

114TH CONGRESS
2D SESSION

S. 3084

AN ACT

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

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

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

2 (a) SHORT TITLE.—This Act may be cited as the
3 “American Innovation and Competitiveness Act”.

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

Sec. 1. Short title; table of contents.

Sec. 2. Definitions.

TITLE I—MAXIMIZING BASIC RESEARCH

Sec. 101. Reaffirmation of merit-based peer review.

Sec. 102. Transparency and accountability.

Sec. 103. EPSCoR reaffirmation and update.

Sec. 104. Cybersecurity research.

Sec. 105. Networking and Information Technology Research and Development
Update.

Sec. 106. Physical sciences coordination.

Sec. 107. Laboratory program improvements.

Sec. 108. Standard Reference Data Act update.

Sec. 109. NSF mid-scale project investments.

Sec. 110. Oversight of NSF major multi-user research facility projects.

Sec. 111. Personnel oversight.

Sec. 112. Management of the U.S. Antarctic Program.

Sec. 113. NIST campus security.

Sec. 114. Coordination of sustainable chemistry research and development.

Sec. 115. Misrepresentation of research results.

Sec. 116. Research reproducibility and replication.

Sec. 117. Brain Research through Advancing Innovative Neurotechnologies Ini-
tiative.

**TITLE II—ADMINISTRATIVE AND REGULATORY BURDEN
REDUCTION**

Sec. 201. Interagency working group on research regulation.

Sec. 202. Scientific and technical collaboration.

Sec. 203. NIST grants and cooperative agreements update.

Sec. 204. Repeal of certain obsolete reports.

Sec. 205. Repeal of certain provisions.

Sec. 206. Grant subrecipient transparency and oversight.

Sec. 207. Micro-purchase threshold for procurement solicitations by research in-
stitutions.

Sec. 208. Coordination of international science and technology partnerships.

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

Sec. 301. Robert Noyce Teacher Scholarship Program update.

Sec. 302. Space grants.

Sec. 303. STEM Education Advisory Panel.

Sec. 304. Committee on STEM Education.

Sec. 305. Programs to expand STEM opportunities.

- Sec. 306. NIST education and outreach.
- Sec. 307. Presidential awards for excellence in STEM mentoring.
- Sec. 308. Working group on inclusion in STEM fields.
- Sec. 309. Improving undergraduate STEM experiences.
- Sec. 310. Computer science education research.
- Sec. 311. Informal STEM education.
- Sec. 312. Developing STEM apprenticeships.
- Sec. 313. NSF report on broadening participation.
- Sec. 314. NOAA science education programs.
- Sec. 315. Hispanic-serving institutions undergraduate program update.

TITLE IV—LEVERAGING THE PRIVATE SECTOR

- Sec. 401. Prize competition authority update.
- Sec. 402. Crowdsourcing and citizen science.
- Sec. 403. NIST director functions update.
- Sec. 404. NIST Visiting Committee on Advanced Technology update.

TITLE V—MANUFACTURING

- Sec. 501. Hollings manufacturing extension partnership improvements.

TITLE VI—INNOVATION AND TECHNOLOGY TRANSFER

- Sec. 601. Innovation corps.
- Sec. 602. Translational research grants.
- Sec. 603. Optics and photonics technology innovations.
- Sec. 604. United States chief technology officer.
- Sec. 605. National research council study on technology for emergency notifications on campuses.

1 **SEC. 2. DEFINITIONS.**

2 In this Act, unless expressly provided otherwise:

3 (1) APPROPRIATE COMMITTEES OF CON-
 4 GRESS.—The term “appropriate committees of Con-
 5 gress” means the Committee on Commerce, Science,
 6 and Transportation of the Senate and the Com-
 7 mittee on Science, Space, and Technology of the
 8 House of Representatives.

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

1 (3) FOUNDATION.—The term “Foundation”
2 means the National Science Foundation.

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

7 (5) NIST.—The term “NIST” means the Na-
8 tional Institute of Standards and Technology.

9 (6) STEM.—The term “STEM” has the mean-
10 ing given the term in section 2 of the American
11 COMPETES Reauthorization Act of 2010 (42
12 U.S.C. 6621 note).

13 (7) STEM EDUCATION.—The term “STEM
14 education” has the meaning given the term in sec-
15 tion 2 of the STEM Education Act of 2015 (42
16 U.S.C. 6621 note).

17 **TITLE I—MAXIMIZING BASIC** 18 **RESEARCH**

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

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

22 (1) sustained, predictable Federal funding of
23 basic research is essential to United States leader-
24 ship in science and technology;

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

(3) evaluating proposals on the basis of the Foundation's intellectual merit and broader impacts criteria should be used to assure that the Foundation's activities are in the national interest as these reviews can affirm that—

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

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

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

(b) MERIT REVIEW CRITERIA.—The Foundation shall maintain the intellectual merit and broader impacts criteria, among other specific criteria as appropriate, as

1 the basis for evaluating grant proposals in the merit re-
2 view process.

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

8 **SEC. 102. TRANSPARENCY AND ACCOUNTABILITY.**

9 (a) FINDINGS.—

10 (1) building the understanding of and con-
11 fidence in investments in basic research is essential
12 to public support for sustained, predictable Federal
13 funding;

14 (2) the Foundation has improved transparency
15 and accountability of the outcomes made through
16 the merit review process, but additional trans-
17 parency into individual grants is valuable in commu-
18 nicating and assuring the public value of federally
19 funded research; and

20 (3) the Foundation should commit to trans-
21 parency and accountability and to clear, consistent
22 public communication regarding the national interest
23 for each Foundation-awarded grant and cooperative
24 agreement.

25 (b) GUIDANCE.—

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

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

(A) describing how the project—

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

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

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

(c) BROADER IMPACTS REVIEW CRITERION UPDATE.—Section 526(a) of the America COMPETES Re-

1 authorization Act of 2010 (42 U.S.C. 1862p–14(a)) is
2 amended to read as follows:

3 “(a) GOALS.—The Foundation shall apply a broader
4 impacts review criterion to identify and demonstrate
5 project support of the following goals:

6 “(1) Increasing the economic competitiveness of
7 the United States.

8 “(2) Advancing of the health and welfare of the
9 American public.

10 “(3) Supporting the national defense of the
11 United States.

12 “(4) Enhancing partnerships between academia
13 and industry in the United States.

14 “(5) Developing an American STEM workforce
15 that is globally competitive through improved pre-
16 kindergarten through grade 12 STEM education
17 and teacher development, and improved under-
18 graduate STEM education and instruction.

19 “(6) Improving public scientific literacy and en-
20 gagement with science and technology in the United
21 States.

22 “(7) Expanding participation of women and in-
23 dividuals from underrepresented groups in STEM.”.

1 **SEC. 103. EPSCOR REAFFIRMATION AND UPDATE.**

2 (a) FINDINGS.—Section 517(a) of the America COM-
3 PETES Reauthorization Act of 2010 (42 U.S.C. 1862p-
4 9(a)) is amended—

5 (1) in paragraph (1)—

6 (A) by striking “The National” and insert-
7 ing “the National”; and

8 (B) by striking “education,” and inserting
9 “education”;

10 (2) in paragraph (2), by striking “with 27
11 States” and all that follows through the semicolon at
12 the end and inserting “with 28 States and jurisdic-
13 tions, taken together, receiving only about 12 per-
14 cent of all National Science Foundation research
15 funding;”;

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

18 “(3) each of the States described in paragraph
19 (2) receives only a fraction of 1 percent of the Foun-
20 dation’s research dollars each year;” and

21 (4) by adding at the end the following:

22 “(4) first established at the National Science
23 Foundation in 1979, the Experimental Program to
24 Stimulate Competitive Research (referred to in this
25 section as ‘EPSCoR’) assists States and jurisdic-
26 tions historically underserved by Federal research

1 and development funding in strengthening their re-
2 search and innovation capabilities;

3 “(5) the EPSCoR structure requires each par-
4 ticipating State to develop a science and technology
5 plan suited to State and local research, education,
6 and economic interests and objectives;

7 “(6) EPSCoR has been credited with advancing
8 the research competitiveness of participating States,
9 improving awareness of science, promoting policies
10 that link scientific investment and economic growth,
11 and encouraging partnerships between government,
12 industry, and academia;

13 “(7) EPSCoR proposals are evaluated through
14 a rigorous and competitive merit-review process to
15 ensure that awarded research and development ef-
16 forts meet high scientific standards; and

17 “(8) according to the National Academy of
18 Sciences, EPSCoR has strengthened the national re-
19 search infrastructure and enhanced the educational
20 opportunities needed to develop the science and engi-
21 neering workforce.”.

22 (b) SENSE OF CONGRESS.—

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

1 (A) since maintaining the Nation’s sci-
2 entific and economic leadership requires the
3 participation of talented individuals nationwide,
4 EPSCoR investments into State research and
5 education capacities are in the Federal interest
6 and should be sustained; and

7 (B) EPSCoR should maintain its experi-
8 mental component by supporting innovative
9 methods for improving research capacity and
10 competitiveness.

11 (2) DEFINITION OF EPSCOR.—In this sub-
12 section, the term “EPSCoR” has the meaning given
13 the term in section 502 of the America COMPETES
14 Reauthorization Act of 2010 (42 U.S.C. 1862p
15 note).

16 (c) AWARD STRUCTURE UPDATES.—Section 517 of
17 the America COMPETES Reauthorization Act of 2010
18 (42 U.S.C. 1862p–9) is amended by adding at the end
19 the following:

20 “(g) AWARD STRUCTURE UPDATES.—In imple-
21 menting the mandate to maximize the impact of Federal
22 EPSCoR support on building competitive research infra-
23 structure, and based on the inputs and recommendations
24 of previous EPSCoR reviews, the head of each Federal
25 agency administering an EPSCoR program shall—

1 “(1) consider modifications to EPSCoR pro-
2 posal solicitation, award type, and project evalua-
3 tion—

4 “(A) to more closely align with current
5 agency priorities and initiatives;

6 “(B) to focus EPSCoR funding on achiev-
7 ing critical scientific, infrastructure, and edu-
8 cational needs of that agency;

9 “(C) to encourage collaboration between
10 EPSCoR-eligible institutions and researchers,
11 including with institutions and researchers in
12 other States and jurisdictions;

13 “(D) to improve communication between
14 State and Federal agency proposal reviewers;
15 and

16 “(E) to continue to reduce administrative
17 burdens associated with EPSCoR;

18 “(2) consider modifications to EPSCoR award
19 structures—

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

1 “(B) to allow the agency, States, and juris-
 2 dictions to experiment with new research and
 3 development funding models; and

4 “(3) consider modifications to the mechanisms
 5 used to monitor and evaluate EPSCoR awards—

6 “(A) to increase collaboration between
 7 EPSCoR-funded researchers and agency staff,
 8 including by providing opportunities for men-
 9 toring young researchers and for the use of
 10 Federal facilities;

11 “(B) to identify and disseminate best prac-
 12 tices; and

13 “(C) to harmonize metrics across partici-
 14 pating Federal agencies, as appropriate.”.

15 (d) REPORTS.—

16 (1) CONGRESSIONAL REPORTS.—Section 517 of
 17 the America COMPETES Reauthorization Act of
 18 2010 (42 U.S.C. 1862p–9), as amended, is further
 19 amended—

20 (A) by striking subsection (c);

21 (B) by redesignating subsections (d)
 22 through (g) as subsections (c) through (f), re-
 23 spectively;

24 (C) in subsection (c), as redesignated—

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

(ii) in paragraph (2)—

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

(II) in subparagraph (D), by striking “EPSCoR and other Federal EPSCoR-like programs” and inserting “each EPSCoR”;

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

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

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

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

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

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

5 “(A) the total amount made available, by
6 State, under EPSCoR;

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

10 “(C) the efforts and accomplishments to
11 more fully integrate the EPSCoR States in
12 major agency activities and initiatives;

13 “(D) the percentage of EPSCoR reviewers
14 from EPSCoR States; and

15 “(E) the number of programs or large col-
16 laborator awards involving a partnership of or-
17 ganizations and institutions from EPSCoR and
18 non-EPSCoR States; and

19 “(3) an analysis of the gains in academic re-
20 search quality and competitiveness, and in science
21 and technology human resource development,
22 achieved by the program over the last 5 fiscal
23 years.”; and

24 (E) in subsection (e)(1), as redesignated,
25 by striking “Experimental Program to Stimu-

late Competitive Research or a program similar to the Experimental Program to Stimulate Competitive Research” and inserting “EPSCoR”.

(2) RESULTS OF AWARD STRUCTURE PLAN.—

Not later than 1 year after the date of enactment of this Act, the EPSCoR Interagency Coordinating Committee shall brief the appropriate committees of Congress on the updates made to the award structure under 517(f) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p–9(f)), as amended by this subsection.

(e) DEFINITION OF EPSCoR.—

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

“(2) EPSCoR.—The term ‘EPSCoR’ means—

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

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

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

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

(B) in subsection (a), by striking “an Experimental Program to Stimulate Competitive Research” and inserting “a program to stimulate competitive research (known as the ‘Established Program to Stimulate Competitive Research’)”; and

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

SEC. 104. CYBERSECURITY RESEARCH.

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

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

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

(3) by adding at the end the following:

1 “(Q) security of election-dedicated voting
2 system software and hardware; and

3 “(R) role of the human factor in cyberse-
4 curity and the interplay of computers and hu-
5 mans and the physical world.”.

6 (b) NIST CYBERSECURITY PRIORITIES.—

7 (1) CRITICAL INFRASTRUCTURE AWARENESS.—

8 The Director of NIST shall continue to raise public
9 awareness of the voluntary, industry-led cybersecu-
10 rity standards and best practices for critical infra-
11 structure developed under section 2(c)(15) of the
12 National Institute of Standards and Technology Act
13 (15 U.S.C. 272(c)(15)).

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

19 (A) research information systems for fu-
20 ture cybersecurity needs; and

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

23 (i) to research and identify or, if nec-
24 essary, develop cryptography standards
25 and guidelines for future cybersecurity

1 needs, including quantum-resistant cryp-
2 tography standards; and

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

10 (3) FEDERAL INFORMATION SYSTEMS RE-
11 SEARCH AND DEVELOPMENT.—Section 20(d)(3) of
12 the National Institute of Standards and Technology
13 Act (15 U.S.C. 278g–3(d)(3)) is amended to read as
14 follows:

15 “(3) conduct research and analysis—

16 “(A) to determine the nature and extent of
17 information security vulnerabilities and tech-
18 niques for providing cost-effective information
19 security;

20 “(B) to review and determine prevalent in-
21 formation security challenges and deficiencies
22 identified by agencies or the Institute, including
23 any challenges or deficiencies described in any
24 of the annual reports under section 3553 or
25 3554 of title 44, United States Code, and in

any of the reports and the independent evaluations under section 3555 of that title, that may undermine the effectiveness of agency information security programs and practices; and

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

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

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

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

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

1 **SEC. 105. NETWORKING AND INFORMATION TECHNOLOGY**
2 **RESEARCH AND DEVELOPMENT UPDATE.**

3 (a) **SHORT TITLE.**—This section may be cited as the
4 “Networking and Information Technology Research and
5 Development Modernization Act of 2016”.

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

8 (1) in paragraphs (2) and (5), by striking
9 “high-performance computing” and inserting “net-
10 working and information technology, including high-
11 performance computing,”; and

12 (2) in paragraph (3), by striking “high-per-
13 formance computing” and inserting “networking and
14 information technology, including high-performance
15 computing”;

16 (c) **PURPOSES.**—Section 3 of the High-Performance
17 Computing Act of 1991 (15 U.S.C. 5502) is amended—

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

21 (2) in paragraph (1)—

22 (A) in the matter preceding subparagraph
23 (A), by striking “expanding Federal support for
24 research, development, and application of high-
25 performance computing” and inserting “sup-
26 porting Federal research, development, and ap-

1 plication of networking and information tech-
2 nology”;

3 (B) in subparagraph (A), by striking
4 “high-performance computing” both places it
5 appears and inserting “networking and infor-
6 mation technology”;

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

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

11 “(C) stimulate research on and promote
12 more rapid development of high-end computing
13 systems software and applications software;”;

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

17 (F) in subparagraph (D), as redesignated,
18 by inserting “high-end” after “the development
19 of”;

20 (G) in subparagraphs (E) and (F), as re-
21 designated, by striking “high-performance com-
22 puting” each place it appears and inserting
23 “networking and information technology”; and

1 (H) in subparagraph (G), as redesignated,
 2 by striking “high-performance” and inserting
 3 “high-end”; and
 4 (3) in paragraph (2)—

5 (A) by striking “high-performance com-
 6 puting and” and inserting “networking and in-
 7 formation technology and”; and

8 (B) by striking “high-performance com-
 9 puting network” and inserting “networking and
 10 information technology”.

