  
20 AND IMPLEMENTATION ACTIVITIES REPORT.—Section 3  
21 of the Enterprise Integration Act of 2002 (15 U.S.C.  
22 278g-5) is amended—

23           (1) by striking subsection (c); and

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

1 (b) TIP REPORTS.—Section 28 of the National Insti-  
2 tute of Standards and Technology Act (15 U.S.C. 278n)  
3 is amended—

4 (1) by striking subsection (g); and

5 (2) in subsection (k), by striking paragraph (5).

6 **SEC. 411. MODIFICATIONS TO GRANTS AND COOPERATIVE**  
7 **AGREEMENTS.**

8 Section 8(a) of the Stevenson-Wydler Technology In-  
9 novation Act of 1980 (15 U.S.C. 3706(a)) is amended by  
10 striking “The total amount of any such grant or coopera-  
11 tive agreement may not exceed 75 percent of the total cost  
12 of the program.”.

13 **Subtitle B—Innovative Approaches**  
14 **to Technology Transfer**

15 **SEC. 421. INNOVATIVE APPROACHES TO TECHNOLOGY**  
16 **TRANSFER.**

17 Section 9(jj) of the Small Business Act (15 U.S.C.  
18 638(jj)) is amended to read as follows:

19 “(jj) INNOVATIVE APPROACHES TO TECHNOLOGY  
20 TRANSFER.—

21 “(1) GRANT PROGRAM.—

22 “(A) IN GENERAL.—Each Federal agency  
23 required by subsection (n) to establish an  
24 STTR program shall carry out a grant program  
25 to support innovative approaches to technology

1 transfer at institutions of higher education (as  
2 defined in section 101(a) of the Higher Edu-  
3 cation Act of 1965 (20 U.S.C. 1001(a)), non-  
4 profit research institutions, and Federal labora-  
5 tories in order to improve or accelerate the  
6 commercialization of federally funded research  
7 and technology by small business concerns, in-  
8 cluding new businesses.

9 “(B) AWARDING OF GRANTS AND  
10 AWARDS.—

11 “(i) IN GENERAL.—Each Federal  
12 agency required by subparagraph (A) to  
13 participate in this program shall award,  
14 through a competitive, merit-based process,  
15 grants, in the amounts listed in subpara-  
16 graph (C) to institutions of higher edu-  
17 cation, technology transfer organizations  
18 that facilitate the commercialization of  
19 technologies developed by one or more such  
20 institutions of higher education, Federal  
21 laboratories, other public and private non-  
22 profit entities, and consortia thereof, for  
23 initiatives that help identify high-quality,  
24 commercially viable federally funded re-  
25 search and technologies and to facilitate

1 and accelerate their transfer into the mar-  
2 ketplace.

3 “(ii) USE OF FUNDS.—Activities sup-  
4 ported by grants under this subsection  
5 may include—

6 “(I) providing early-stage proof  
7 of concept funding for translational  
8 research;

9 “(II) identifying research and  
10 technologies at institutions that have  
11 the potential for accelerated commer-  
12 cialization;

13 “(III) technology maturation  
14 funding to support activities such as  
15 prototype construction, experiment  
16 analysis, product comparison, and the  
17 collection of performance data;

18 “(IV) technical validations, mar-  
19 ket research, clarifying intellectual  
20 property rights position and strategy,  
21 and investigating commercial and  
22 business opportunities;

23 “(V) programs to provide advice,  
24 mentoring, entrepreneurial education,  
25 project management, and technology



1 and business development expertise to  
2 innovators and recipients of tech-  
3 nology transfer licenses to maximize  
4 commercialization potential; and

5 “(VI) conducting outreach to  
6 small business concerns as potential  
7 licensees of federally funded research  
8 and technology, and providing tech-  
9 nology transfer services to such small  
10 business concerns.

11 “(iii) SELECTION PROCESS AND AP-  
12 PPLICATIONS.—Qualifying institutions seek-  
13 ing a grant under this subsection shall  
14 submit an application to a Federal agency  
15 required by subparagraph (A) to partici-  
16 pate in this program at such time, in such  
17 manner, and containing such information  
18 as the agency may require. The application  
19 shall include, at a minimum—

20 “(I) a description of innovative  
21 approaches to technology transfer,  
22 technology development, and commer-  
23 cial readiness that have the potential  
24 to increase or accelerate technology  
25 transfer outcomes and can be adopted

1 by other qualifying institutions, or a  
2 demonstration of proven technology  
3 transfer and commercialization strate-  
4 gies, or a plan to implement proven  
5 technology transfer and commer-  
6 cialization strategies that can achieve  
7 greater commercialization of federally  
8 funded research and technologies with  
9 program funding;

10 “(II) a description of how the  
11 qualifying institution will contribute  
12 to local and regional economic devel-  
13 opment efforts; and

14 “(III) a plan for sustainability  
15 beyond the duration of the funding  
16 award.