11 (d) DEFINITIONS.—Section 4 of the High-Perform-
 12 ance Computing Act of 1991 (15 U.S.C. 5503) is amend-
 13 ed—

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

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

18 (3) by inserting before paragraph (2), as redes-
 19 ignated, the following:

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

1 means to enable safe and effective, real-time per-
 2 formance in safety-critical and other applications;”;

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

6 (5) by inserting after paragraph (3), as redesign-
 7 nated, the following:

8 “(4) ‘high-end computing’ means the most ad-
 9 vanced and capable computing systems, including
 10 their hardware, storage, networking and software,
 11 encompassing both massive computational capability
 12 and large-scale data analytics to solve computational
 13 problems of national importance that are beyond the
 14 capability of small- to medium-scale systems, includ-
 15 ing computing formerly known as high-performance
 16 computing;”;

17 (6) by inserting after paragraph (5), as redesign-
 18 nated, the following:

19 “(6) ‘networking and information technology’
 20 means high-end computing, communications, and in-
 21 formation technologies, high-capacity and high-speed
 22 networks, special purpose and experimental systems,
 23 high-end computing systems software and applica-
 24 tions software, and the management of large data
 25 sets;

1 “(7) ‘participating agency’ means an agency de-
 2 scribed in section 101(a)(3)(C);” and

3 (7) in paragraph (8), as redesignated, by strik-
 4 ing “National High-Performance Computing Pro-
 5 gram” and inserting “Networking and Information
 6 Technology Research and Development Program”.

7 (e) TITLE I HEADING.—The heading of title I of the
 8 High-Performance Computing Act of 1991 (15 U.S.C.
 9 5511 et seq.) is amended by striking “**HIGH-PER-**
 10 **FORMANCE COMPUTING**” and inserting “**NET-**
 11 **WORKING AND INFORMATION TECH-**
 12 **NOLOGY**”.

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

17 (1) in the section heading, by striking “**NA-**
 18 **TIONAL HIGH-PERFORMANCE COMPUTING**
 19 **PROGRAM**” and inserting “**NETWORKING AND**
 20 **INFORMATION TECHNOLOGY RESEARCH AND**
 21 **DEVELOPMENT PROGRAM**”;

22 (2) in subsection (a)—

23 (A) in the subsection heading, by striking
 24 “NATIONAL HIGH-PERFORMANCE COMPUTING
 25 PROGRAM” and inserting “NETWORKING AND

1 INFORMATION TECHNOLOGY RESEARCH AND
2 DEVELOPMENT”;

3 (B) in paragraph (1)—

4 (i) in the matter preceding subpara-
5 graph (A), by striking “National High-Per-
6 formance Computing Program” and insert-
7 ing “Networking and Information Tech-
8 nology Research and Development Pro-
9 gram”;

10 (ii) in subparagraph (A), by striking
11 “high-performance computing, including
12 networking” and inserting “networking
13 and information technology”;

14 (iii) in subparagraphs (B) and (G), by
15 striking “high-performance” each place it
16 appears and inserting “high-end”;

17 (iv) in subparagraph (C), by striking
18 “high-performance computing and net-
19 working” and inserting “high-end com-
20 puting, distributed, and networking”;

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

23 “(D) provide for efforts to increase soft-
24 ware security and reliability;”;

25 (vi) in subparagraph (H)—

1 (I) by inserting “support and
2 guidance” after “provide”; and

3 (II) by striking “and” after the
4 semicolon;

5 (vii) in subparagraph (I)—

6 (I) by striking “improving the se-
7 curity” and inserting “improving the
8 security, reliability, and resilience”;
9 and

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

12 (viii) by adding at the end the fol-
13 lowing:

14 “(J) provide for increased understanding
15 of the scientific principles of cyber-physical sys-
16 tems and improve the methods available for the
17 design, development, and operation of cyber-
18 physical systems that are characterized by high
19 reliability, safety, and security;

20 “(K) provide for research and development
21 on human-computer interactions, visualization,
22 and big data;

23 “(L) provide for research and development
24 on the enhancement of cybersecurity, including

the human facets of cyber threats and secure
cyber systems;

“(M) provide for the understanding of the
science, engineering, policy, and privacy protec-
tion related to networking and information
technology;

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

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

(C) in paragraph (2)—

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

“(A) establish the goals and priorities for
Federal networking and information technology
research, development, education, and other ac-
tivities;”;

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

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

“(i) among the participating agencies;
and

“(ii) to the extent practicable, with other Federal agencies not described in paragraph (3)(C), other Federal and private research laboratories, industry, research entities, institutions of higher education, relevant nonprofit organizations, and international partners of the United States;”;

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

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

1 (iv) in subparagraph (F), by striking
 2 “high-performance” and inserting “high-
 3 end”; and

4 (D) in paragraph (3)—

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

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

10 “(B) provide a detailed description of the
 11 nature and scope of research infrastructure des-
 12 ignated as such under the Program;”;

13 (iii) in subparagraph (C), as redesign-
 14 nated—

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

17 “(i) the Department of Justice;”;

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

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

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

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

3 “(viii) the National Archives and
4 Records Administration;”;

5 (iv) in subparagraph (D), as redesign-
6 nated—

7 (I) by striking “is submitted,”
8 and inserting “is submitted, the levels
9 for the previous fiscal year,”; and

10 (II) by striking “each Program
11 Component Area,” and inserting
12 “each Program Component Area and
13 research area supported in accordance
14 with section 102;”;

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

17 “(E) describe the levels of Federal funding
18 for each participating agency, and for each Pro-
19 gram Component Area, for the fiscal year dur-
20 ing which such report is submitted, the levels
21 for the previous fiscal year, and the levels pro-
22 posed for the fiscal year with respect to which
23 the budget submission applies;”;

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

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

(3) in subsection (b)—

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

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

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

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

(C) in paragraph (2)—

1 (i) in the second sentence, by striking
2 “2” and inserting “3”;

3 (ii) by striking “Committee on Science
4 and Technology” and inserting “Com-
5 mittee on Science, Space, and Tech-
6 nology”; and

7 (iii) by striking “The first report shall
8 be due within 1 year after the date of en-
9 actment of the America COMPETES
10 Act.”;

11 (4) in subsection (c)(1)(A), by striking “high-
12 performance computing” and inserting “networking
13 and information technology”; and

14 (5) by adding at the end the following:

15 “(d) PERIODIC REVIEWS.—The heads of the partici-
16 pating agencies, working through the National Science
17 and Technology Council and the Program, shall—

18 “(1) periodically assess and update, as appro-
19 priate, the structure of the Program, including the
20 Program Component Areas and associated contents,
21 scope, and funding levels, taking into consideration
22 any relevant recommendations of the advisory com-
23 mittee established under subsection (b); and

24 “(2) ensure that such agency’s implementation
25 of the Program includes foundational, large-scale,

1 long-term, and interdisciplinary information tech-
2 nology research and development activities, including
3 activities described in section 102.

4 “(e) STRATEGIC PLANS.—

5 “(1) IN GENERAL.—The heads of the partici-
6 pating agencies, working through the National
7 Science and Technology Council and the Program,
8 shall develop and implement strategic plans to
9 guide—

10 “(A) emerging activities of Federal net-
11 working and information technology research
12 and development; and

13 “(B) the activities described in subsection
14 (a)(1).

15 “(2) UPDATES.—The heads of the participating
16 agencies shall update the strategic plans as appro-
17 priate.

18 “(3) CONTENTS.—Each strategic plan shall—

19 “(A) specify near-term and long-term ob-
20 jectives for the portions of the Program rel-
21 evant to the strategic plan, the anticipated
22 schedule for achieving the near-term and long-
23 term objectives, and the metrics to be used for
24 assessing progress toward the near-term and
25 long-term objectives;

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

“(C) describe how the heads of the participating agencies will support mechanisms for foundational, large-scale, long-term, and interdisciplinary information technology research and development and for Grand Challenges, including through collaborations—

“(i) across Federal agencies;

“(ii) across Program Component Areas; and

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

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

1 transition initiatives supported by the States;
2 and

3 “(E) describe how the portions of the Pro-
4 gram relevant to the strategic plan will address
5 long-term challenges for which solutions require
6 foundational, large-scale, long-term, and inter-
7 disciplinary information technology research
8 and development.

9 “(4) PRIVATE SECTOR EFFORTS.—In devel-
10 oping, implementing, and updating strategic plans,
11 the heads of the participating agencies, working
12 through the National Science and Technology Coun-
13 cil and the Program, shall coordinate with industry,
14 academia, and other interested stakeholders to en-
15 sure, to the extent practicable, that the Federal net-
16 working and information technology research and
17 development activities carried out under this section
18 do not duplicate the efforts of the private sector.

19 “(5) RECOMMENDATIONS.—In developing and
20 updating strategic plans, the heads of the partici-
21 pating agencies shall solicit recommendations and
22 advice from—

23 “(A) the advisory committee under sub-
24 section (b);

1 “(B) the Committee on Science and rel-
 2 evant subcommittees of the National Science
 3 and Technology Council; and

4 “(C) a wide range of stakeholders, includ-
 5 ing industry, academia, National Laboratories,
 6 and other relevant organizations and institu-
 7 tions.

8 “(f) REPORTS.—The heads of the participating agen-
 9 cies, working through the National Science and Tech-
 10 nology Council and the Program, shall submit to the advi-
 11 sory committee, the Committee on Commerce, Science,
 12 and Transportation of the Senate, and the Committee on
 13 Science, Space, and Technology of the House of Rep-
 14 resentatives—

15 “(1) the strategic plans developed under sub-
 16 section (e)(1); and

17 “(2) each update under subsection (e)(2).”.

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

21 (h) NEXT GENERATION INTERNET.—Section 103 of
 22 the High-Performance Computing Act of 1991 (15 U.S.C.
 23 5513) is repealed.

24 (i) GRAND CHALLENGES IN AREAS OF NATIONAL IM-
 25 PORTANCE.—Title I of the High-Performance Computing

1 Act of 1991 (15 U.S.C. 5511 et seq.) is amended by add-
2 ing at the end the following:

3 **“SEC. 102. GRAND CHALLENGES IN AREAS OF NATIONAL**
4 **IMPORTANCE.**

5 “(a) IN GENERAL.—The Program shall encourage
6 the participating agencies to support foundational, large-
7 scale, long-term, interdisciplinary, and interagency infor-
8 mation technology research and development activities in
9 networking and information technology directed toward
10 agency mission areas that have the potential for signifi-
11 cant contributions to national economic competitiveness
12 and for other significant societal benefits. Such activities,
13 ranging from basic research to the demonstration of tech-
14 nical solutions, shall be designed to advance the develop-
15 ment of fundamental discoveries. The advisory committee
16 established under section 101(b) shall make recommenda-
17 tions to the Program for candidate research and develop-
18 ment areas for support under this section.

19 “(b) CHARACTERISTICS.—

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

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

1 “(B) to the extent practicable, involve col-
 2 laborations among researchers in institutions of
 3 higher education and industry, and may involve
 4 nonprofit research institutions and Federal lab-
 5 oratories, as appropriate;

6 “(C) to the extent practicable, leverage
 7 Federal investments through collaboration with
 8 related State and private sector initiatives; and

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

15 “(2) COST-SHARING.—In selecting applications
 16 for support, the agencies may give special consider-
 17 ation to projects that include cost sharing from non-
 18 Federal sources.”.

19 (j) NATIONAL SCIENCE FOUNDATION ACTIVITIES.—
 20 Section 201 of the High-Performance Computing Act of
 21 1991 (15 U.S.C. 5521) is amended—

22 (1) in subsection (a)—

23 (A) by striking “(a) GENERAL RESPON-
 24 SIBILITIES.—”;

25 (B) in paragraph (1)—

1 (i) by inserting “high-end” after “Na-
 2 tional Science Foundation shall provide”;
 3 and

4 (ii) by striking “high-performance
 5 computing” and all that follows through
 6 “networking;” and inserting “networking
 7 and information technology; and”;

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

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

12 “(2) the National Science Foundation shall use
 13 its existing programs, in collaboration with other
 14 agencies, as appropriate, to improve the teaching
 15 and learning of networking and information tech-
 16 nology at all levels of education and to increase par-
 17 ticipation in networking and information technology
 18 fields, including by individuals identified in sections
 19 33 and 34 of the Science and Engineering Equal
 20 Opportunities Act (42 U.S.C. 1885a and 1885b).”;
 21 and

22 (2) by striking subsection (b).

23 (k) NATIONAL AERONAUTICS AND SPACE ADMINIS-
 24 TRATION ACTIVITIES.—Section 202 of the High-Perform-

1 ance Computing Act of 1991 (15 U.S.C. 5522) is amend-
2 ed—

3 (1) by striking “(a) GENERAL RESPONSIBIL-
4 ITIES.—”;

5 (2) by striking “high-performance computing”
6 and inserting “networking and information tech-
7 nology”; and

8 (3) by striking subsection (b).

9 (l) DEPARTMENT OF ENERGY ACTIVITIES.—Section
10 203 of the High-Performance Computing Act of 1991 (15
11 U.S.C. 5523) is amended—

12 (1) by striking “(a) GENERAL RESPONSIBIL-
13 ITIES.—”;

14 (2) in paragraph (1), by striking “high-per-
15 formance computing and networking” and inserting
16 “networking and information technology”;

17 (3) in paragraph (2)(A), by striking “high-per-
18 formance” and inserting “high-end”; and

19 (4) by striking subsection (b).

20 (m) DEPARTMENT OF COMMERCE ACTIVITIES.—Sec-
21 tion 204 of the High-Performance Computing Act of 1991
22 (15 U.S.C. 5524) is amended—

23 (1) in subsection (a)(1)—

24 (A) in subparagraph (A), by striking
25 “high-performance computing systems and net-

works” and inserting “networking and information technology systems and capabilities”;

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

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

(2) in subsection (b)—

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

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

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

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

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

4 (o) ROLE OF THE DEPARTMENT OF EDUCATION.—
 5 Section 206 of the High-Performance Computing Act of
 6 1991 (15 U.S.C. 5526) is repealed.

7 (p) MISCELLANEOUS PROVISIONS.—Section 207 of
 8 the High-Performance Computing Act of 1991 (15 U.S.C.
 9 5527) is amended—

10 (1) in subsection (a)(2), by striking “para-
 11 graphs (1) through (5) of section 2315(a) of title
 12 10” and inserting “section 3552(b)(6)(A)(i) of title
 13 44”; and

14 (2) in subsection (b), by striking “high-per-
 15 formance computing” and inserting “networking and
 16 information technology”.

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

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

24 (s) NATIONAL INFORMATION TECHNOLOGY RE-
 25 SEARCH AND DEVELOPMENT PROGRAM.—Section

1 13202(b) of the America Recovery and Reinvestment Act
 2 of 2009 (42 U.S.C. 17912(b)) is amended by striking
 3 “National High-Performance Computing Program” and
 4 inserting “Networking and Information Technology Re-
 5 search and Development Program”.

6 (t) FEDERAL CYBERSECURITY RESEARCH AND DE-
 7 VELOPMENT.—Section 201(a)(4) of the Cybersecurity En-
 8 hancement Act of 2014 (15 U.S.C. 7431(a)(4)) is amend-
 9 ed—

10 (1) by striking “clauses (i) through (x)” and in-
 11 serting “clauses (i) through (xi)”; and

12 (2) by striking “under clause (xi)” and insert-
 13 ing “under clause (xii)”.

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

17 **SEC. 106. PHYSICAL SCIENCES COORDINATION.**

18 (a) HIGH-ENERGY PHYSICS.—

19 (1) IN GENERAL.—The Physical Science Sub-
 20 committee of the National Science and Technology
 21 Council (referred to in this section as “Sub-
 22 committee”) shall continue to coordinate Federal ef-
 23 forts related to high-energy physics research to
 24 maximize the efficiency and effectiveness of United
 25 States investment in high-energy physics.

1 (2) PURPOSES.—The purposes of the Sub-
2 committee include—

3 (A) to advise and assist the Committee on
4 Science and the National Science and Tech-
5 nology Council on United States policies, proce-
6 dures, and plans in the physical sciences, in-
7 cluding high-energy physics; and

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

12 (i) in high-energy physics research, in-
13 cluding related underground science and
14 engineering research;

15 (ii) in physical infrastructure and fa-
16 cilities;

17 (iii) in information and analysis; and

18 (iv) in coordination activities.

19 (3) RESPONSIBILITIES.—In regard to coordi-
20 nating Federal efforts related to high-energy physics
21 research, the Subcommittee shall, taking into ac-
22 count the findings and recommendations of relevant
23 advisory committees—

1 (A) provide recommendations on planning
2 for construction and stewardship of large facili-
3 ties participating in high-energy physics;

4 (B) provide recommendations on research
5 coordination and collaboration among the pro-
6 grams and activities of Federal agencies related
7 to underground science, neutrino research, dark
8 energy, and dark matter research;

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

14 (D) propose methods for engagement with
15 international, Federal, and State agencies and
16 Federal laboratories not represented on the Na-
17 tional Science and Technology Council to iden-
18 tify and reduce regulatory, logistical, and fiscal
19 barriers that inhibit United States leadership in
20 high-energy physics and related underground
21 science; and

22 (E) develop, and update as necessary, a
23 strategic plan to guide Federal programs and
24 activities in support of high-energy physics re-
25 search, including—

- (i) the efforts taken in support of paragraph (2) since the last strategic plan;
- (ii) an evaluation of the current research needs for maintaining United States leadership in high-energy physics; and
- (iii) an identification of future priorities in the area of high-energy physics.

(b) RADIATION BIOLOGY.—

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

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

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

(B) identify opportunities to stimulate international cooperation and leverage research

1 and knowledge from sources outside of the
2 United States;

3 (C) ensure coordination between the De-
4 partment of Energy Office of Science, Founda-
5 tion, National Aeronautics and Space Adminis-
6 tration, National Institutes of Health, Environ-
7 mental Protection Agency, Department of De-
8 fense, Nuclear Regulatory Commission, and De-
9 partment of Homeland Security;

10 (D) identify ongoing scientific challenges
11 for understanding the long-term effects of ion-
12 izing radiation on biological systems; and

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

16 (c) FUSION ENERGY SCIENCES.—

17 (1) IN GENERAL.—The Subcommittee shall con-
18 tinue to coordinate Federal efforts related to fusion
19 energy research to maximize the efficiency and effec-
20 tiveness of United States investment in fusion en-
21 ergy sciences.

22 (2) RESPONSIBILITIES FOR FUSION ENERGY
23 SCIENCES.—In regard to coordinating Federal ef-
24 forts related to fusion energy sciences, the Sub-
25 committee shall—

1 (A) advise and assist the National Science
2 and Technology Council on policies and initia-
3 tives in fusion energy sciences, including en-
4 hancing scientific knowledge of fusion energy
5 science, plasma physics, and related materials
6 sciences;

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

11 (C) ensure coordination between the De-
12 partment of Energy Office of Science, National
13 Nuclear Security Administration, Advanced Re-
14 search Projects Agency-Energy, National Aero-
15 nautics and Space Administration, Foundation,
16 and Department of Defense regarding fusion
17 energy sciences and plasma physics; and

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

21 **SEC. 107. LABORATORY PROGRAM IMPROVEMENTS.**

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

1 (1) interactions with academia, international re-
2 searchers, and industry; and

3 (2) commercial and industrial applications.

4 (b) OPTIMIZING COMMERCIAL AND INDUSTRIAL AP-
5 PPLICATIONS.—In accordance with the purpose under sec-
6 tion 1(b)(3) of the National Institute of Standards and
7 Technology Act (15 U.S.C. 271(b)(3)), the comprehensive
8 strategic plan shall—

9 (1) include performance metrics for the dissemi-
10 nation of fundamental research results, measure-
11 ments, and standards research results to industry,
12 including manufacturing, and other interested par-
13 ties;

14 (2) document any positive benefits of research
15 on the competitiveness of the interested parties de-
16 scribed in paragraph (1);

17 (3) clarify the current approach to the tech-
18 nology transfer activities of NIST; and

19 (4) consider recommendations from the Na-
20 tional Academy of Sciences.

21 **SEC. 108. STANDARD REFERENCE DATA ACT UPDATE.**

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

24 **“SEC. 2. DEFINITIONS.**

25 “For the purposes of this Act:

1 “(1) STANDARD REFERENCE DATA.—The term
2 ‘standard reference data’ means data that is—

3 “(A) either—

4 “(i) quantitative information related
5 to a measurable physical, or chemical, or
6 biological property of a substance or sys-
7 tem of substances of known composition
8 and structure;

9 “(ii) measurable characteristics of a
10 physical artifact or artifacts;

11 “(iii) engineering properties or per-
12 formance characteristics of a system; or

13 “(iv) 1 or more digital data objects
14 that serve—

15 “(I) to calibrate or characterize
16 the performance of a detection or
17 measurement system; or

18 “(II) to interpolate or extrapo-
19 late, or both, data described in sub-
20 paragraph (A) through (C); and

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

23 “(2) SECRETARY.—The term ‘Secretary’ means
24 the Secretary of Commerce.”.

1 **SEC. 109. NSF MID-SCALE PROJECT INVESTMENTS.**

2 (a) FINDINGS.—Congress makes the following find-
3 ings:

4 (1) The Foundation funds major research facili-
5 ties, infrastructure, and instrumentation that pro-
6 vide unique capabilities at the frontiers of science
7 and engineering.

8 (2) Modern and effective research facilities, in-
9 frastructure, and instrumentation are critical to
10 maintaining United States leadership in science and
11 engineering.

12 (3) The costs of some proposed research instru-
13 mentation, equipment, and upgrades to major re-
14 search facilities fall between programs currently
15 funded by the Foundation, creating a gap between
16 the established parameters of the Major Research
17 Instrumentation and Major Research Equipment
18 and Facilities Construction programs, including
19 projects that have been identified as cost-effective
20 additions of high priority to the advancement of sci-
21 entific understanding.

22 (4) The 2010 Astronomy and Astrophysics
23 Decadal Survey recommended a mid-scale innova-
24 tions program.

25 (b) MID-SCALE PROJECTS.—

1 (1) IN GENERAL.—The Foundation shall evalu-
2 ate the existing and future needs, across all dis-
3 ciplines supported by the Foundation, for mid-scale
4 projects.

5 (2) STRATEGY.—The Director of the Founda-
6 tion shall develop a strategy to address the needs
7 identified in paragraph (1).

8 (3) BRIEFING.—Not later than 180 days after
9 the date of enactment of this Act, the Director of
10 the Foundation shall provide a briefing to the appro-
11 priate committees of Congress on the evaluation
12 under paragraph (1) and the strategy under para-
13 graph (2).

14 (4) DEFINITION OF MID-SCALE PROJECTS.—In
15 this subsection, the term “mid-scale projects” means
16 research instrumentation, equipment, and upgrades
17 to major research facilities or other research infra-
18 structure investments that exceed the maximum
19 award funded by the major research instrumentation
20 program and are below the minimum award funded
21 by the major research equipment and facilities con-
22 struction program as described in section 507 of the
23 AMERICA Competes Reauthorization Act of 2010
24 (Public Law 111–358; 124 Stat. 4008).

1 **SEC. 110. OVERSIGHT OF NSF MAJOR MULTI-USER RE-**
2 **SEARCH FACILITY PROJECTS.**

3 (a) FACILITIES OVERSIGHT.—

4 (1) IN GENERAL.—The Director of the Founda-
5 tion shall strengthen oversight and accountability
6 over the full life-cycle of each major multi-user re-
7 search facility project, including planning, develop-
8 ment, procurement, construction, operations, and
9 support, and shut-down of the facility, in order to
10 maximize research investment.

11 (2) REQUIREMENTS.—In carrying out para-
12 graph (1), the Director shall—

13 (A) prioritize the scientific outcomes of a
14 major multi-user research facility project and
15 the internal management and financial over-
16 sight of the major multi-user research facility
17 project;

18 (B) clarify the roles and responsibilities of
19 all organizations, including offices, panels, com-
20 mittees, and directorates, involved in supporting
21 a major multi-user research facility project, in-
22 cluding the role of the Major Research Equip-
23 ment and Facilities Construction Panel;

24 (C) establish policies and procedures for
25 the planning, management, and oversight of a
26 major multi-user research facility project at

1 each phase of the life-cycle of the major multi-
2 user research facility project;

3 (D) ensure that policies for estimating and
4 managing costs and schedules are consistent
5 with the best practices described in the Govern-
6 ment Accountability Office Cost Estimating and
7 Assessment Guide, the Government Account-
8 ability Office Schedule Assessment Guide, and
9 the Office of Management and Budget Uniform
10 Guidance (2 C.F.R. Part 200);

11 (E) establish the appropriate project man-
12 agement and financial management expertise
13 required for Foundation staff to oversee each
14 major multi-user research facility project effec-
15 tively, including by improving project manage-
16 ment training and certification;

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

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

(i) serving as the Foundation's primary resource for all policy or process issues related to the development, implementation, and oversight of a major multi-user research facility project;

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

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

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

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

(b) FACILITIES FULL LIFE-CYCLE COSTS.—

(1) IN GENERAL.—Subject to subsection (c)(1), the Director of the Foundation shall require that any pre-award analysis of a major multi-user research facility project includes the development and consideration of the full life-cycle cost (as defined in section 2 of the National Science Foundation Authorization Act of 1998 (42 U.S.C. 1862k note)) in accordance with section 14 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n-4).

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

(c) COST OVERSIGHT.—

(1) PRE-AWARD ANALYSIS.—

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

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

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

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

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

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

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

(C) EXCEPTION.—The Director of the Foundation, at the Director's discretion, may

1 waive the requirement under subparagraph
 2 (A)(iii) if a similar analysis of the accounting
 3 systems was conducted in the prior years.

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

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

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

13 (C) annual incurred cost submissions of fi-
 14 nancial expenditures; and

15 (D) an incurred cost audit of the major
 16 multi-user research facility project in accord-
 17 ance with Government Accountability Office
 18 Government Auditing Standards—

19 (i) at least once during construction
 20 at a time determined based on risk anal-
 21 ysis and length of the award, except that
 22 the length of time between audits may not
 23 exceed 3 years; and

24 (ii) at the completion of the construc-
 25 tion phase.

1 (3) OPERATIONS COST ANALYSIS.—The Direc-
2 tor of the Foundation shall require an independent
3 cost analysis of the operational proposal for each
4 major multi-user research facility project.

5 (d) CONTINGENCY.—

6 (1) IN GENERAL.—The Director of the Founda-
7 tion shall strengthen internal controls to improve
8 oversight of contingency on a major multi-user re-
9 search facility project.

10 (2) REQUIREMENTS.—In carrying out para-
11 graph (1), the Director of the Foundation shall—

12 (A) only include contingency amounts in
13 an award in accordance with section 200.433 of
14 title 2, Code of Federal Regulations (relating to
15 contingency provisions), or any successor regu-
16 lation;

17 (B) retain control over funds budgeted for
18 contingency, except that the Director may dis-
19 burse budgeted contingency funds incrementally
20 to the awardee to ensure project stability and
21 continuity;

22 (C) track contingency use; and

23 (D) ensure that contingency amounts allo-
24 cated to the performance baseline are reason-
25 able and allowable.

1 (e) USE OF FEES.—

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

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

6 (B) the Foundation should implement an
7 award fee policy that ensures more trans-
8 parency and accountability in the funding of
9 necessary and appropriate expenses directly re-
10 lated to the construction and operation of major
11 multi-user research facilities.

12 (2) REPORTING AND RECORDKEEPING.—The
13 Director of the Foundation shall establish guidelines
14 for awardees regarding inappropriate expenditures
15 associated with all fee types used in cooperative
16 agreements, including for alcoholic beverages, lob-
17 bying, meals or entertainment for non-business pur-
18 poses, non-business travel, and any other purpose
19 the Director determines is inappropriate.

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

22 (1) not later than 90 days after the date of en-
23 actment of this Act, and periodically thereafter until
24 the completion date, provide a briefing to the appro-

1 appropriate committees of Congress on the response to or
 2 progress made toward implementation of—

3 (A) this section;

4 (B) all of the issues and recommendations
 5 identified in cooperative agreement audit re-
 6 ports and memoranda issued by the Inspector
 7 General of the Foundation in the last 5 years;
 8 and

9 (C) all of the issues and recommendations
 10 identified by a panel of the National Academy
 11 of Public Administration in the December 2015
 12 report entitled “National Science Foundation:
 13 Use of Cooperative Agreements to Support
 14 Large Scale Investment in Research”; and

15 (2) not later than 1 year after the date of en-
 16 actment of this Act, notify the appropriate commit-
 17 tees of Congress when the Foundation has imple-
 18 mented the recommendations identified in a panel of
 19 the National Academy of Public Administration re-
 20 port issued December 2015.

21 (g) DEFINITIONS.—In this section:

22 (1) APPROPRIATE COMMITTEES OF CON-
 23 GRESS.—The term “appropriate committees of Con-
 24 gress” means the Committee on Commerce, Science,
 25 and Transportation and the Committee on Appro-

1 priations of the Senate and the Committee on
 2 Science, Space, and Technology and the Committee
 3 on Appropriations of the House of Representatives.

4 (2) MAJOR MULTI-USER RESEARCH FACILITY
 5 PROJECT.—The term “‘major multi-user research
 6 facility project’” means a science and engineering
 7 facility project that—

8 (A) exceeds the lesser of—

9 (i) 10 percent of a Directorate’s an-
 10 nual budget; or

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

13 (B) is funded by the major research equip-
 14 ment and facilities construction account, or any
 15 successor account.

16 **SEC. 111. PERSONNEL OVERSIGHT.**

17 (a) CONFLICTS OF INTEREST.—The Director of the
 18 Foundation shall update the policy and procedure of the
 19 Foundation relating to conflicts of interest to improve doc-
 20 umentation and management of any known conflict of in-
 21 terest of an individual on temporary assignment at the
 22 Foundation, including an individual on assignment under
 23 the Intergovernmental Personnel Act of 1970 (42 U.S.C.
 24 4701 et seq.).

1 (b) JUSTIFICATIONS.—The Deputy Director of the
2 Foundation shall submit annually to the appropriate com-
3 mittees of Congress written justification for each rotator
4 employed under the Intergovernmental Personnel Act of
5 1970 (42 U.S.C. 4701 et seq.), or other rotator employed,
6 by the Foundation that year that is paid at a rate that
7 exceeds the maximum rate of pay for the Senior Executive
8 Service, including, if applicable, the level of adjustment for
9 the certified Senior Executive Service Performance Ap-
10 praisal System.

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

21 **SEC. 112. MANAGEMENT OF THE U.S. ANTARCTIC PRO-**
22 **GRAM.**

23 (a) REVIEW.—

24 (1) IN GENERAL.—The Director of the Founda-
25 tion shall continue to review the efforts by the Foun-

1 dation to sustain and strengthen scientific efforts in
2 the face of logistical challenges for the United States
3 Antarctic Program.

4 (2) ISSUES TO BE EXAMINED.—In conducting
5 the review, the Director shall examine, at a min-
6 imum, the following:

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

9 (i) the Inspector General of the Na-
10 tional Science Foundation in audit reports
11 and memoranda on the United States Ant-
12 arctic Program in the last 4 years;

13 (ii) the U.S. Antarctic Program Blue
14 Ribbon Panel report, More and Better
15 Science in Antarctica through Increased
16 Logistical Effectiveness, issued July 23,
17 2012; and

18 (iii) the National Research Council re-
19 port, Future Science Opportunities in Ant-
20 arctica and the Southern Ocean, issued
21 September 2011.

22 (B) Efforts by the Foundation to track its
23 progress in addressing the issues and rec-
24 ommendations under subparagraph (A).

1 (C) Efforts by the Foundation to address
2 other opportunities and challenges, including ef-
3 forts on scientific research, coordination with
4 other Federal agencies and international part-
5 ners, logistics and transportation, health and
6 safety of participants, oversight and financial
7 management of awardees and contractors, and
8 resources and policy challenges.

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

13 **SEC. 113. NIST CAMPUS SECURITY.**

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

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

1 **SEC. 114. COORDINATION OF SUSTAINABLE CHEMISTRY RE-**
2 **SEARCH AND DEVELOPMENT.**

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

5 (1) the science of chemistry is vital to improv-
6 ing the quality of human life and plays an important
7 role in addressing critical global challenges, includ-
8 ing water quality, energy, health care, and agri-
9 culture;

10 (2) sustainable chemistry can reduce risks to
11 human health and the environment, reduce waste,
12 improve pollution prevention, promote safe and effi-
13 cient manufacturing, and promote efficient use of re-
14 sources in developing new materials, processes, and
15 technologies that support viable long-term solutions
16 to a significant number of challenges;

17 (3) sustainable chemistry can stimulate innova-
18 tion, encourage new and creative approaches to
19 problems, create jobs, and save money; and

20 (4) a coordinated effort on sustainable chem-
21 istry will allow for a greater return on research in-
22 vestment in this area.

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

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

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

4 (a) PROHIBITION.—The Director of the Foundation
 5 may revise the regulations under part 689 of title 45, Code
 6 of Federal Regulations (relating to research misconduct)
 7 to ensure that the findings and conclusions of any article
 8 authored by a principal investigator, using the results of
 9 research conducted under a Foundation grant, that is pub-
 10 lished in a peer-reviewed publication, made publicly avail-
 11 able, or incorporated in an application for a research grant
 12 or grant extension from the Foundation, does not contain
 13 any falsification, fabrication, or plagiarism.

14 (b) INTERAGENCY COMMUNICATION.—Upon a find-
 15 ing that research misconduct has occurred, the Founda-
 16 tion shall, in addition to any possible final action under
 17 section 689.3 of title 45, Code of Federal Regulations, no-
 18 tify other Federal science agencies of the finding.

19 **SEC. 116. RESEARCH REPRODUCIBILITY AND REPLICA-**
 20 **TION.**

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

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

1 produce a published research finding, including
2 methods;

3 (2) there is growing concern that some pub-
4 lished research findings cannot be reproduced or
5 replicated, which can negatively affect the public's
6 trust in science;

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

9 (4) the increasing interdisciplinary nature and
10 complexity of scientific research may be a contrib-
11 uting factor to issues with research reproducibility
12 and replication.

13 (b) REPORT.—

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

18 (A) to assess research and data reproduc-
19 ibility and replicability issues in interdiscipli-
20 nary research;

21 (B) to make recommendations for improv-
22 ing rigor and transparency in scientific re-
23 search; and

24 (C) to submit to the Director of the Foun-
25 dation a report on the assessment, including its

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

3 (2) SUBMISSION TO CONGRESS.—Not later than
4 60 days after the date the Director of the Founda-
5 tion receives the report under paragraph (1)(C), the
6 Director shall submit the report to the appropriate
7 committees of Congress, including a response from
8 the Director of the Foundation and the Chair of the
9 National Science Board as to whether they agree
10 with each of the findings and recommendations in
11 the report.