17 “(iv) PROGRAM OVERSIGHT  
18 BOARDS.—

19 “(I) IN GENERAL.—Successful  
20 proposals shall include a plan to as-  
21 semble a Program Oversight Board,  
22 the members of which shall have tech-  
23 nical, scientific, or business expertise  
24 three-fifths of whom shall be drawn  
25 from industry, start-up companies,

1 venture capital or other equity invest-  
2 ment mechanism, technical enter-  
3 prises, financial institutions, and busi-  
4 ness development organizations with a  
5 track record of success in commer-  
6 cializing innovations. Proposals may  
7 use oversight boards in existence on  
8 the date of the enactment of the  
9 FIRST Act of 2014 that meet the re-  
10 quirements of this subclause.

11 “(II) PROGRAM OVERSIGHT  
12 BOARDS RESPONSIBILITIES.—Pro-  
13 gram Oversight Boards shall—

14 “(aa) establish award pro-  
15 grams for individual projects;

16 “(bb) provide rigorous eval-  
17 uation of project applications;

18 “(cc) determine which  
19 projects should receive awards, in  
20 accordance with guidelines estab-  
21 lished under subparagraph  
22 (C)(ii);

23 “(dd) establish milestones  
24 and associated award amounts

1 for projects that reach mile-  
2 stones;

3 “(ee) determine whether  
4 awarded projects are reaching  
5 milestones; and

6 “(ff) develop a process to re-  
7 allocate outstanding award  
8 amounts from projects that are  
9 not reaching milestones to other  
10 projects with more potential.

11 “(III) CONFLICT OF INTER-  
12 EST.—Program Oversight Boards  
13 shall be composed of members who do  
14 not have a conflict of interest. Boards  
15 shall adopt conflict of interest policies  
16 to ensure relevant relationships are  
17 disclosed and proper recusal proce-  
18 dures are in place.

19 “(c) GRANT AND AWARD AMOUNTS.—

20 “(i) GRANT AMOUNTS.—Each Federal  
21 agency required by subparagraph (A) to  
22 carry out a grant program may make  
23 grants of up to \$3,000,000 to a qualifying  
24 institution.

1                   “(ii) AWARD AMOUNTS.—Each quali-  
2                   fying institution that receives a grant  
3                   under subparagraph (B) shall provide  
4                   awards for individual projects of not more  
5                   than \$100,000, to be provided in phased  
6                   amounts, based on reaching the milestones  
7                   established by the qualifying institution’s  
8                   Program Oversight Board.

9                   “(D) AUTHORIZED EXPENDITURES FOR  
10                   INNOVATIVE APPROACHES TO TECHNOLOGY  
11                   TRANSFER GRANT PROGRAM.—

12                   “(i) PERCENTAGE.—The percentage  
13                   of the extramural budget for research, or  
14                   research and development, each Federal  
15                   agency required by subsection (n) to estab-  
16                   lish an STTR program shall expend on the  
17                   Innovative Approaches to Technology  
18                   Transfer Grant Program shall be—

19                   “(I) 0.05 percent for each of fis-  
20                   cal years 2014 and 2015; and

21                   “(II) 0.1 percent for each of fis-  
22                   cal years 2016 and 2017.

23                   “(ii) TREATMENT OF EXPENDI-  
24                   TURES.—Any portion of the extramural  
25                   budget expended by a Federal agency on

1 the Innovative Approaches to Technology  
2 Transfer Grant Program shall apply to-  
3 wards the agency's expenditure require-  
4 ments under subsection (n).

5 “(2) PROGRAM EVALUATION AND DATA COL-  
6 LECTION AND DISSEMINATION.—

7 “(A) EVALUATION PLAN AND DATA COL-  
8 LECTION.—Each Federal agency required by  
9 paragraph (1)(A) to establish an Innovative Ap-  
10 proaches to Technology Transfer Grant Pro-  
11 gram shall develop a program evaluation plan  
12 and collect annually such information from  
13 grantees as is necessary to assess the Program.  
14 Program evaluation plans shall require the col-  
15 lection of data aimed at identifying outcomes  
16 resulting from the transfer of technology with  
17 assistance from the Innovative Approaches to  
18 Technology Transfer Grant Program. Such  
19 data may include—

20 “(i) specific follow-on funding identi-  
21 fied or obtained, including follow-on fund-  
22 ing sources, such as Federal sources or  
23 private sources, within 3 years of the com-  
24 pletion of the award;

1           “(ii) the number of projects which,  
2           within 5 years of receiving an award under  
3           paragraph (1), result in a license to a  
4           start-up company or an established com-  
5           pany with sufficient resources for effective  
6           commercialization;

7           “(iii) the number of invention disclo-  
8           sures received, United States patent appli-  
9           cations filed, and United States patents  
10          issued within 5 years of the award;

11          “(iv) the number of projects receiving  
12          a grant under paragraph (1) that secure  
13          Phase I or Phase II SBIR or STTR  
14          awards;

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

20          “(vi) the number and location of jobs  
21          created resulting from projects awarded  
22          under paragraph (1); and

23          “(vii) other data as deemed appro-  
24          priate by a Federal agency required by this

1           subparagraph to develop a program evalua-  
2           tion plan.

3           “(B) EVALUATIVE REPORT TO CON-  
4           GRESS.—The head of each Federal agency that  
5           participates in the Innovative Approaches to  
6           Technology Transfer Grant Program shall sub-  
7           mit to the Committee on Science, Space, and  
8           Technology and the Committee on Small Busi-  
9           ness of the House of Representatives and the  
10          Committee on Small Business and Entrepre-  
11          neurship of the Senate an evaluative report re-  
12          garding the activities of the program. The re-  
13          port shall include—

14                 “(i) a detailed description of the im-  
15                 plementation of the program;

16                 “(ii) a detailed description of the  
17                 grantee selection process;

18                 “(iii) an accounting of the funds used  
19                 in the program; and

20                 “(iv) a summary of the data collected  
21                 under subparagraph (A).

22           “(C) DATA DISSEMINATION.—For the pur-  
23           poses of program transparency and dissemina-  
24           tion of best practices, the Administrator shall  
25           include on the public database under subsection



1 (k)(1) information on the Innovative Ap-  
2 proaches to Technology Transfer Grant Pro-  
3 gram, including—

4 “(i) the program evaluation plan re-  
5 quired under subparagraph (A);

6 “(ii) a list of recipients by State of  
7 awards under paragraph (1); and

8 “(iii) information on the use of grants  
9 under paragraph (1) by recipient institu-  
10 tions.”.

11 **TITLE V—NETWORKING AND IN-**  
12 **FORMATION TECHNOLOGY**  
13 **RESEARCH AND DEVELOP-**  
14 **MENT**

15 **SEC. 501. SHORT TITLE.**

16 This title may be cited as the “Advancing America’s  
17 Networking and Information Technology Research and  
18 Development Act of 2014”.

19 **SEC. 502. PROGRAM PLANNING AND COORDINATION.**

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

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

1           “(1) periodically assess the contents and fund-  
2           ing levels of the Program Component Areas and re-  
3           structure the Program when warranted, taking into  
4           consideration any relevant recommendations of the  
5           advisory committee established under subsection (b);  
6           and

7           “(2) ensure that the Program includes large-  
8           scale, long-term, interdisciplinary research and de-  
9           velopment activities, including activities described in  
10          section 104.”.

11          (b) DEVELOPMENT OF STRATEGIC PLAN.—Section  
12          101 of such Act (15 U.S.C. 5511) is amended further by  
13          adding after subsection (d), as added by subsection (a)  
14          of this Act, the following new subsection:

15          “(e) STRATEGIC PLAN.—

16                 “(1) IN GENERAL.—The agencies identified in  
17                 subsection (a)(3)(B), working through the National  
18                 Science and Technology Council and with the assist-  
19                 ance of the National Coordination Office described  
20                 under section 102, shall develop, within 12 months  
21                 after the date of enactment of the Advancing Amer-  
22                 ica’s Networking and Information Technology Re-  
23                 search and Development Act of 2014, and update  
24                 every 3 years thereafter, a 5-year strategic plan to

1 guide the activities described under subsection  
2 (a)(1).