12 **SEC. 117. BRAIN RESEARCH THROUGH ADVANCING INNO-**
13 **VATIVE NEUROTECHNOLOGIES INITIATIVE.**

14 (a) IN GENERAL.—The Foundation shall support re-
15 search activities related to the interagency Brain Research
16 through Advancing Innovative Neurotechnologies Initia-
17 tive.

18 (b) SENSE OF CONGRESS.—It is the sense of Con-
19 gress that the Foundation should work in conjunction with
20 the Interagency Working Group on Neuroscience estab-
21 lished by the National Science and Technology Council,
22 Committee on Science to determine how to use the data
23 infrastructure of the Foundation and other applicable
24 Federal science agencies to help neuroscientists collect,
25 standardize, manage, and analyze the large amounts of

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

3 **TITLE II—ADMINISTRATIVE AND**
4 **REGULATORY BURDEN RE-**
5 **DUCTION**

6 **SEC. 201. INTERAGENCY WORKING GROUP ON RESEARCH**
7 **REGULATION.**

8 (a) **SHORT TITLE.**—This section may be cited as the
9 “Research and Development Efficiency Act”.

10 (b) **FINDINGS.**—Congress makes the following find-
11 ings:

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

16 (2) Substantial and increasing administrative
17 burdens and costs in Federal research administra-
18 tion, particularly in the higher education sector
19 where most federally funded research is performed,
20 are eroding funds available to carry out basic sci-
21 entific research.

22 (3) Federally funded grants are increasingly
23 competitive, with the Foundation funding only ap-
24 proximately 1 in every 5 grant proposals.

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

5 (5) Post-award administrative costs have in-
6 creased as Federal research agencies have continued
7 to impose agency-unique compliance and reporting
8 requirements on researchers and research institu-
9 tions.

10 (6) Researchers spend as much as 42 percent
11 of their time complying with Federal regulations, in-
12 cluding administrative tasks such as applying for
13 grants or meeting reporting requirements.

14 (c) SENSE OF CONGRESS.—It is the sense of Con-
15 gress that—

16 (1) administrative burdens faced by researchers
17 may be reducing the return on investment of feder-
18 ally funded research and development; and

19 (2) it is a matter of critical importance to
20 United States competitiveness that administrative
21 costs of federally funded research be streamlined so
22 that a higher proportion of federal funding is ap-
23 plied to direct research activities.

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

1 of Science and Technology Policy, shall establish an inter-
2 agency working group (referred to in this section as the
3 “Working Group”) for the purpose of reducing adminis-
4 trative burdens on federally funded researchers while pro-
5 tecting the public interest through the transparency of and
6 accountability for federally funded activities.

7 (e) RESPONSIBILITIES.—

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

9 (A) regularly review relevant, administra-
10 tion-related regulations imposed on federally
11 funded researchers;

12 (B) recommend those regulations or proc-
13 esses that may be eliminated, streamlined, or
14 otherwise improved for the purpose described in
15 subsection (d);

16 (C) recommend ways to minimize the regu-
17 latory burden on United States institutions of
18 higher education performing federally funded
19 research while maintaining accountability for
20 federal funding; and

21 (D) recommend ways to identify and up-
22 date specific regulations to refocus on perform-
23 ance-based goals rather than on process while
24 achieving the outcome described in subpara-
25 graph (C).

1 (2) GRANT REVIEW.—

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

4 (i) conduct a comprehensive review of
5 Federal science agency grant proposal doc-
6 uments; and

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

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

13 (i) procedures for preliminary project
14 proposals in advance of peer-review selec-
15 tion;

16 (ii) increased use of “Just-In-Time”
17 procedures for documentation that does
18 not bear directly on the scientific merit of
19 a proposal;

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

22 (iv) detailed budget proposals for ap-
23 plicants that peer review selection identi-
24 fies as likely to be funded.

1 (3) CENTRALIZED RESEARCHER PROFILE DATA-
2 BASE.—

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

9 (B) CONSIDERATIONS.—In establishing the
10 centralized profile database under subparagraph
11 (A), the Working Group shall consider incor-
12 porating existing investigator databases.

13 (C) GRANT PROPOSALS.—To the extent
14 practicable, all grant proposals shall utilize the
15 centralized investigator profile database estab-
16 lished under subparagraph (A).

17 (D) REQUIREMENTS.—Each investigator
18 shall—

19 (i) be responsible for ensuring the in-
20 vestigator's profile is current and accurate;
21 and

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

1 (4) CENTRALIZED ASSURANCES REPOSITORY.—

2 The Working Group shall—

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

6 (B) provide guidance to institutions of
7 higher education and Federal science agencies
8 on the use of the centralized assurances reposi-
9 tory.

10 (5) COMPREHENSIVE REVIEW.—

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

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

16 (ii) develop a strategy to simplify in-
17 vestigator progress reports.

18 (B) CONSIDERATIONS.—In developing the
19 strategy, the Working Group shall consider lim-
20 iting progress reports to performance outcomes.

21 (f) CONSULTATION.—In carrying out its responsibil-
22 ities under subsection (e)(1), the Working Group shall
23 consult with academic researchers outside the Federal
24 Government, including—

25 (1) federally funded researchers;

- 1 (2) non-federally funded researchers;
- 2 (3) institutions of higher education and their
- 3 representative associations;
- 4 (4) scientific and engineering disciplinary soci-
- 5 eties and associations;
- 6 (5) nonprofit research institutions;
- 7 (6) industry, including small businesses;
- 8 (7) federally funded research and development
- 9 centers; and
- 10 (8) members of the public with a stake in en-
- 11 suring effectiveness, efficiency, and accountability in
- 12 the performance of scientific research.

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

21 **SEC. 202. SCIENTIFIC AND TECHNICAL COLLABORATION.**

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

1 neers working in STEM research and development fields
2 assemble to coordinate, exchange and disseminate infor-
3 mation or to explore or clarify a defined subject, problem
4 or area of knowledge in the STEM fields.

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

7 (1) the United States should encourage broad
8 dissemination of Federal research findings and en-
9 gagement of Federal researchers with the scientific
10 and technical community; and

11 (2) laboratory, test center, and field center di-
12 rectors and other similar heads of offices should ap-
13 prove scientific and technical workshop attendance
14 if—

15 (A) that attendance would meet the mis-
16 sion of the laboratory or test center; and

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

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

1 (d) NIST WORKSHOPS.—Section 2(c) of the National
 2 Institute of Standards and Technology Act (15 U.S.C.
 3 272(c)), as amended by section 104 of this Act, is further
 4 amended—

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

8 (2) by inserting after paragraph (18) the fol-
 9 lowing:

10 “(19) host, participate in, and support scientific
 11 and technical workshops (as defined in section 202
 12 of the American Innovation and Competitiveness
 13 Act);

14 “(20) collect and retain any fees charged by the
 15 Secretary for hosting a scientific and technical work-
 16 shop described in paragraph (19);

17 “(21) notwithstanding title 31 of the United
 18 States Code, use the fees described in paragraph
 19 (20) to pay for any related expenses, including sub-
 20 sistence expenses for participants;”.

21 **SEC. 203. NIST GRANTS AND COOPERATIVE AGREEMENTS**

22 **UPDATE.**

23 Section 8(a) of the Stevenson-Wydler Technology In-
 24 novation Act of 1980 (15 U.S.C. 3706(a)) is amended by
 25 striking “The total amount of any such grant or coopera-

1 tive agreement may not exceed 75 percent of the total cost
2 of the program.”.

3 **SEC. 204. REPEAL OF CERTAIN OBSOLETE REPORTS.**

4 (a) REPEAL OF CERTAIN OBSOLETE REPORTS.—

5 (1) NIST REPORTS.—

6 (A) REPORT ON DONATION OF EDUCA-
7 TIONALLY USEFUL FEDERAL EQUIPMENT TO
8 SCHOOLS.—Section 6(b) of the Technology Ad-
9 ministration Act of 1998 (15 U.S.C. 272 note)
10 is amended—

11 (i) in paragraph (1), by striking “(1)
12 IN GENERAL.—” and indenting appro-
13 priately; and

14 (ii) by striking paragraph (2).

15 (B) THREE-YEAR PROGRAMMATIC PLAN-
16 NING DOCUMENT.—

17 (i) IN GENERAL.—Section 23 of the
18 National Institute of Standards and Tech-
19 nology Act (15 U.S.C. 278i) is amended by
20 striking subsections (c) and (d).

21 (ii) CONFORMING AMENDMENT.—Sec-
22 tion 10(h)(1) of the National Institute of
23 Standards and Technology Act (15 U.S.C.
24 278(h)(1)) is amended by striking the last
25 sentence.

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

(A) by striking subsection (c); and

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

(3) NSF REPORTS.—

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

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

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

(i) by striking paragraph (4); and

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

1 (b) NATIONAL NANOTECHNOLOGY INITIATIVE RE-
2 PORTS.—The 21st Century Nanotechnology Research and
3 Development Act (15 U.S.C. 7501 et seq.) is amended—

4 (1) by amending section 2(c)(4) (15 U.S.C.
5 7501(c)(4)) to read as follows:

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

11 “(A) the near-term and long-term objec-
12 tives for the Program;

13 “(B) the anticipated schedule for achieving
14 the near-term objectives; and

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

18 “(D) how the Program will move results
19 out of the laboratory and into application for
20 the benefit of society;

21 “(E) the Program’s support for long-term
22 funding for interdisciplinary research and devel-
23 opment in nanotechnology; and

24 “(F) the allocation of funding for inter-
25 agency nanotechnology projects;”;

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

3 “(d) REPORTS.—Not later than 4 years after the
4 date of the most recent assessment under subsection (c),
5 and quadrennially thereafter, the Advisory Panel shall
6 submit to the President, the Committee on Commerce,
7 Science, and Transportation of the Senate, and the Com-
8 mittee on Science, Space, and Technology of the House
9 of Representatives a report its assessments under sub-
10 section (c) and its recommendations for ways to improve
11 the Program.”; and

12 (3) in section 5 (15 U.S.C. 7504)—

13 (A) in the heading, by striking “**TRI-**
14 **ENNIAL**” and inserting “**QUADRENNIAL**”;

15 (B) in subsection (a), in the matter pre-
16 ceding paragraph (1), by striking “triennial”
17 and inserting “quadrennial”;

18 (C) in subsection (b), by striking “tri-
19 ennial” and inserting “quadrennial”;

20 (D) in subsection (c), by striking “tri-
21 ennial” and inserting “quadrennial”; and

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

24 “(d) REPORT.—

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

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

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

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

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

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

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

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

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

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

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

(2) by striking subsection (e);

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

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

1 “(c) BOARD APPROVAL OF MAJOR RESEARCH
 2 EQUIPMENT AND FACILITIES PROJECTS.—The Board
 3 shall explicitly approve any project to be funded out of
 4 the major research equipment and facilities construction
 5 account before any funds may be obligated from such ac-
 6 count for such project.”.

7 **SEC. 205. REPEAL OF CERTAIN PROVISIONS.**

8 (a) TECHNOLOGY INNOVATION PROGRAM.—

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

12 (2) CONFORMING AMENDMENTS.—

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

16 (B) MANAGEMENT COSTS.—Section 2(d) of
 17 the National Institute of Standards and Tech-
 18 nology Act (15 U.S.C. 272(d)) is amended by
 19 striking “sections 25, 26, and 28” and insert-
 20 ing “sections 25 and 26”.

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

1 amended by striking “, including the Program
2 established under section 28,”.

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

9 **SEC. 206. GRANT SUBRECIPIENT TRANSPARENCY AND**
10 **OVERSIGHT.**

11 (a) **IN GENERAL.**—Not later than 1 year after the
12 date of enactment of this Act, the Inspector General of
13 the Foundation shall prepare and submit to the appro-
14 priate committees of Congress an audit of the Founda-
15 tion’s policies and procedures governing the monitoring of
16 pass-through entities with respect to subrecipients.

17 (b) **CONTENTS.**—The audit shall include the fol-
18 lowing:

19 (1) Information regarding the Foundation’s
20 process to oversee—

21 (A) the compliance of pass-through entities
22 under section 200.331 and subpart F of part
23 200 of chapter II of subtitle A of title 2, Code
24 of Federal Regulations, and the other require-
25 ments of that title for subrecipients;

1 (B) whether pass-through entities have
 2 processes and controls in place regarding finan-
 3 cial compliance of subrecipients, where appro-
 4 priate; and

5 (C) whether pass-through entities have
 6 processes and controls in place to maintain ap-
 7 proved grant objectives for subrecipients, where
 8 appropriate.

9 (2) Recommendations, if necessary, to increase
 10 transparency and oversight while balancing adminis-
 11 trative burdens.

12 **SEC. 207. MICRO-PURCHASE THRESHOLD FOR PROCURE-**
 13 **MENT SOLICITATIONS BY RESEARCH INSTI-**
 14 **TUTIONS.**

15 (a) MICRO-PURCHASE THRESHOLD.—The micro-pur-
 16 chase threshold for procurement activities administered
 17 under sections 6303 through 6305 of title 31, United
 18 States Code, awarded by the Foundation, the National
 19 Aeronautics and Space Administration, or the National
 20 Institute of Standards and Technology to institutions of
 21 higher education, or related or affiliated nonprofit entities,
 22 or to nonprofit research organizations or independent re-
 23 search institutes is—

24 (1) \$10,000 (as adjusted periodically to account
 25 for inflation); or

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

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

13 **SEC. 208. COORDINATION OF INTERNATIONAL SCIENCE**
14 **AND TECHNOLOGY PARTNERSHIPS.**

15 (a) SHORT TITLE.—This section may be cited as the
16 “International Science and Technology Cooperation Act of
17 2016”.

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

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

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

7 (1) plan and coordinate interagency inter-
8 national science and technology cooperative research
9 and training activities and partnerships supported or
10 managed by Federal agencies;

11 (2) work with other National Science and Tech-
12 nology Council committees to help plan and coordi-
13 nate the international component of national science
14 and technology priorities;

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

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

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

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

12 (e) REPORT TO CONGRESS.—The Director of the Of-
13 fice of Science and Technology Policy shall submit to the
14 Committee on Commerce, Science, and Transportation
15 and the Committee on Foreign Relations of the Senate
16 and the Committee on Science, Space, and Technology
17 and the Committee on Foreign Affairs of the House of
18 Representatives a biennial report on the requirements of
19 this section.

20 (f) WEBSITE.—The Director shall make each report
21 available to the public on the Office of Science and Tech-
22 nology Policy website.

23 (g) TERMINATION.—The body established under sub-
24 section (b) shall terminate on the date that is 10 years
25 after the date of enactment of this Act.

1 (h) ADDITIONAL REPORTS TO CONGRESS.—The Di-
 2 rector of the Office of Science and Technology Policy shall
 3 submit, not later than 60 days after the date of enactment
 4 of this Act and annually thereafter, to the Committee on
 5 Commerce, Science, and Transportation and the Com-
 6 mittee on Foreign Relations of the Senate and the Com-
 7 mittee on Science, Space, and Technology and the Com-
 8 mittee on Foreign Affairs of the House of Representatives
 9 a report that lists and describes the details of all foreign
 10 travel by Office of Science and Technology Policy staff and
 11 detailees.

12 **TITLE III—SCIENCE, TECH-**
 13 **NOLOGY, ENGINEERING, AND**
 14 **MATH EDUCATION**

15 **SEC. 301. ROBERT NOYCE TEACHER SCHOLARSHIP PRO-**
 16 **GRAM UPDATE.**

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

20 “(k) STEM TEACHER SERVICE AND RETENTION.—

21 “(1) IN GENERAL.—The Director shall develop
 22 and implement practices for increasing the propor-
 23 tion of individuals receiving fellowships under this
 24 section who—

1 “(A) fulfill the service obligation required
2 under subsection (h); and

3 “(B) remain in the teaching profession in
4 a high need local educational agency beyond the
5 service obligation.

6 “(2) PRACTICES.—The practices described
7 under paragraph (1) may include—

8 “(A) partnering with nonprofit or profes-
9 sional associations or with other government en-
10 tities to provide individuals receiving fellowships
11 under this section with opportunities for profes-
12 sional development, including mentorship pro-
13 grams that pair those individuals with currently
14 employed and recently retired science, tech-
15 nology, engineering, mathematics, or computer
16 science professionals;

17 “(B) increasing recruitment from high
18 need districts;

19 “(C) establishing a system to better collect,
20 track, and respond to data on the career deci-
21 sions of individuals receiving fellowships under
22 this section;

23 “(D) conducting research to better under-
24 stand factors relevant to teacher service and re-
25 tention, including factors specifically impacting

1 the retention of teachers who are individuals
2 identified in sections 33 and 34 of the Science
3 and Engineering Equal Opportunities Act (42
4 U.S.C. 1885a, 1885b); and
5 “(E) conducting pilot programs to improve
6 teacher service and retention.”.

7 **SEC. 302. SPACE GRANTS.**

8 (a) SENSE OF CONGRESS.—It is the sense of Con-
9 gress that the National Space Grant College and Fellow-
10 ship Program has been an important program by which
11 the Federal Government has partnered with universities,
12 colleges, industry, and other organizations to provide
13 hands-on STEM experiences, fostering of multidisci-
14 plinary space research, and supporting graduate fellow-
15 ships in space-related fields, among other purposes.