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

9 “(A) foster the transfer of research and  
10 development results into new technologies and  
11 applications for the benefit of society, including  
12 through cooperation and collaborations with  
13 networking and information technology re-  
14 search, development, and technology transition  
15 initiatives supported by the States;

16 “(B) encourage and support mechanisms  
17 for interdisciplinary research and development  
18 in networking and information technology, in-  
19 cluding through collaborations across agencies,  
20 across Program Component Areas, with indus-  
21 try, with Federal laboratories (as defined in  
22 section 4 of the Stevenson-Wydler Technology  
23 Innovation Act of 1980 (15 U.S.C. 3703)), and  
24 with international organizations;

1           “(C) address long-term challenges of na-  
2           tional importance for which solutions require  
3           large-scale, long-term, interdisciplinary research  
4           and development;

5           “(D) place emphasis on innovative and  
6           high-risk projects having the potential for sub-  
7           stantial societal returns on the research invest-  
8           ment;

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

13          “(F) attract more women and underrep-  
14          resented minorities to pursue postsecondary de-  
15          grees in networking and information tech-  
16          nology.

17          “(3) NATIONAL RESEARCH INFRASTRUC-  
18          TURE.—The strategic plan developed in accordance  
19          with paragraph (1) shall be accompanied by mile-  
20          stones and roadmaps for establishing and maintain-  
21          ing the national research infrastructure required to  
22          support the Program, including the roadmap re-  
23          quired by subsection (a)(2)(E).

24          “(4) RECOMMENDATIONS.—The entities in-  
25          volved in developing the strategic plan under para-

1 graph (1) shall take into consideration the rec-  
2 ommendations—

3 “(A) of the advisory committee established  
4 under subsection (b); and

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

8 “(5) REPORT TO CONGRESS.—The Director of  
9 the National Coordination Office shall transmit the  
10 strategic plan required under paragraph (1) to the  
11 advisory committee, the Committee on Commerce,  
12 Science, and Transportation of the Senate, and the  
13 Committee on Science, Space, and Technology of the  
14 House of Representatives.”.

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

18 (1) in subparagraph (A) by inserting “edu-  
19 cation,” before “and other activities”;

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

22 (3) by inserting after subparagraph (D) the fol-  
23 lowing new subparagraph:

24 “(E) encourage and monitor the efforts of the  
25 agencies participating in the Program to allocate the

1 level of resources and management attention nec-  
2 essary to ensure that the strategic plan under sub-  
3 section (e) is developed and executed effectively and  
4 that the objectives of the Program are met;”.

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

7 (1) after the first sentence, by inserting the fol-  
8 lowing: “The co-chairs of the advisory committee  
9 shall meet the qualifications of committee member-  
10 ship and may be members of the President’s Council  
11 of Advisors on Science and Technology.”; and

12 (2) in subparagraph (D), by striking “high-per-  
13 formance” and inserting “high-end”.

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

16 (1) in subparagraph (B)—

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

20 (B) by inserting after clause (vi) the fol-  
21 lowing:

22 “(vii) the Department of Homeland  
23 Security;”;

24 (2) in subparagraph (C)—

1 (A) by striking “is submitted,” and insert-  
2 ing “is submitted, the levels for the previous  
3 fiscal year,”; and

4 (B) by striking “each Program Component  
5 Area;” and inserting “each Program Compo-  
6 nent Area and research area supported in ac-  
7 cordance with section 104;”;

8 (3) in subparagraph (D)—

9 (A) by striking “each Program Component  
10 Area,” and inserting “each Program Compo-  
11 nent Area and research area supported in ac-  
12 cordance with section 104;”;

13 (B) by striking “is submitted,” and insert-  
14 ing “is submitted, the levels for the previous  
15 fiscal year,”; and

16 (C) by striking “and” after the semicolon;

17 (4) by redesignating subparagraph (E) as sub-  
18 paragraph (G); and

19 (5) by inserting after subparagraph (D) the fol-  
20 lowing new subparagraphs:

21 “(E) include a description of how the objectives  
22 for each Program Component Area, and the objec-  
23 tives for activities that involve multiple Program  
24 Component Areas, relate to the objectives of the

1 Program identified in the strategic plan required  
2 under subsection (e);

3 “(F) include—

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

8 “(ii) a description of the funding required  
9 by such Office to perform the functions speci-  
10 fied under section 102(b) for the current fiscal  
11 year by category of activity; and

12 “(iii) the amount of funding provided for  
13 such Office for the current fiscal year by each  
14 agency participating in the Program; and”.

15 (f) DEFINITION.—Section 4 of such Act (15 U.S.C.  
16 5503) is amended—

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

19 (2) by inserting before paragraph (2), as so re-  
20 designated, the following new paragraph:

21 “(1) ‘cyber-physical systems’ means physical or  
22 engineered systems whose networking and informa-  
23 tion technology functions and physical elements are  
24 deeply integrated and are actively connected to the  
25 physical world through sensors, actuators, or other



1 means to perform monitoring and control func-  
2 tions;”;

3 (3) in paragraph (3), as so redesignated, by  
4 striking “high-performance computing” and insert-  
5 ing “networking and information technology”;

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

7 (A) by striking “high-performance com-  
8 puting” and inserting “networking and infor-  
9 mation technology”; and

10 (B) by striking “supercomputer” and in-  
11 serting “high-end computing”;

12 (5) in paragraph (6), as so redesignated, by  
13 striking “network referred to as” and all that fol-  
14 lows through the semicolon and inserting “network,  
15 including advanced computer networks of Federal  
16 agencies and departments;”; and

17 (6) in paragraph (7), as so redesignated, by  
18 striking “National High-Performance Computing  
19 Program” and inserting “networking and informa-  
20 tion technology research and development program”.

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

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

1 **“SEC. 104. LARGE-SCALE RESEARCH IN AREAS OF NA-**  
2 **TIONAL IMPORTANCE.**

3       “(a) IN GENERAL.—The Program shall encourage  
4 agencies identified in section 101(a)(3)(B) to support  
5 large-scale, long-term, interdisciplinary research and de-  
6 velopment activities in networking and information tech-  
7 nology directed toward application areas that have the po-  
8 tential for significant contributions to national economic  
9 competitiveness and for other significant societal benefits.  
10 Such activities, ranging from basic research to the dem-  
11 onstration of technical solutions, shall be designed to ad-  
12 vance the development of research discoveries. The advi-  
13 sory committee established under section 101(b) shall  
14 make recommendations to the Program for candidate re-  
15 search and development areas for support under this sec-  
16 tion.

17       “(b) CHARACTERISTICS.—

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

20                       “(A) include projects selected on the basis  
21 of applications for support through a competi-  
22 tive, merit-based process;

23                       “(B) involve collaborations among re-  
24 searchers in institutions of higher education  
25 and industry, and may involve nonprofit re-

1 search institutions and Federal laboratories, as  
2 appropriate;

3 “(C) when possible, leverage Federal in-  
4 vestments through collaboration with related  
5 State initiatives; and

6 “(D) include a plan for fostering the trans-  
7 fer of research discoveries and the results of  
8 technology demonstration activities, including  
9 from institutions of higher education and Fed-  
10 eral laboratories, to industry for commercial de-  
11 velopment.

12 “(2) COST-SHARING.—In selecting applications  
13 for support, the agencies shall give special consider-  
14 ation to projects that include cost sharing from non-  
15 Federal sources.

16 “(3) AGENCY COLLABORATION.—If 2 or more  
17 agencies identified in section 101(a)(3)(B), or other  
18 appropriate agencies, are working on large-scale re-  
19 search and development activities in the same area  
20 of national importance, then such agencies shall  
21 strive to collaborate through joint solicitation and se-  
22 lection of applications for support and subsequent  
23 funding of projects.

24 “(4) INTERDISCIPLINARY RESEARCH CEN-  
25 TERS.—Research and development activities under

1 this section may be supported through interdiscipli-  
2 nary research centers that are organized to inves-  
3 tigate basic research questions and carry out tech-  
4 nology demonstration activities in areas described in  
5 subsection (a). Research may be carried out through  
6 existing interdisciplinary centers, including those au-  
7 thorized under section 7024(b)(2) of the America  
8 COMPETES Act (Public Law 110-69; 42 U.S.C.  
9 1862o-10).”.

10 **SEC. 504. CYBER-PHYSICAL SYSTEMS.**

11 (a) **ADDITIONAL PROGRAM CHARACTERISTICS.**—Sec-  
12 tion 101(a)(1) of such Act (15 U.S.C. 5511(a)(1)) is  
13 amended—

14 (1) in subparagraph (H), by striking “and”  
15 after the semicolon;

16 (2) in subparagraph (I)—

17 (A) by striking “improving the security”  
18 and inserting “improving the security, reli-  
19 ability, and resilience”; and

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

22 (3) by adding at the end the following new sub-  
23 paragraphs:

24 “(J) provide for increased understanding of the  
25 scientific principles of cyber-physical systems and

1 improve the methods available for the design, devel-  
2 opment, and operation of cyber-physical systems  
3 that are characterized by high reliability, safety, and  
4 security; and

5 “(K) provide for research and development on  
6 human-computer interactions, visualization, and big  
7 data.”.