16 (b) ADMINISTRATIVE COSTS.—Section 40303 of title
17 51, United States Code, is amended by adding at the end
18 the following:

19 “(d) PROGRAM ADMINISTRATION COSTS.—In car-
20 rying out the provisions of this chapter, the Adminis-
21 trator—

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

1 “(2) in each fiscal year, the Administrator shall
2 limit its program administration costs to no more
3 than 5 percent of funds appropriated for this pro-
4 gram for that fiscal year.

5 “(e) REPORTS.—For any fiscal year in which the Ad-
6 ministrator cannot meet the administration cost target
7 under subsection (d)(2), if the Administration is unable
8 to limit program costs under subsection (b), the Adminis-
9 trator shall submit to the appropriate committees of Con-
10 gress a report, including—

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

13 “(2) the measures the Administrator will take
14 in the next fiscal year to meet the cost target under
15 subsection (d) without drawing upon other Federal
16 funding.”.

17 **SEC. 303. STEM EDUCATION ADVISORY PANEL.**

18 (a) ESTABLISHMENT.—Not later than 180 days after
19 the date of enactment this Act, the Director of the Foun-
20 dation, Secretary of Education, Administrator of the Na-
21 tional Aeronautics and Space Administration, and Admin-
22 istrator of the National Oceanic and Atmospheric Admin-
23 istration shall jointly establish an advisory panel (referred
24 to in this section as the “STEM Education Advisory
25 Panel”) to advise the Committee on STEM Education of

1 the National Science and Technology Council (referred to
2 in this section as “CoSTEM”) on matters relating to
3 STEM education.

4 (b) MEMBERS.—

5 (1) IN GENERAL.—The STEM Education Advi-
6 sory Panel shall be composed of not less than 11
7 members.

8 (2) APPOINTMENT.—

9 (A) IN GENERAL.—Subject to subpara-
10 graph (B), the Director of the Foundation, in
11 consultation with the Secretary of Education
12 and the heads of the Federal science agencies,
13 shall appoint the members of the STEM Edu-
14 cation Advisory Panel.

15 (B) CONSIDERATION.—In selecting individ-
16 uals to appoint under subparagraph (A), the
17 Director of the Foundation shall seek and give
18 consideration to recommendations from Con-
19 gress, industry, the scientific community, in-
20 cluding the National Academy of Sciences, sci-
21 entific professional societies, academia, State
22 and local governments, organizations rep-
23 resenting individuals identified in section 33 or
24 section 34 of the Science and Engineering
25 Equal Opportunities Act (42 U.S.C. 1885a,

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

(C) QUALIFICATIONS.—Members shall—

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

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

(c) RESPONSIBILITIES.—

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

(A) advise CoSTEM;

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

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

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

3 (A) the management, coordination, and im-
4 plementation of STEM education programs and
5 activities across the Federal Government;

6 (B) the appropriateness of criteria used by
7 Federal agencies to evaluate the effectiveness of
8 Federal STEM education programs and activi-
9 ties;

10 (C) whether societal and workforce con-
11 cerns are adequately addressed by current Fed-
12 eral STEM education programs and activities;

13 (D) how Federal agencies can incentivize
14 institutions of higher education to improve re-
15 tention of STEM students;

16 (E) ways to leverage private and nonprofit
17 STEM investments and encourage public-pri-
18 vate partnerships to strengthen STEM edu-
19 cation and help build the STEM workforce
20 pipeline;

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

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

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

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

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

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

1 trator of the National Oceanic and Atmospheric Adminis-
2 tration shall jointly make funds available on an annual
3 basis to support the activities of the STEM Education Ad-
4 visory Panel.

5 (e) REPORTS.—Not later than 1 year after the date
6 of enactment of this Act, and after each assessment under
7 subsection (c)(1)(B), the STEM Education Advisory
8 Panel shall submit to the appropriate committees of Con-
9 gress and CoSTEM a report on its assessment under that
10 subsection and its recommendations under subsection
11 (c)(3).

12 (f) TRAVEL EXPENSES OF NON-FEDERAL MEM-
13 BERS.—

14 (1) IN GENERAL.—Non-Federal members of the
15 STEM Education Advisory Panel, while attending
16 meetings of the panel or while otherwise serving at
17 the request of a co-chairperson away from their
18 homes or regular places of business, may be allowed
19 travel expenses, including per diem in lieu of subsist-
20 ence, as authorized by section 5703 of title 5,
21 United States Code, for individuals in the Govern-
22 ment serving without pay.

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

1 ployees of the United States from being allowed
2 travel expenses, including per diem in lieu of subsist-
3 ence, in accordance with existing law.

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

8 **SEC. 304. COMMITTEE ON STEM EDUCATION.**

9 (a) RESPONSIBILITIES.—Section 101(b) of the Amer-
10 ica COMPETES Reauthorization Act of 2010 (42 U.S.C.
11 6621(b)) is amended—

12 (1) in paragraph (5)(D), by striking “; and”
13 and inserting a semicolon;

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

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

17 “(7) collaborate with the STEM Education Ad-
18 visory Panel established under section 303 of the
19 American Innovation and Competitiveness Act and
20 other outside stakeholders to ensure the engagement
21 of the STEM education community;

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

1 “(9) request and review feedback from States
 2 on how the States are utilizing Federal STEM edu-
 3 cation programs and activities; and

4 “(10) recommend the reform, termination, or
 5 consolidation of Federal STEM education activities
 6 and programs, taking into consideration the rec-
 7 ommendations of the STEM Education Advisory
 8 Panel.”.

9 (b) REPORTS.—Section 101 of the America COM-
 10 PETES Reauthorization Act of 2010 (42 U.S.C. 6621)
 11 is amended—

12 (1) by striking “(c) REPORT.—” and inserting
 13 “(d) REPORTS.—”;

14 (2) by striking “(b) RESPONSIBILITIES OF
 15 OSTP.—” and inserting “(c) RESPONSIBILITIES OF
 16 OSTP.—”; and

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

18 (A) in paragraph (4), by striking “; and”
 19 and inserting a semicolon;

20 (B) in paragraph (5), by striking the pe-
 21 riod at the end and inserting a semicolon; and

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

23 “(6) a description of all consolidations and ter-
 24 minations of Federal STEM education programs
 25 and activities implemented in the previous fiscal

1 year, including an explanation for the consolidations
2 and terminations;

3 “(7) recommendations for reforms, consolida-
4 tions, and terminations of STEM education pro-
5 grams or activities in the upcoming fiscal year; and

6 “(8) a description of any significant new STEM
7 education public-private partnerships.”.

8 **SEC. 305. PROGRAMS TO EXPAND STEM OPPORTUNITIES.**

9 (a) FINDINGS.—Congress makes the following find-
10 ings:

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

14 (2) Women represent slightly more than half
15 the United States population, and projections indi-
16 cate that 54 percent of the population will be a
17 member of a racial or ethnic minority group by
18 2050.

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

23 (4) A 2014 National Center for Education Sta-
24 tistics study found that underrepresented popu-

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

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

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

12 (7) Many of the numbers in the American In-
13 dian or Alaskan Native and Native Hawaiian or
14 Other Pacific Islander categories for different fac-
15 ulty ranks were too small for the Foundation to re-
16 port publicly without potentially compromising con-
17 fidential information about the individuals being sur-
18 veyed.

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

21 (1) it is critical to our Nation's economic lead-
22 ership and global competitiveness that the United
23 States educate, train, and retain more scientists, en-
24 gineers, and computer scientists;

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

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

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

11 (c) REAFFIRMATION.—The Director of the Founda-
12 tion shall continue to support programs designed to broad-
13 en participation of underrepresented populations in STEM
14 fields.

15 (d) GRANTS TO BROADEN PARTICIPATION.—

16 (1) IN GENERAL.—The Director of the Founda-
17 tion shall award grants on a competitive, merit-re-
18 viewed basis, to eligible entities to increase the par-
19 ticipation of underrepresented populations in STEM
20 fields, including individuals identified in section 33
21 or section 34 of the Science and Engineering Equal
22 Opportunities Act (42 U.S.C. 1885a, 1885b).

23 (2) CENTER OF EXCELLENCE.—

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

1 tablishment of a Center of Excellence to collect,
2 maintain, and disseminate information to in-
3 crease participation of underrepresented popu-
4 lations in STEM fields.

5 (B) PURPOSE.—The purpose of a Center
6 of Excellence under this subsection is to pro-
7 mote diversity in STEM fields by building on
8 the success of the INCLUDES programs, pro-
9 viding technical assistance, maintaining best
10 practices, and providing related training at fed-
11 erally funded academic institutions.

12 (e) ACCOUNTABILITY AND DISSEMINATION.—

13 (1) EVALUATION.—

14 (A) IN GENERAL.—Not later than 5 years
15 after the date of enactment of this Act, the Di-
16 rector of the Foundation shall evaluate the
17 grants provided under this section.

18 (B) REQUIREMENTS.—In conducting the
19 evaluation under subparagraph (A), the Direc-
20 tor shall—

21 (i) use a common set of benchmarks
22 and assessment tools to identify best prac-
23 tices and materials developed or dem-
24 onstrated by the research; and

1 (ii) to the extent practicable, combine
2 the research resulting from the grant activ-
3 ity under subsection (e) with the current
4 research on serving underrepresented stu-
5 dents in grades kindergarten through 8.

6 (2) REPORT ON EVALUATIONS.—Not later than
7 180 days after the completion of the evaluation
8 under paragraph (1), the Director of the Foundation
9 shall submit to the appropriate committees of Con-
10 gress and make widely available to the public a re-
11 port that includes—

12 (A) the results of the evaluation; and

13 (B) any recommendations for administra-
14 tive and legislative action that could optimize
15 the effectiveness of the program.

16 (f) COORDINATION.—In carrying out this section, the
17 Director of the Foundation shall consult and cooperate
18 with the programs and policies of other relevant Federal
19 agencies to avoid duplication with and enhance the effec-
20 tiveness of the program under this section.

21 **SEC. 306. NIST EDUCATION AND OUTREACH.**

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

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

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

6 ““(a) IN GENERAL.—The Director is authorized to ex-
7 pend funds appropriated for activities of the Institute in
8 any fiscal year, to support, promote, and coordinate activi-
9 ties and efforts to enhance public awareness and under-
10 standing of measurement sciences, standards and tech-
11 nology at the national measurement laboratories and oth-
12 erwise in fulfillment of the mission of the Institute. The
13 Director may carry out activities under this subsection,
14 including education and outreach activities to the general
15 public, industry and academia in support of the Institute’s
16 mission.

17 “(b) HIRING.—The Director, in coordination with the
18 Director of the Office of Personnel Management, may re-
19 vise the procedures the Director applies when making ap-
20 pointments to laboratory positions within the competitive
21 service—

22 “(1) to ensure corporate memory of and exper-
23 tise in the fundamental ongoing work, and on devel-
24 oping new capabilities in priority areas;

1 “(2) to maintain high overall technical com-
2 petence;

3 “(3) to improve staff diversity;

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

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

8 “(c) VOLUNTEERS.—

9 “(1) IN GENERAL.—The Director may establish
10 a program to use volunteers in carrying out the pro-
11 grams of the Institute.

12 “(2) ACCEPTANCE OF PERSONNEL.—The Direc-
13 tor may accept, subject to regulations issued by the
14 Office of Personnel Management, voluntary service
15 for the Institute for such purpose if the service—

16 “(A) is to be without compensation; and

17 “(B) will not be used to displace any cur-
18 rent employee or act as a substitute for any fu-
19 ture full-time employee of the Institute.

20 “(3) FEDERAL EMPLOYEE STATUS.—Any indi-
21 vidual who provides voluntary service under this sub-
22 section shall not be considered a Federal employee,
23 except for purposes of chapter 81 of title 5, United
24 States Code (relating to compensation for injury),

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

3 “(d) RESEARCH FELLOWSHIPS.—

4 “(1) IN GENERAL.—The Director may expend
5 funds appropriated for activities of the Institute in
6 any fiscal year, as the Director considers appro-
7 priate, for awards of research fellowships and other
8 forms of financial and logistical assistance, including
9 direct stipend awards to—

10 “(A) students at institutions of higher
11 learning within the United States who show
12 promise as present or future contributors to the
13 mission of the Institute; and

14 “(B) United States citizens for research
15 and technical activities of the Institute, includ-
16 ing programs.

17 “(2) SELECTION CRITERIA.—The selection of
18 persons to receive such fellowships and assistance
19 shall be made on the basis of ability and of the rel-
20 evance of the proposed work to the mission and pro-
21 grams of the Institute.

22 “(3) FINANCIAL AND LOGISTICAL ASSIST-
23 ANCE.—Notwithstanding section 1345 of title 31,
24 United States Code, or any other law to the con-
25 trary, the Director may include as a form of finan-

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

4 “(e) EDUCATIONAL OUTREACH ACTIVITIES.—The
5 Director may—

6 “(1) facilitate education programs for under-
7 graduate and graduate students, postdoctoral re-
8 searchers, and academic and industry employees;

9 “(2) sponsor summer workshops for STEM kin-
10 dergarten through grade 12 teachers as appropriate;

11 “(3) develop programs for graduate student in-
12 ternships and visiting faculty researchers;

13 “(4) document publications, presentations, and
14 interactions with visiting researchers and sponsoring
15 interns as performance metrics for improving and
16 continuing interactions with those individuals; and

17 “(5) facilitate laboratory tours and provide
18 presentations for educational, industry, and commu-
19 nity groups.”.

20 (c) POST-DOCTORAL FELLOWSHIP PROGRAM.—Sec-
21 tion 19 of the National Institute of Standards and Tech-
22 nology Act (15 U.S.C. 278g–2) is amended to read as fol-
23 lows:

1 **“SEC. 19. POST-DOCTORAL FELLOWSHIP PROGRAM.**

2 “(a) IN GENERAL.—The Institute and the National
3 Academy of Sciences, jointly, shall establish and conduct
4 a post-doctoral fellowship program, subject to the avail-
5 ability of appropriations.

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

9 “(c) EVALUATIONS.—In evaluating applications for
10 post-doctoral fellowships under this section, the Director
11 of the Institute and the President of the National Acad-
12 emy of Sciences shall give consideration to the goal of pro-
13 moting the participation of individuals identified in sec-
14 tions 33 and 34 of the Science and Engineering Equal
15 Opportunities Act (42 U.S.C. 1885a, 1885b) in research
16 areas supported by the Institute.”.

17 (d) SAVINGS CLAUSES.—

18 (1) RESEARCH FELLOWSHIPS AND OTHER FI-
19 NANCIAL ASSISTANCE TO STUDENTS AT INSTITUTES
20 OF HIGHER EDUCATION.—The repeal made by sub-
21 section (a) of this section shall not affect any award
22 of a research fellowship or other form of financial
23 assistance made under section 18 of the National In-
24 stitute of Standards and Technology Act (15 U.S.C.
25 278g–1) before the date of enactment of this Act.
26 Such award shall continue to be subject to the re-

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

3 (2) POST-DOCTORAL FELLOWSHIP PROGRAM.—

4 The amendment made by subsection (c) of this sec-
5 tion shall not affect any award of a post-doctoral fel-
6 lowship or other form of financial assistance made
7 under section 19 of the National Institute of Stand-
8 ards and Technology Act (15 U.S.C. 278g–2) before
9 the date of enactment of this Act. Such awards shall
10 continue to be subject to the requirements to which
11 such funds were subject under that section before
12 the date of enactment of this Act.

13 **SEC. 307. PRESIDENTIAL AWARDS FOR EXCELLENCE IN**
14 **STEM MENTORING.**

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

19 (b) ANNUAL AWARD RECIPIENTS.—The Director of
20 the Foundation shall provide Congress with a list of award
21 recipients, including the name, institution, and a brief syn-
22 opsis of the impact of the mentoring efforts.

1 **SEC. 308. WORKING GROUP ON INCLUSION IN STEM**
2 **FIELDS.**

3 (a) ESTABLISHMENT.—The Office of Science and
4 Technology Policy, in collaboration with Federal depart-
5 ments and agencies, shall establish an interagency work-
6 ing group to compile and summarize available research
7 and best practices on how to promote diversity and inclu-
8 sions in STEM fields and examine whether barriers exist
9 to promoting diversity and inclusion within Federal agen-
10 cies employing scientists and engineers.

11 (b) RESPONSIBILITIES.—The working group shall be
12 responsible for reviewing and assessing research, best
13 practices, and policies across Federal science agencies re-
14 lated to the inclusion of individuals identified in sections
15 33 and 34 of the Science and Engineering Equal Opportu-
16 nities Act (42 U.S.C. 1885a, 1885b) in the Federal STEM
17 workforce, including available research and best practices
18 on how to promote diversity and inclusion in STEM fields,
19 including—

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

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

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

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

7 (c) **STAKEHOLDER INPUT.**—In carrying out the re-
8 sponsibilities under section (b), the working group shall
9 solicit and consider input and recommendations from non-
10 Federal stakeholders, including—

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

13 (2) federally funded and non-federally funded
14 researchers, institutions of higher education, sci-
15 entific disciplinary societies, and associations;

16 (3) nonprofit research institutions;

17 (4) industry, including small businesses;

18 (5) federally funded research and development
19 centers;

20 (6) non-governmental organizations; and

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

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

1 after, the working group shall publish a report on the re-
2 view and assessment under subsection (b), including a
3 summary of available research and best practices, any rec-
4 ommendations for Federal actions to promote a diverse
5 and inclusive Federal STEM workforce, and updates on
6 the implementation of previous recommendations for Fed-
7 eral actions.