8 (b) WORKSHOP.—Title I of such Act (15 U.S.C.  
9 5511) is amended further by adding after section 104, as  
10 added by section 503 of this Act, the following new sec-  
11 tion:

12 **“SEC. 105. UNIVERSITY/INDUSTRY WORKSHOP.**

13 “(a) ESTABLISHMENT.—Not later than 1 year after  
14 the date of enactment of the Advancing America’s Net-  
15 working and Information Technology Research and Devel-  
16 opment Act of 2014, the Director of the National Coordi-  
17 nation Office shall convene a workshop, with participants  
18 from institutions of higher education, Federal labora-  
19 tories, and industry, to explore mechanisms for carrying  
20 out collaborative research and development activities for  
21 cyber-physical systems, including the related technologies  
22 required to enable these systems, and to develop grand  
23 challenges in cyber-physical systems research and develop-  
24 ment.

1       “(b) FUNCTIONS.—The workshop participants  
2 shall—

3           “(1) develop options for models for research  
4 and development partnerships among institutions of  
5 higher education, Federal laboratories, and industry,  
6 including mechanisms for the support of research  
7 and development carried out under these partner-  
8 ships;

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

12           “(3) propose guidelines for assigning intellec-  
13 tual property rights and for the transfer of research  
14 results to the private sector; and

15           “(4) make recommendations for how Federal  
16 agencies participating in the Program can help sup-  
17 port research and development partnerships in  
18 cyber-physical systems, including through existing or  
19 new grant programs.

20       “(c) PARTICIPANTS.—The Director of the National  
21 Coordination Office shall ensure that participants in the  
22 workshop are individuals with knowledge and expertise in  
23 cyber-physical systems and that participants represent a  
24 broad mix of relevant stakeholders, including academic  
25 and industry researchers, cyber-physical systems and tech-

1 nologies manufacturers, cyber-physical systems and tech-  
2 nologies users, and, as appropriate, Federal Government  
3 regulators.

4 “(d) REPORT.—Not later than 18 months after the  
5 date of enactment of the Advancing America’s Networking  
6 and Information Technology Research and Development  
7 Act of 2014, the Director of the National Coordination  
8 Office shall transmit to the Committee on Commerce,  
9 Science, and Transportation of the Senate and the Com-  
10 mittee on Science, Space, and Technology of the House  
11 of Representatives a report describing the findings and  
12 recommendations resulting from the workshop required  
13 under this section.”

14 **SEC. 505. CLOUD COMPUTING SERVICES FOR RESEARCH.**

15 Title I of such Act (15 U.S.C. 5511) is amended fur-  
16 ther by adding after section 105, as added by section  
17 504(b) of this Act, the following new section:

18 **“SEC. 106. CLOUD COMPUTING SERVICES FOR RESEARCH.**

19 “(a) INTERAGENCY WORKING GROUP.—Not later  
20 than 180 days after the date of enactment of the Advanc-  
21 ing America’s Networking and Information Technology  
22 Research and Development Act of 2014, the Director of  
23 the National Coordination Office, working through the  
24 National Science and Technology Council, shall convene  
25 an interagency working group to examine—

1 “(1) the research and development needed—

2 “(A) to enhance the effectiveness and effi-  
3 ciency of cloud computing environments;

4 “(B) to increase the trustworthiness of  
5 cloud applications and infrastructure; and

6 “(C) to enhance the foundations of cloud  
7 architectures, programming models, and inter-  
8 operability; and

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

12 “(A) making recommendations on changes  
13 in funding mechanisms, budget models, and  
14 policies needed to remove barriers to the adop-  
15 tion of cloud computing services for research  
16 and for data preservation and sharing; and

17 “(B) providing guidance to organizations  
18 and researchers on opportunities and guidelines  
19 for using cloud computing services for federally  
20 supported research and related activities.

21 “(b) CONSULTATION.—In carrying out the tasks in  
22 paragraphs (1) and (2) of subsection (a), the working  
23 group shall consult with academia, industry, Federal lab-  
24 oratories, and other relevant organizations and institu-  
25 tions, as appropriate.



1       “(c) REPORT.—Not later than 1 year after the date  
2 of enactment of the Advancing America’s Networking and  
3 Information Technology Research and Development Act of  
4 2014, the Director of the National Coordination Office  
5 shall transmit to the Committee on Science, Space, and  
6 Technology of the House of Representatives and the Com-  
7 mittee on Commerce, Science, and Transportation of the  
8 Senate a report describing the findings and any rec-  
9 ommendations of the working group.

10       “(d) TERMINATION.—The interagency working group  
11 shall terminate upon transmittal of the report required  
12 under subsection (e).”.

13 **SEC. 506. NATIONAL COORDINATION OFFICE.**

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

16 **“SEC. 102. NATIONAL COORDINATION OFFICE.**

17       “(a) OFFICE.—The Director shall continue a Na-  
18 tional Coordination Office with a Director and full-time  
19 staff.

20       “(b) FUNCTIONS.—The National Coordination Office  
21 shall—

22               “(1) provide technical and administrative sup-  
23 port to—

24                       “(A) the agencies participating in planning  
25 and implementing the Program, including such

1 support as needed in the development of the  
2 strategic plan under section 101(e); and

3 “(B) the advisory committee established  
4 under section 101(b);

5 “(2) serve as the primary point of contact on  
6 Federal networking and information technology ac-  
7 tivities for government organizations, academia, in-  
8 dustry, professional societies, State computing and  
9 networking technology programs, interested citizen  
10 groups, and others to exchange technical and pro-  
11 grammatic information;

12 “(3) solicit input and recommendations from a  
13 wide range of stakeholders during the development  
14 of each strategic plan required under section 101(e)  
15 through the convening of at least 1 workshop with  
16 invitees from academia, industry, Federal labora-  
17 tories, and other relevant organizations and institu-  
18 tions;

19 “(4) conduct public outreach, including the dis-  
20 semination of findings and recommendations of the  
21 advisory committee, as appropriate; and

22 “(5) promote access to and early application of  
23 the technologies, innovations, and expertise derived  
24 from Program activities to agency missions and sys-

1       tems across the Federal Government and to United  
2       States industry.

3       “(c) SOURCE OF FUNDING.—

4             “(1) IN GENERAL.—The operation of the Na-  
5       tional Coordination Office shall be supported by  
6       funds from each agency participating in the Pro-  
7       gram.

8             “(2) SPECIFICATIONS.—The portion of the total  
9       budget of such Office that is provided by each agen-  
10      cy for each fiscal year shall be in the same propor-  
11      tion as each such agency’s share of the total budget  
12      for the Program for the previous fiscal year, as spec-  
13      ified in the report required under section  
14      101(a)(3).”.

15   **SEC. 507. IMPROVING NETWORKING AND INFORMATION**  
16                   **TECHNOLOGY EDUCATION.**

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

19             (1) by redesignating paragraphs (2) through  
20             (4) as paragraphs (3) through (5), respectively; and  
21             (2) by inserting after paragraph (1) the fol-  
22             lowing new paragraph:

23             “(2) the National Science Foundation shall use  
24             its existing programs, in collaboration with other  
25             agencies, as appropriate, to improve the teaching

1 and learning of networking and information tech-  
2 nology at all levels of education and to increase par-  
3 ticipation in networking and information technology  
4 fields, including by women and underrepresented mi-  
5 norities;”.

6 **SEC. 508. CONFORMING AND TECHNICAL AMENDMENTS.**

7 (a) SECTION 3.—Section 3 of such Act (15 U.S.C.  
8 5502) is amended—

9 (1) in the matter preceding paragraph (1), by  
10 striking “high-performance computing” and insert-  
11 ing “networking and information technology”;

12 (2) in paragraph (1)—

13 (A) in the matter preceding subparagraph  
14 (A), by striking “high-performance computing”  
15 and inserting “networking and information  
16 technology”;

17 (B) in subparagraphs (A), (F), and (G), by  
18 striking “high-performance computing” each  
19 place it appears and inserting “networking and  
20 information technology”; and

21 (C) in subparagraph (H), by striking  
22 “high-performance” and inserting “high-end”;  
23 and

24 (3) in paragraph (2)—

1 (A) by striking “high-performance com-  
2 puting and” and inserting “networking and in-  
3 formation technology and”; and

4 (B) by striking “high-performance com-  
5 puting network” and inserting “networking and  
6 information technology”.

7 (b) TITLE I.—The heading of title I of such Act (15  
8 U.S.C. 5511) is amended by striking “**HIGH-PER-**  
9 **FORMANCE COMPUTING**” and inserting “**NET-**  
10 **WORKING AND INFORMATION TECH-**  
11 **NOLOGY**”.