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

11 **SEC. 309. IMPROVING UNDERGRADUATE STEM EXPERI-**
12 **ENCES.**

13 (a) SENSE OF CONGRESS.—It is the sense of Con-
14 gress that each Federal science agency should invest in
15 and expand research opportunities for undergraduate stu-
16 dents attending institutions of higher education during the
17 undergraduate students' first 2 academic years of postsec-
18 ondary education.

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

1 **SEC. 310. COMPUTER SCIENCE EDUCATION RESEARCH.**

2 (a) FINDINGS.—Congress finds that as the lead Fed-
3 eral agency for building the research knowledge base for
4 computer science education, the Foundation is well posi-
5 tioned to make investments that will accelerate ongoing
6 efforts to enable rigorous and engaging computer science
7 throughout the Nation as an integral part of STEM edu-
8 cation.

9 (b) GRANT PROGRAM.—

10 (1) IN GENERAL.—The Director of the Founda-
11 tion shall award grants to eligible entities to re-
12 search computer science education and computa-
13 tional thinking.

14 (2) RESEARCH.—The research described in
15 paragraph (1) may include the development or adap-
16 tation, piloting or full implementation, and testing
17 of—

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

21 (B) scalable and sustainable models of pro-
22 fessional development and ongoing support for
23 the teachers described in subparagraph (A);

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

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

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

11 (c) COLLABORATIONS.—In carrying out the grants
12 established in subsection (b), eligible entities may collabo-
13 rate and partner with local or remote schools to support
14 the integration of computing and computational thinking
15 within pre-kindergarten through grade 12 STEM cur-
16 ricula and instruction.

17 (d) METRICS.—The Director of the Foundation shall
18 develop metrics to measure the success of the grant pro-
19 gram funded under this section in achieving program
20 goals.

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

1 (f) DEFINITION OF ELIGIBLE ENTITY.—In this sec-
 2 tion, the term “eligible entity” means an institution of
 3 higher education or a nonprofit research organization.

4 **SEC. 311. INFORMAL STEM EDUCATION.**

5 (a) NATIONAL STEM PARTNERSHIP GRANTS.—Sec-
 6 tion 3(a) of the STEM Education Act of 2015 (42 U.S.C.
 7 1862q(a)) is amended—

8 (1) in paragraph (1), by striking “; and” and
 9 inserting a semicolon;

10 (2) in paragraph (2), by striking the period at
 11 the end and inserting “; and”; and

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

13 “(3) a national partnership of institutions in-
 14 volved in informal STEM learning.”.

15 (b) USE OF FUNDS.—Section 3(b) of the STEM
 16 Education Act of 2015 (42 U.S.C. 1862q(b)) is amend-
 17 ed—

18 (1) in paragraph (1), by striking “; and” and
 19 inserting a semicolon;

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

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

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

stitutions of higher education, and education research centers; and

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

SEC. 312. DEVELOPING STEM APPRENTICESHIPS.

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

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

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

(B) to expand registered apprenticeships.

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

(3) The Secretary of Commerce has initiated—

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

1 munity with data on employer benefits and
2 costs; and

3 (B) discussions with officials at relevant
4 Federal agencies about the need to collect com-
5 prehensive data on—

6 (i) employer-provided worker training;
7 and
8 (ii) existing tools that could be used
9 to collect such data.

10 (b) DEVELOPMENT OF APPRENTICESHIP INFORMA-
11 TION.—The Secretary of Commerce shall continue to re-
12 search the value to businesses of utilizing apprenticeship
13 programs, including—

14 (1) evidence of return on investment of appren-
15 ticeships, including estimates for the average time it
16 takes a business to recover the costs associated with
17 training apprentices; and

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

23 (c) DISSEMINATION OF APPRENTICESHIP INFORMA-
24 TION.—The Secretary of Commerce shall disseminate

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

- 3 (1) institutions of higher education;
- 4 (2) State and local chambers of commerce; and
- 5 (3) workforce training organizations.

6 (d) NEW APPRENTICESHIP PROGRAM STUDY.—The
 7 Secretary of Commerce may collaborate with the Secretary
 8 of Labor to study approaches for reducing the cost of cre-
 9 ating new apprenticeship programs and hosting appren-
 10 tices for businesses, particularly small businesses, includ-
 11 ing—

- 12 (1) training sharing agreements;
- 13 (2) group training models; and
- 14 (3) pooling resources and best practices.

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

19 **“SEC. 28. STEM APPRENTICESHIP PROGRAMS.**

20 “(a) IN GENERAL.—The Secretary of Commerce may
 21 carry out a grant program to identify the need for skilled
 22 science, technology, engineering, and mathematics (re-
 23 ferred to in this section as ‘STEM’) workers and to ex-
 24 pand STEM apprenticeship programs.

1 “(b) ELIGIBLE RECIPIENT DEFINED.—In this sec-
2 tion, the term ‘eligible recipient’ means—

3 “(1) a State;

4 “(2) an Indian tribe;

5 “(3) a city or other political subdivision of a
6 State;

7 “(4) an entity that—

8 “(A) is a nonprofit organization, an insti-
9 tution of higher education, a public-private
10 partnership, a science or research park, a Fed-
11 eral laboratory, or an economic development or-
12 ganization or similar entity; and

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

16 “(5) a consortium of any of the entities de-
17 scribed in paragraphs (1) through (5).

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

21 “(1) the unmet need of a region’s employer
22 base for skilled STEM workers;

23 “(2) the potential of STEM apprenticeships to
24 address the unmet need described in paragraph (1);
25 and

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

3 “(d) APPRENTICESHIP EXPANSION GRANTS.—The
4 Secretary of Commerce may provide a grant to an eligible
5 recipient that has conducted a needs assessment as de-
6 scribed in subsection (c)(1) to develop infrastructure to
7 expand STEM apprenticeship programs.”.

8 **SEC. 313. NSF REPORT ON BROADENING PARTICIPATION.**

9 Section 204(e) of the National Science Foundation
10 Authorization Act of 1988 (42 U.S.C. 1885c(e)) is amend-
11 ed to read as follows:

12 “(e) BIENNIAL REPORT.—Every 2 years, the Com-
13 mittee shall prepare and submit to the Director a report
14 on its activities during the previous 2 years and proposed
15 activities for the next 2 years. The Director shall submit
16 to Congress the report, unaltered, together with such com-
17 ments as the Director considers appropriate, including—

18 “(1) review data on the participation in Foun-
19 dation activities of institutions serving populations
20 that are underrepresented in STEM disciplines, in-
21 cluding poor, rural, and tribal populations; and

22 “(2) recommendations regarding how the Foun-
23 dation could improve outreach and inclusion of these
24 populations in Foundation activities.”.

1 **SEC. 314. NOAA SCIENCE EDUCATION PROGRAMS.**

2 (a) IN GENERAL.—Section 4002(a) of the America
 3 COMPETES Act (33 U.S.C. 893a(a)) is amended by
 4 striking “agency, with consideration given to the goal of
 5 promoting the participation of individuals from underrep-
 6 resented groups” and inserting “the agency, with consid-
 7 eration given to the goal of promoting the participation
 8 of individuals identified in sections 33 and 34 of the
 9 Science and Engineering Equal Opportunities Act (42
 10 U.S.C. 1885a, 1885b)”.

11 (b) EDUCATIONAL PROGRAM GOALS.—Section
 12 4002(b)(4) of the America COMPETES Act (33 U.S.C.
 13 893a(b)(4)) is amended—

14 (1) in subparagraph (B), by striking “and” at
 15 the end;

16 (2) by redesignating subparagraph (C) and sub-
 17 paragraph (D);

18 (3) by inserting after subparagraph (B) the fol-
 19 lowing:

20 “(C) are designed considering the unique
 21 needs of underrepresented groups, translating
 22 such materials and other resources;” and

23 (4) by adding at the end the following:

24 “(E) are promoted widely, especially
 25 among individuals identified in sections 33 and
 26 34 of the Science and Engineering Equal Op-

1 portunities Act (42 U.S.C. 1885a, 1885b);
 2 and”.

3 (c) METRICS.—Section 4002 of the America COM-
 4 PETES Act (33 U.S.C. 893a) is amended—

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

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

8 “(d) METRICS.—In executing the National Oceanic
 9 and Atmospheric Administration science education plan
 10 under subsection (c), the Administrator shall maintain a
 11 comprehensive system for evaluating the Administration’s
 12 educational programs and activities. In so doing, the Ad-
 13 ministrator shall ensure that such education programs
 14 have measurable objectives and milestones as well as clear,
 15 documented metrics for evaluating programs. For each
 16 such education program or portfolio of similar programs,
 17 the Administrator shall—

18 “(1) encourage the collection of evidence as rel-
 19 evant to the measurable objectives and milestones;
 20 and

21 “(2) ensure that program or portfolio evalua-
 22 tions focus on educational outcomes and not just in-
 23 puts, activities completed, or the number of partici-
 24 pants.”.

1 **SEC. 315. HISPANIC-SERVING INSTITUTIONS UNDER-**
 2 **GRADUATE PROGRAM UPDATE.**

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

6 “(a) IN GENERAL.—The Director shall award grants
 7 on a competitive, merit-reviewed basis to Hispanic-serving
 8 institutions (as defined in section 502 of the Higher Edu-
 9 cation Act of 1965 (20 U.S.C. 1101a)) to enhance the
 10 quality of undergraduate STEM education at such institu-
 11 tions and to increase the retention and graduation rates
 12 of students pursuing associate’s or baccalaureate degrees
 13 in science, technology, engineering, and mathematics.”.

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

22 **TITLE IV—LEVERAGING THE**
 23 **PRIVATE SECTOR**

24 **SEC. 401. PRIZE COMPETITION AUTHORITY UPDATE.**

25 (a) SHORT TITLE.—This section may be cited as the
 26 “Science Prize Competition Act”.

1 (b) IN GENERAL.—Section 24 of the Stevenson-
2 Wydler Technology Innovation Act of 1980 (15 U.S.C.
3 3719) is amended—

4 (1) in subsection (c)—

5 (A) in the subsection heading, by striking
6 “PRIZES” and by inserting “PRIZE COMPETI-
7 TIONS”;

8 (B) in the matter preceding paragraph (1),
9 by striking “prize may be one or more of the
10 following” and inserting “prize competition may
11 be 1 or more of the following types of activi-
12 ties”;

13 (C) in paragraph (2), by inserting “com-
14 petition” after “prize”; and

15 (D) in paragraphs (3) and (4), by striking
16 “prizes” and inserting “prize competitions”;

17 (2) in subsection (f)—

18 (A) in the matter preceding paragraph (1),
19 by striking “in the Federal Register” and in-
20 serting “on a publicly accessible Government
21 website, such as www.challenge.gov,”;

22 (B) in paragraphs (1), (2), and (3), by in-
23 serting “prize” before “competition”; and

1 (C) in paragraph (4), by striking “prize”
 2 and inserting “cash prize purse or non-cash
 3 prize award”;

4 (3) in subsection (g)—

5 (A) in the matter preceding paragraph (1),
 6 by striking “prize” and inserting “cash prize
 7 purse”; and

8 (B) in paragraph (1), by inserting “prize”
 9 before “competition”;

10 (4) in subsection (h), by inserting “prize” be-
 11 fore “competition” each place it appears;

12 (5) in subsection (i)—

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

15 (B) in paragraph (2)(A), by inserting
 16 “prize” before “competition” each place it ap-
 17 pears;

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

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

22 “(3) WAIVERS.—

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

1 “(B) LIST.—The Director shall include a
 2 list of all of the waivers granted under this
 3 paragraph during the preceding fiscal year, in-
 4 cluding a detailed explanation of the reason for
 5 granting the waiver.”;

6 (6) in subsection (j)—

7 (A) in paragraph (1), by inserting “prize”
 8 before “competition”; and

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

11 “(2) LICENSES.—As appropriate and to further
 12 the goals of a prize competition, the Federal Govern-
 13 ment may negotiate a license for the use of intellec-
 14 tual property developed by a registered participant
 15 in a prize competition.”;

16 (7) in subsection (k)—

17 (A) in paragraph (1), by striking “each
 18 competition” and inserting “each prize competi-
 19 tion” each place it appears;

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

22 (C) in paragraph (3), by inserting “prize”
 23 before “competitions” each place it appears;

24 (8) in subsection (l), by striking “an agreement
 25 with” and all that follows through the period at the

1 end and inserting “a grant, contract, cooperative
2 agreement, or other agreement with a private sector
3 for-profit or nonprofit entity or State or local gov-
4 ernment agency to administer the prize competition,
5 subject to the provisions of this section.”;

6 (9) in subsection (m)—

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

9 “(1) IN GENERAL.—Support for a prize com-
10 petition under this section, including financial sup-
11 port for the design and administration of a prize
12 competition or funds for a cash prize purse, may
13 consist of Federal appropriated funds and funds
14 provided by private sector for-profit and nonprofit
15 entities. The head of an agency may request and ac-
16 cept funds from other Federal agencies, State,
17 United States territory, local, or tribal government
18 agencies, private sector for-profit entities, and non-
19 profit entities, to be available to the extent provided
20 by appropriations Acts, to support such prize com-
21 petitions. The head of an agency may not give any
22 special consideration to any agency or entity in re-
23 turn for a donation.”;

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

(C) in paragraph (3)—

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

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

(ii) in subparagraph (B)—

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

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

(III) in clause (ii), by inserting “or State, United States territory, local, or tribal government” after “private”; and

(D) in paragraph (4)—

1 (i) in subparagraph (A)—

2 (I) by striking “a prize” and in-
 3 serting “a cash prize purse or a non-
 4 cash prize award”; and

5 (II) by striking “Science and
 6 Technology” and inserting “Science,
 7 Space, and Technology”; and

8 (ii) in subparagraph (B), by striking
 9 “cash prizes” and inserting “cash prize
 10 purses or non-cash prize awards”;

11 (10) in subsection (n)—

12 (A) in the heading, by striking “SERVICE”
 13 and inserting “SERVICES”;

14 (B) by striking “the date of the enactment
 15 of the America COMPETES Reauthorization
 16 Act of 2010,” and inserting “the date of enact-
 17 ment of the American Innovation and Competi-
 18 tiveness Act,”; and

19 (C) by inserting “for both for-profit and
 20 nonprofit entities and State, United States ter-
 21 ritory, local, and tribal government entities,”
 22 after “contract vehicle”;

23 (11) in subsection (o)(1), by striking “or pro-
 24 viding a prize” and inserting “a prize competition or

1 providing a cash prize purse or non-cash prize
2 award”; and

3 (12) in subsection (p)—

4 (A) in the heading, by striking “ANNUAL”
5 and inserting “BIENNIAL”;

6 (B) in paragraph (1)—

7 (i) by striking “each year” and insert-
8 ing “every other year”;

9 (ii) by striking “Science and Tech-
10 nology” and inserting “Science, Space, and
11 Technology”; and

12 (iii) by striking “fiscal year” and in-
13 serting “2 fiscal years”; and

14 (C) in paragraph (2)—

15 (i) by striking “The report for a fiscal
16 year” and inserting “A report”;

17 (ii) in subparagraph (C)—

18 (I) in the heading, by striking
19 “PRIZES” and inserting “PRIZE
20 PURSES OR NON-CASH PRIZE
21 AWARDS”; and

22 (II) by striking “cash prizes”
23 each place it appears and inserting
24 “cash prize purses or non-cash prize
25 awards”; and

1 (iii) by adding at the end the fol-
2 lowing:

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

8 **SEC. 402. CROWDSOURCING AND CITIZEN SCIENCE.**

9 (a) SHORT TITLE.—This section may be cited as the
10 “Crowdsourcing and Citizen Science Act”.

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

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

18 (2) crowdsourcing and citizen science projects
19 have a number of additional unique benefits, includ-
20 ing accelerating scientific research, increasing cost
21 effectiveness to maximize the return on taxpayer dol-
22 lars, addressing societal needs, providing hands-on
23 learning in STEM, and connecting members of the
24 public directly to Federal science agency missions
25 and to each other; and

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

(c) DEFINITIONS.—In this section:

(1) CITIZEN SCIENCE.—The term “citizen science” means a form of open collaboration in which individuals or organizations participate voluntarily in the scientific process in various ways, including—

(A) enabling the formulation of research questions;

(B) creating and refining project design;

(C) conducting scientific experiments;

(D) collecting and analyzing data;

(E) interpreting the results of data;

(F) developing technologies and applications;

(G) making discoveries; and

(H) solving problems.

1 (2) CROWDSOURCING.—The term
 2 “crowdsourcing” means a method to obtain needed
 3 services, ideas, or content by soliciting voluntary
 4 contributions from a group of individuals or organi-
 5 zations, especially from an online community.