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

14 (1) in the section heading, by striking “**HIGH-**  
15 **PERFORMANCE COMPUTING**” and inserting  
16 “**NETWORKING AND INFORMATION TECH-**  
17 **NOLOGY RESEARCH AND DEVELOPMENT**”;

18 (2) in subsection (a)—

19 (A) in the subsection heading, by striking  
20 “**NATIONAL HIGH-PERFORMANCE COMPUTING**”  
21 and inserting “**NETWORKING AND INFORMA-**  
22 **TION TECHNOLOGY RESEARCH AND DEVELOP-**  
23 **MENT**”;

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

1 (i) in the matter preceding subpara-  
2 graph (A), by striking “National High-Per-  
3 formance Computing Program” and insert-  
4 ing “networking and information tech-  
5 nology research and development pro-  
6 gram”;

7 (ii) in subparagraph (A), by striking  
8 “high-performance computing, including  
9 networking” and inserting “networking  
10 and information technology”;

11 (iii) in subparagraphs (B) and (G), by  
12 striking “high-performance” each place it  
13 appears and inserting “high-end”; and

14 (iv) in subparagraph (C), by striking  
15 “high-performance computing and net-  
16 working” and inserting “high-end com-  
17 puting, distributed, and networking”; and  
18 (C) in paragraph (2) of such subsection—

19 (i) in subparagraphs (A) and (C)—

20 (I) by striking “high-performance  
21 computing” each place it appears and  
22 inserting “networking and information  
23 technology”; and

1 (II) by striking “development,  
2 networking,” each place it appears  
3 and inserting “development,”; and

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

8 (3) in subsection (b)—

9 (A) in paragraph (1), in the matter pre-  
10 ceding subparagraph (A), by striking “high-per-  
11 formance computing” both places it appears  
12 and inserting “networking and information  
13 technology”; and

14 (B) in paragraph (2), in the second sen-  
15 tence, by striking “2” and inserting “3”; and

16 (4) in subsection (c)(1)(A), by striking “high-  
17 performance computing” and inserting “networking  
18 and information technology”.

19 (d) SECTION 201.—Section 201(a)(1) of such Act  
20 (15 U.S.C. 5521(a)(1)) is amended by striking “high-per-  
21 formance computing” and all that follows through “net-  
22 working;” and inserting “networking and information re-  
23 search and development;”.

24 (e) SECTION 202.—Section 202(a) of such Act (15  
25 U.S.C. 5522(a)) is amended by striking “high-perform-

1 ance computing” and inserting “networking and informa-  
2 tion technology”.

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

5 (1) in paragraph (1), by striking “high-per-  
6 formance computing and networking” and inserting  
7 “networking and information technology”; and

8 (2) in paragraph (2)(A), by striking “high-per-  
9 formance” and inserting “high-end”.

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

12 (1) in subsection (a)(1)—

13 (A) in subparagraph (A), by striking  
14 “high-performance computing systems and net-  
15 works” and inserting “networking and informa-  
16 tion technology systems and capabilities”;

17 (B) in subparagraph (B), by striking  
18 “interoperability of high-performance com-  
19 puting systems in networks and for common  
20 user interfaces to systems” and inserting  
21 “interoperability and usability of networking  
22 and information technology systems”; and

23 (C) in subparagraph (C), by striking  
24 “high-performance computing” and inserting  
25 “networking and information technology”; and



1 (2) in subsection (b)—

2 (A) in the heading, by striking “HIGH-  
3 PERFORMANCE COMPUTING AND NETWORK”  
4 and inserting “NETWORKING AND INFORMA-  
5 TION TECHNOLOGY”; and

6 (B) by striking “sensitive”.

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

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

14 (j) SECTION 207.—Section 207(b) of such Act (15  
15 U.S.C. 5527(b)) is amended by striking “high-perform-  
16 ance computing” and inserting “networking and informa-  
17 tion technology”.

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

20 (1) in the section heading, by striking “**HIGH-**  
21 **PERFORMANCE COMPUTING**” and inserting  
22 “**NETWORKING AND INFORMATION TECH-**  
23 **NOLOGY**”; and

24 (2) in subsection (a)—

1 (A) in paragraph (1), by striking “High-  
2 performance computing and associated” and in-  
3 serting “Networking and information”;

4 (B) in paragraph (2), by striking “high-  
5 performance computing” and inserting “net-  
6 working and information technologies”;

7 (C) in paragraph (3), by striking “high-  
8 performance” and inserting “high-end”;

9 (D) in paragraph (4), by striking “high-  
10 performance computers and associated” and in-  
11 serting “networking and information”; and

12 (E) in paragraph (5), by striking “high-  
13 performance computing and associated” and in-  
14 serting “networking and information”.