6 (3) PARTICIPANT.—The term “participant”
 7 means any individual or other entity that has volun-
 8 teered in a crowdsourcing or citizen science project
 9 under this section.

10 (d) CROWDSOURCING AND CITIZEN SCIENCE.—

11 (1) IN GENERAL.—The head of each Federal
 12 science agency, or the heads of multiple Federal
 13 science agencies working cooperatively, may utilize
 14 crowdsourcing and citizen science to conduct
 15 projects designed to advance the mission of the re-
 16 spective Federal science agency or the joint mission
 17 of Federal science agencies, as applicable.

18 (2) VOLUNTARY SERVICES.—Notwithstanding
 19 section 1342 of title 31, United States Code, the
 20 head of a Federal science agency may accept, sub-
 21 ject to regulations issued by the Director of the Of-
 22 fice of Personnel Management, in coordination with
 23 the Director of the Office of Science and Technology
 24 Policy, services from participants under this section
 25 if such services—

1 (A) are performed voluntarily as a part of
2 a crowdsourcing or citizen science project au-
3 thorized under paragraph (1);

4 (B) are not financially compensated for
5 their time; and

6 (C) will not be used to displace any em-
7 ployee of the Federal Government.

8 (3) OUTREACH.—The head of each Federal
9 science agency engaged in a crowdsourcing or citizen
10 science project under this section shall make public
11 and promote such project to encourage broad par-
12 ticipation.

13 (4) CONSENT, REGISTRATION, AND TERMS OF
14 USE.—

15 (A) IN GENERAL.—Each Federal science
16 agency shall determine the appropriate level of
17 consent, registration, or acknowledgment of the
18 terms of use that are required from participants
19 in crowdsourcing or citizen science projects
20 under this section on a per-project basis.

21 (B) DISCLOSURES.—In seeking consent,
22 conducting registration, or developing terms of
23 use for a project under this subsection, a Fed-
24 eral science agency shall disclose the privacy,
25 intellectual property, data ownership, com-

1 pensation, service, program, and other terms of
 2 use to the participant in a clear and reasonable
 3 manner.

4 (C) MODE OF CONSENT.—A Federal agen-
 5 cy or Federal science agencies, as applicable,
 6 may obtain consent electronically or in written
 7 form from participants under this section.

8 (5) PROTECTIONS FOR HUMAN SUBJECTS.—
 9 Any crowdsourcing or citizen science project under
 10 this section that involves research involving human
 11 subjects shall be subject to part 46 of title 28, Code
 12 of Federal Regulations (or any successor regulation).

13 (6) DATA.—

14 (A) IN GENERAL.—A Federal science
 15 agency shall, where appropriate and to the ex-
 16 tent practicable, make data collected through a
 17 crowdsourcing or citizen science project under
 18 this section available to the public, in a machine
 19 readable format, unless prohibited by law.

20 (B) NOTICE.—As part of the consent proc-
 21 ess, the Federal science agency shall notify all
 22 participants—

23 (i) of the expected uses of the data
 24 compiled through the project;

1 (ii) if the Federal science agency will
2 retain ownership of such data;

3 (iii) if and how the data and results
4 from the project would be made available
5 for public or third party use; and

6 (iv) if participants are authorized to
7 publish such data.

8 (7) TECHNOLOGIES AND APPLICATIONS.—Fed-
9 eral science agencies shall endeavor to make tech-
10 nologies, applications, code, and derivations of such
11 intellectual property developed through a
12 crowdsourcing or citizen science project under this
13 section available to the public.

14 (8) LIABILITY.—Each participant in a
15 crowdsourcing or citizen science project under this
16 section shall agree—

17 (A) to assume any and all risks associated
18 with such participation; and

19 (B) to waive all claims against the Federal
20 Government and its related entities, except for
21 claims based on willful misconduct, for any in-
22 jury, death, damage, or loss of property, rev-
23 enue, or profits (whether direct, indirect, or
24 consequential) arising from participation in the
25 project.

1 (9) RESEARCH MISCONDUCT.—Federal science
 2 agencies coordinating crowdsourcing or citizen
 3 science projects under this section shall make all
 4 practicable efforts to ensure that participants adhere
 5 to all relevant Federal research misconduct policies
 6 and other applicable ethics policies.

7 (10) MULTI-SECTOR PARTNERSHIPS.—The
 8 head of each Federal science agency engaged in
 9 crowdsourcing or citizen science under this section,
 10 or the heads of multiple Federal science agencies
 11 working cooperatively, may enter into a contract or
 12 other agreement to share administrative duties for
 13 such projects with—

14 (A) a for profit or nonprofit private sector
 15 entity, including a private institution of higher
 16 education;

17 (B) a State, tribal, local, or foreign govern-
 18 ment agency, including a public institution of
 19 higher education; or

20 (C) a public-private partnership.

21 (11) FUNDING.—In carrying out crowdsourcing
 22 and citizen science projects under this section, the
 23 head of a Federal science agency, or the heads of
 24 multiple Federal science agencies working coopera-
 25 tively—

1 (A) may use funds appropriated by Con-
2 gress;

3 (B) may publicize projects and solicit and
4 accept funds or in-kind support for such
5 projects, to be available to the extent provided
6 by appropriations Acts, from—

7 (i) other Federal agencies;

8 (ii) for profit or nonprofit private sec-
9 tor entities, including private institutions
10 of higher education; or

11 (iii) State, tribal, local, or foreign gov-
12 ernment agencies, including public institu-
13 tions of higher education; and

14 (C) may not give any special consideration
15 to any entity described in subparagraph (B) in
16 return for such funds or in-kind support.

17 (12) FACILITATION.—

18 (A) GENERAL SERVICES ADMINISTRATION
19 ASSISTANCE.—The Administrator of the Gen-
20 eral Services Administration, in coordination
21 with the Director of the Office of Personnel
22 Management and the Director of the Office of
23 Science and Technology Policy, shall, at no cost
24 to Federal science agencies, identify and de-
25 velop relevant products, training, and services

1 to facilitate the use of crowdsourcing and cit-
2 izen science projects under this section, includ-
3 ing by specifying the appropriate contract vehi-
4 cles and technology and organizational plat-
5 forms to enhance the ability of Federal science
6 agencies to carry out the projects under this
7 section.

8 (B) ADDITIONAL GUIDANCE.—The head of
9 each Federal science agency engaged in
10 crowdsourcing or citizen science under this sec-
11 tion may—

12 (i) consult any guidance provided by
13 the Director of the Office of Science and
14 Technology Policy, including the Federal
15 Crowdsourcing and Citizen Science Tool-
16 kit;

17 (ii) designate a coordinator for that
18 Federal science agency's crowdsourcing
19 and citizen science projects; and

20 (iii) share best practices with other
21 Federal agencies, including participation of
22 staff in the Federal Community of Practice
23 for Crowdsourcing and Citizen Science.

24 (e) REPORT.—

1 (1) IN GENERAL.—Not later than 2 years after
2 the date of the enactment of this Act, the Director
3 of the Office of Science and Technology Policy shall
4 include, as a component of an annual report re-
5 quired under section 24(p) of the Stevenson-Wydler
6 Technology Innovation Act of 1980 (15 U.S.C.
7 3719(p)), a report on the projects and activities car-
8 ried out under this section.

9 (2) INFORMATION INCLUDED.—The report re-
10 quired under paragraph (1) shall include—

11 (A) a summary of each crowdsourcing and
12 citizen science project conducted by a Federal
13 science agency during the most recently com-
14 pleted 2 fiscal years, including a description of
15 the proposed goals of each crowdsourcing and
16 citizen science project;

17 (B) an analysis of why the utilization of a
18 crowdsourcing or citizen science project summa-
19 rized in subparagraph (A) was the preferable
20 method of achieving the goals described in sub-
21 paragraph (A) as opposed to other authorities
22 available to the Federal science agency, such as
23 contracts, grants, cooperative agreements, and
24 prize competitions;

1 (C) the participation rates, submission lev-
2 els, number of consents, and any other statistic
3 that might be considered relevant in each
4 crowdsourcing and citizen science project;

5 (D) a detailed description of—

6 (i) the resources, including personnel
7 and funding, that were used in the execu-
8 tion of each crowdsourcing and citizen
9 science project;

10 (ii) the project activities for which
11 such resources were used; and

12 (iii) how the obligations and expendi-
13 tures relating to the project's execution
14 were allocated among the accounts of the
15 Federal science agency, including a de-
16 scription of the amount and source of all
17 funds, private, public, and in-kind, contrib-
18 uted to each crowdsourcing and citizen
19 science project;

20 (E) a summary of the use of
21 crowdsourcing and citizen science by all Federal
22 science agencies, including interagency and
23 multi-sector partnerships;

24 (F) a description of how each
25 crowdsourcing and citizen science project ad-

1 vanced the mission of each participating Fed-
2 eral science agency;

3 (G) an identification of each crowdsourcing
4 or citizen science project where data collected
5 through such project was not made available to
6 the public, including the reasons for such ac-
7 tion; and

8 (H) any other information that the Direc-
9 tor of the Office of Science and Technology Pol-
10 icy considers relevant.

11 (f) SAVINGS PROVISION.—Nothing in this section
12 may be construed—

13 (1) to affect the authority to conduct
14 crowdsourcing and citizen science authorized by any
15 other provision of law; or

16 (2) to displace Federal Government resources
17 allocated to the Federal science agencies that use
18 crowdsourcing or citizen science authorized under
19 this section to carry out a project.

20 **SEC. 403. NIST DIRECTOR FUNCTIONS UPDATE.**

21 Section 2(b) of the National Institute of Standards
22 and Technology Act (15 U.S.C. 272(b)), as amended by
23 section 403 of this Act, is further amended—

24 (1) in the matter preceding paragraph (1), by
25 striking “authorized to take” and inserting “author-

1 ized to serve as the President’s principal adviser on
 2 standards policy pertaining to the Nation’s techno-
 3 logical competitiveness and innovation ability and to
 4 take”;

5 (2) in paragraph (3), by striking “compare
 6 standards” and all that follows through “Federal
 7 Government” and inserting “facilitate standards-re-
 8 lated information sharing and cooperation between
 9 Federal agencies”; and

10 (3) in paragraph (13), by striking “Federal,
 11 State, and local” and all that follows through “pri-
 12 vate sector” and inserting “technical standards ac-
 13 tivities and conformity assessment activities of Fed-
 14 eral, State, and local governments with private sec-
 15 tor”.

16 **SEC. 404. NIST VISITING COMMITTEE ON ADVANCED TECH-**
 17 **NOLOGY UPDATE.**

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

20 (1) in subsection (a)—

21 (A) in the second sentence, by striking “15
 22 members appointed by the Director, at least 10
 23 of whom” and inserting “not fewer than 9
 24 members appointed by the Director, a majority
 25 of whom”; and

1 (B) in the third sentence, by striking “Na-
 2 tional Bureau of Standards” and inserting
 3 “National Institute of Standards and Tech-
 4 nology”; and
 5 (2) in subsection (h)(1), by striking “, including
 6 the Program established under section 28,”.

7 **TITLE V—MANUFACTURING**

8 **SEC. 501. HOLLINGS MANUFACTURING EXTENSION PART-** 9 **nership Improvements.**

10 (a) SHORT TITLE.—This section may be cited as the
 11 “Manufacturing Extension Partnership Improvement
 12 Act”.

13 (b) IN GENERAL.—Section 25 of the National Insti-
 14 tute of Standards and Technology Act (15 U.S.C. 278k)
 15 is amended to read as follows:

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

18 “(a) DEFINITIONS.—In this section:

19 “(1) APPROPRIATE COMMITTEES OF CON-
 20 GRESS.—The term ‘appropriate committees of Con-
 21 gress’ means—

22 “(A) the Committee on Commerce,
 23 Science, and Transportation of the Senate; and

1 “(B) the Committee on Science, Space,
2 and Technology of the House of Representa-
3 tives.

4 “(2) AREA CAREER AND TECHNICAL EDU-
5 CATION SCHOOL.—The term ‘area career and tech-
6 nical education school’ has the meaning given the
7 term in section 3 of the Vocational Education Act of
8 1963 (20 U.S.C. 2302).

9 “(3) CENTER.—The term ‘Center’ means a
10 manufacturing extension center that—

11 “(A) is created under subsection (b); and

12 “(B) is affiliated with an eligible entity
13 that applies for and is awarded financial sup-
14 port under subsection (e).

15 “(4) COMMUNITY COLLEGE.—The term ‘com-
16 munity college’ means an institution of higher edu-
17 cation (as defined under section 101(a) of the High-
18 er Education Act of 1965 (20 U.S.C. 1001(a))) at
19 which the highest degree that is predominately
20 awarded to students is an associate’s degree.

21 “(5) ELIGIBLE ENTITY.—The term ‘eligible en-
22 tity’ means a United States-based nonprofit institu-
23 tion, or consortium thereof, an institution of higher
24 education, or a State, United States territory, local,
25 or tribal government.

1 “(6) HOLLINGS MANUFACTURING EXTENSION
2 PARTNERSHIP OR PROGRAM.—The term ‘Hollings
3 Manufacturing Extension Partnership’ or ‘Program’
4 means the program established under subsection (b).

5 “(7) MEP ADVISORY BOARD.—The term ‘MEP
6 Advisory Board’ means the Manufacturing Exten-
7 sion Partnership Advisory Board established under
8 subsection (n).

9 “(b) ESTABLISHMENT AND PURPOSE.—The Sec-
10 retary, acting through the Director and, if appropriate,
11 through other Federal officials, shall establish a program
12 to provide assistance for the creation and support of man-
13 ufacturing extension centers for the transfer of manufac-
14 turing technology and best business practices.

15 “(c) OBJECTIVE.—The objective of the Program shall
16 be to enhance competitiveness, productivity, and techno-
17 logical performance in United States manufacturing
18 through—

19 “(1) the transfer of manufacturing technology
20 and techniques developed at the Institute to Centers
21 and, through them, to manufacturing companies
22 throughout the United States;

23 “(2) the participation of individuals from indus-
24 try, institutions of higher education, State govern-
25 ments, other Federal agencies, and, when appro-

1 appropriate, the Institute in cooperative technology trans-
2 fer activities;

3 “(3) efforts to make new manufacturing tech-
4 nology and processes usable by United States-based
5 small and medium-sized companies;

6 “(4) the active dissemination of scientific, engi-
7 neering, technical, and management information
8 about manufacturing to industrial firms, including
9 small and medium-sized manufacturing companies;

10 “(5) the utilization, when appropriate, of the
11 expertise and capability that exists in Federal agen-
12 cies, other than the Institute, and federally-spon-
13 sored laboratories;

14 “(6) the provision to community colleges and
15 area career and technical education schools of infor-
16 mation about the job skills needed in manufacturing
17 companies, including small and medium-sized manu-
18 facturing businesses in the regions they serve;

19 “(7) the promotion and expansion of certifi-
20 cation systems offered through industry, associa-
21 tions, and local colleges when appropriate, including
22 efforts such as facilitating training, supporting new
23 or existing apprenticeships, and providing access to
24 information and experts, to address workforce needs

1 and skills gaps in order to assist small- and medium-
2 sized manufacturing businesses; and

3 “(8) the growth in employment and wages at
4 United States-based small and medium-sized compa-
5 nies.

6 “(d) ACTIVITIES.—The activities of a Center shall in-
7 clude—

8 “(1) the establishment of automated manufac-
9 turing systems and other advanced production tech-
10 nologies, based on Institute-supported research, for
11 the purpose of demonstrations and technology trans-
12 fer;

13 “(2) the active transfer and dissemination of re-
14 search findings and Center expertise to a wide range
15 of companies and enterprises, particularly small and
16 medium-sized manufacturers; and

17 “(3) the facilitation of collaborations and part-
18 nerships between small and medium-sized manufac-
19 turing companies, community colleges, and area ca-
20 reer and technical education schools, to help those
21 entities better understand the specific needs of man-
22 ufacturers and to help manufacturers better under-
23 stand the skill sets that students learn in the pro-
24 grams offered by such colleges and schools.

25 “(e) FINANCIAL ASSISTANCE.—

1 “(1) AUTHORIZATION.—Except as provided in
 2 paragraph (2), the Secretary may provide financial
 3 assistance for the creation and support of a Center
 4 through a cooperative agreement with an eligible en-
 5 tity.

6 “(2) COST SHARING.—The Secretary may not
 7 provide more than 50 percent of the capital and an-
 8 nual operating and maintenance funds required to
 9 establish and support a Center.

10 “(3) RULE OF CONSTRUCTION.—For purposes
 11 of paragraph (2), any amount received by an eligible
 12 entity for a Center under a provision of law other
 13 than paragraph (1) shall not be considered an
 14 amount provided under paragraph (1).

15 “(4) REGULATIONS.—The Secretary may revise
 16 or promulgate such regulations as necessary to carry
 17 out this subsection.

18 “(f) APPLICATIONS.—

19 “(1) IN GENERAL.—An eligible entity shall sub-
 20 mit an application to the Secretary at such time, in
 21 such manner, and containing such information as
 22 the Secretary may require.

23 “(2) PROGRAM DESCRIPTION.—The Secretary
 24 shall establish and update, as necessary—

25 “(A) a description of the Program;

1 “(B) the application procedures;

2 “(C) performance metrics;

3 “(D) criteria for determining qualified ap-
4 plicants; and

5 “(E) criteria for choosing recipients of fi-
6 nancial assistance from among the qualified ap-
7 plicants.

8 “(F) procedures for determining allowable
9 cost share contributions; and

10 “(G) such other program policy objectives
11 and operational procedures as the Secretary
12 considers necessary.

13 “(3) COST SHARING.—

14 “(A) IN GENERAL.—To be considered for
15 financial assistance under this section, an appli-
16 cant shall provide adequate assurances that the
17 applicant and if applicable, the applicant’s
18 partnering organizations, will obtain funding
19 for not less than 50 percent of the capital and
20 annual operating and maintenance funds re-
21 quired to establish and support the Center from
22 sources other than the financial assistance pro-
23 vided under subsection (e).

24 “(B) AGREEMENTS WITH OTHER ENTI-
25 TIES.—In meeting the cost-sharing requirement

under subparagraph (A), an eligible entity may enter into an agreement with 1 or more other entities, such as a private industry, institutions of higher education, or a State, United States territory, local, or tribal government for the contribution by that other entity of funding if the Secretary determines the agreement—

“(i) is programmatically reasonable;

“(ii) will help accomplish programmatic objectives; and

“(iii) is allocable under Program procedures under subsection (f)(2).

“(4) LEGAL RIGHTS.—Each applicant shall include in the application a proposal for the allocation of the legal rights associated with any intellectual property which may result from the activities of the Center.

“(5) MERIT REVIEW OF APPLICATIONS.—

“(A) IN GENERAL.—The Secretary shall subject each application to merit review.

“(B) CONSIDERATIONS.—In making a decision whether to approve an application and provide financial assistance under subsection (e), the Secretary shall consider, at a minimum—

“(i) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors;

“(ii) the quality of service to be provided;

“(iii) the geographical diversity and extent of the service area; and

“(iv) the type and percentage of funding and in-kind commitment from other sources under paragraph (3).

“(g) EVALUATIONS.—

“(1) THIRD AND EIGHTH YEAR EVALUATIONS BY PANEL.—

“(A) IN GENERAL.—The Secretary shall ensure that each Center is evaluated during its third and eighth years of operation by an evaluation panel appointed by the Secretary.

“(B) COMPOSITION.—The Secretary shall ensure that each evaluation panel appointed under subparagraph (A) is composed of—

1 “(i) private experts, none of whom are
2 connected with the Center evaluated by the
3 panel; and

4 “(ii) Federal officials.

5 “(C) CHAIRPERSON.—For each evaluation
6 panel appointed under subparagraph (B), the
7 Secretary shall appoint a chairperson who is an
8 official of the Institute.

9 “(2) FIFTH YEAR EVALUATIONS BY SEC-
10 RETARY.—In the fifth year of operation of a Center,
11 the Secretary shall conduct a review of the Center.

12 “(3) PERFORMANCE MEASUREMENT.—In evalu-
13 ating a Center an evaluation panel or the Secretary,
14 as applicable, shall measure the performance of the
15 Center against—

16 “(A) the objective specified in subsection
17 (c);

18 “(B) the performance metrics under sub-
19 section (f)(2)(C); and

20 “(C) such other criterion as considered ap-
21 propriate by the Secretary.

22 “(4) POSITIVE EVALUATIONS.—If an evaluation
23 of a Center is positive, the Secretary may continue
24 to provide financial assistance for the Center—

1 “(A) in the case of an evaluation occurring
2 in the third year of a Center, through the fifth
3 year of the Center;

4 “(B) in the case of an evaluation occurring
5 in the fifth year of a Center, through the eighth
6 year of the Center; and

7 “(C) in the case of an evaluation occurring
8 in the eighth year of a Center, through the
9 tenth year of the Center.

10 “(5) OTHER THAN POSITIVE EVALUATIONS.—

11 “(A) PROBATION.—If an evaluation of a
12 Center is other than positive, the Secretary
13 shall put the Center on probation during the
14 period beginning on the date that the Center
15 receives notice under subparagraph (B)(i) and
16 ending on the date that the reevaluation is com-
17 plete under subparagraph (B)(iii).

18 “(B) NOTICE AND REEVALUATION.—If a
19 Center receives an evaluation that is other than
20 positive, the evaluation panel or Secretary, as
21 applicable, shall—

22 “(i) notify the Center of the reason,
23 including any deficiencies in the perform-
24 ance of the Center identified during the
25 evaluation;

1 “(ii) assist the Center in remedying
 2 the deficiencies by providing the Center,
 3 not less frequently than once every 3
 4 months, an analysis of the Center, if con-
 5 sidered appropriate by the panel or Sec-
 6 retary, as applicable; and

7 “(iii) reevaluate the Center not later
 8 than 1 year after the date of the notice
 9 under clause (i).

10 “(C) CONTINUED SUPPORT DURING PE-
 11 RIOD OF PROBATION.—

12 “(i) IN GENERAL.—The Secretary
 13 may continue to provide financial assist-
 14 ance under subsection (e) for a Center
 15 during the probation period.

16 “(ii) POST PROBATION.—After the pe-
 17 riod of probation, the Secretary shall not
 18 provide any financial assistance unless the
 19 Center has received a positive evaluation
 20 under subparagraph (B)(iii).

21 “(6) FAILURE TO REMEDY.—

22 “(A) IN GENERAL.—If a Center fails to
 23 remedy a deficiency or to show significant im-
 24 provement in performance before the end of the
 25 probation period under paragraph (5), the Sec-

1 retary shall conduct a competition to select an
2 operator for the Center under subsection (h).

3 “(B) TREATMENT OF CENTERS SUBJECT
4 TO NEW COMPETITION.—Upon the selection of
5 an operator for a Center under subsection (h),
6 the Center shall be considered a new Center
7 and the calculation of the years of operation of
8 that Center for purposes of paragraphs (1)
9 through (5) of this subsection and subsection
10 (h)(1) shall start anew.

11 “(h) REAPPLICATION COMPETITION FOR FINANCIAL
12 ASSISTANCE AFTER 10 YEARS.—

13 “(1) IN GENERAL.—If an eligible entity has op-
14 erated a Center under this section for a period of 10
15 consecutive years, the Secretary shall conduct a com-
16 petition to select an eligible entity to operate the
17 Center in accordance with the process plan under
18 subsection (i).

19 “(2) INCUMBENT ELIGIBLE ENTITIES.—An eli-
20 gible entity that has received financial assistance
21 under this section for a period of 10 consecutive
22 years and that the Secretary determines is in good
23 standing shall be eligible to compete in the competi-
24 tion under paragraph (1).

1 “(3) TREATMENT OF CENTERS SUBJECT TO RE-
2 APPLICATION COMPETITION.—Upon the selection of
3 an operator for a Center under paragraph (1), the
4 Center shall be considered a new Center and the cal-
5 culation of the years of operation of that Center for
6 purposes of paragraphs (1) through (5) of sub-
7 section (g) shall start anew.

8 “(i) PROCESS PLAN.—Not later than 180 days after
9 the date of the enactment of the American Innovation and
10 Competitiveness Act, the Secretary shall implement and
11 submit to Congress a plan for how the Institute will con-
12 duct an evaluation, competition, and reapplication com-
13 petition under this section.

14 “(j) OPERATIONAL REQUIREMENTS.—

15 “(1) PROTECTION OF CONFIDENTIAL INFORMA-
16 TION OF CENTER CLIENTS.—The following informa-
17 tion, if obtained by the Federal Government in con-
18 nection with an activity of a Center or the Program,
19 shall be exempt from public disclosure under section
20 552 of title 5, United States Code:

21 “(A) Information on the business operation
22 of any participant in the Program or of a client
23 of a Center.

24 “(B) Trade secrets of any client of a Cen-
25 ter.

1 “(k) OVERSIGHT BOARDS.—

2 “(1) IN GENERAL.—As a condition on receipt of
3 financial assistance for a Center under subsection
4 (e), an eligible entity shall establish a board to over-
5 see the operations of the Center.

6 “(2) STANDARDS.—

7 “(A) IN GENERAL.—The Director shall es-
8 tablish appropriate standards for each board
9 described under paragraph (1).

10 “(B) CONSIDERATIONS.—In establishing
11 the standards, the Director shall take into ac-
12 count the type and organizational structure of
13 an eligible entity.

14 “(C) REQUIREMENTS.—The standards
15 shall address—

16 “(i) membership;

17 “(ii) composition;

18 “(iii) term limits;

19 “(iv) conflicts of interest; and

20 “(v) such other requirements as the
21 Director considers necessary.

22 “(3) MEMBERSHIP.—

23 “(A) IN GENERAL.—Each board estab-
24 lished under paragraph (1) shall be composed
25 of members as follows:

1 “(i) The membership of each board
2 shall be representative of stakeholders in
3 the region in which the Center is located.

4 “(ii) A majority of the members of the
5 board shall be selected from among indi-
6 viduals who own or are employed by small
7 or medium-sized manufacturers.

8 “(B) LIMITATION.—A member of a board
9 established under paragraph (1) may not serve
10 on more than 1 board established under that
11 paragraph.

12 “(4) BYLAWS.—

13 “(A) IN GENERAL.—Each board estab-
14 lished under paragraph (1) shall adopt and sub-
15 mit to the Director bylaws to govern the oper-
16 ation of the board.

17 “(B) CONFLICTS OF INTEREST.—Bylaws
18 adopted under subparagraph (A) shall include
19 policies to minimize conflicts of interest, includ-
20 ing such policies relating to disclosure of rela-
21 tionships and recusal as may be necessary to
22 minimize conflicts of interest.

23 “(1) ACCEPTANCE OF FUNDS.—In addition to such
24 sums as may be appropriated to the Secretary and Direc-
25 tor to operate the Program, the Secretary and Director

1 may also accept funds from other Federal departments
2 and agencies and from the private sector under section
3 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available
4 to the extent provided by appropriations Acts, for the pur-
5 pose of strengthening United States manufacturing.

6 “(m) MEP ADVISORY BOARD.—

7 “(1) ESTABLISHMENT.—There is established
8 within the Institute a Manufacturing Extension
9 Partnership Advisory Board.

10 “(2) MEMBERSHIP.—

11 “(A) COMPOSITION.—

12 “(i) IN GENERAL.—The MEP Advi-
13 sory Board shall consist of not fewer than
14 10 members appointed by the Director and
15 broadly representative of stakeholders.

16 “(ii) REQUIREMENTS.—Of the mem-
17 bers appointed under clause (i)—

18 “(I) at least 2 members shall be
19 employed by or on an advisory board
20 for a Center;

21 “(II) at least 5 members shall be
22 from United States small businesses
23 in the manufacturing sector; and

24 “(III) at least 1 member shall
25 represent a community college.

1 “(iii) LIMITATION.—No member of
 2 the MEP Advisory Board shall be an em-
 3 ployee of the Federal Government.

4 “(B) TERM.—Except as provided in sub-
 5 paragraph (C), the term of office of each mem-
 6 ber of the MEP Advisory Board shall be 3
 7 years.

8 “(C) VACANCIES.—Any member appointed
 9 to fill a vacancy occurring prior to the expira-
 10 tion of the term for which his predecessor was
 11 appointed shall be appointed for the remainder
 12 of such term.

13 “(D) SERVING CONSECUTIVE TERMS.—
 14 Any person who has completed 2 consecutive
 15 full terms of service on the MEP Advisory
 16 Board shall thereafter be ineligible for appoint-
 17 ment during the 1-year period following the ex-
 18 piration of the second such term.

19 “(3) MEETINGS.—The MEP Advisory Board
 20 shall—

21 “(A) meet not less than biannually; and

22 “(B) provide to the Director—

23 “(i) advice on the activities, plans,
 24 and policies of the Program;

1 “(ii) assessments of the soundness of
2 the plans and strategies of the Program;
3 and

4 “(iii) assessments of current perform-
5 ance against the plans of the Program.

6 “(4) FACA APPLICABILITY.—

7 “(A) IN GENERAL.—In discharging its du-
8 ties under this subsection, the MEP Advisory
9 Board shall function solely in an advisory ca-
10 pacity, in accordance with the Federal Advisory
11 Committee Act (5 U.S.C. App.).

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

15 “(5) ANNUAL REPORT.—

16 “(A) IN GENERAL.—At a minimum, the
17 MEP Advisory Board shall transmit an annual
18 report to the Secretary for transmittal to Con-
19 gress not later than 30 days after the submis-
20 sion to Congress of the President’s annual
21 budget under section 1105 of title 31, United
22 States Code.

23 “(B) CONTENTS.—The report shall ad-
24 dress the status of the Program and describe
25 the relevant sections of the programmatic plan-

ning document and updates thereto transmitted
to Congress by the Director under subsections
(c) and (d) of section 23 (15 U.S.C. 278i).

“(n) SMALL MANUFACTURERS.—

“(1) EVALUATION OF OBSTACLES.—As part of
the Program, the Director shall—

“(A) identify obstacles that prevent small
manufacturers from effectively competing in the
global market;

“(B) implement a comprehensive plan to
train the Centers to address the obstacles iden-
tified in paragraph (2); and

“(C) facilitate improved communication be-
tween the Centers to assist such manufacturers
in implementing appropriate, targeted solutions
to the obstacles identified in paragraph (2).

“(2) DEVELOPMENT OF OPEN ACCESS RE-
SOURCES.—As part of the Program, the Secretary
shall develop open access resources that address best
practices related to inventory sourcing, supply chain
management, manufacturing techniques, available
Federal resources, and other topics to further the
competitiveness and profitability of small manufac-
turers.”.

1 (c) COMPETITIVE AWARDS PROGRAM.—The National
2 Institute of Standards and Technology Act (15 U.S.C. 271
3 et seq.) is amended by inserting after section 25 the fol-
4 lowing:

5 **“SEC. 25A. COMPETITIVE AWARDS PROGRAM.**

6 “(a) ESTABLISHMENT.—The Director shall establish
7 within the Hollings Manufacturing Extension Partnership
8 under section 25 (15 U.S.C. 278k) and section 26 (15
9 U.S.C. 278l) a program of competitive awards among par-
10 ticipants described in subsection (b) of this section for the
11 purposes described in subsection (c).

12 “(b) PARTICIPANTS.—Participants receiving awards
13 under this section shall be Centers, or a consortium of
14 Centers.

15 “(c) PURPOSE, THEMES, AND REIMBURSEMENT.—

16 “(1) PURPOSE.—The purpose of the program
17 established under subsection (a) is to add capabili-
18 ties to the Hollings Manufacturing Extension Part-
19 nership, including the development of projects to
20 solve new or emerging manufacturing problems as
21 determined by the Director, in consultation with the
22 Director of the Hollings Manufacturing Extension
23 Partnership, the MEP Advisory Board, other Fed-
24 eral agencies, and small and medium-sized manufac-
25 turers.

1 “(2) THEMES.—The Director may identify 1 or
2 more themes for a competition carried out under
3 this section, which may vary from year to year, as
4 the Director considers appropriate after assessing
5 the needs of manufacturers and the success of pre-
6 vious competitions.

7 “(3) REIMBURSEMENT.—Centers may be reim-
8 bursed for costs incurred by the Centers under this
9 section.

10 “(d) APPLICATIONS.—Applications for awards under
11 this section shall be submitted in such manner, at such
12 time, and containing such information as the Director
13 shall require in consultation with the MEP Advisory
14 Board.

15 “(e) SELECTION.—

16 “(1) PEER REVIEW AND COMPETITIVELY
17 AWARDED.—The Director shall ensure that awards
18 under this section are peer reviewed and competi-
19 tively awarded.

20 “(2) GEOGRAPHIC DIVERSITY.—The Director
21 shall endeavor to have broad geographic diversity
22 among selected proposals.

23 “(3) CRITERIA.—The Director shall select ap-
24 plications to receive awards that the Director deter-
25 mines will achieve 1 or more of the following:

1 “(A) Improve the competitiveness of indus-
2 tries in the region in which the Center or Cen-
3 ters are located.

4 “(B) Create jobs or train newly hired em-
5 ployees.

6 “(C) Promote the transfer and commer-
7 cialization of research and technology from in-
8 stitutions of higher education, national labora-
9 tories or other federally funded research pro-
10 grams, and nonprofit research institutes.

11 “(D) Recruit a diverse manufacturing
12 workforce, including through outreach to under-
13 represented populations, including individuals
14 identified in section 33 or section 34 of the
15 Science and Engineering Equal Opportunities
16 Act (42 U.S.C. 1885a, 1885b).

17 “(E) Such other result as the Director de-
18 termines will advance the objective set forth in
19 section 25(c) (15 U.S.C. 278k) or in section 26
20 (15 U.S.C. 278l).

21 “(f) PROGRAM CONTRIBUTION.—Recipients of
22 awards under this section shall not be required to provide
23 a matching contribution.

24 “(g) GLOBAL MARKETPLACE PROJECTS.—In making
25 an award under this section, the Director, in consultation

1 with the MEP Advisory Board and the Secretary, may
2 take into consideration whether an application has signifi-
3 cant potential for enhancing the competitiveness of small
4 and medium-sized United States manufacturers in the
5 global marketplace.

6 “(h) DURATION.—The duration of an award under
7 this section shall be for not more than 3 years.

8 “(i) DEFINITIONS.—The terms used in this section
9 have the meanings given the terms in section 25 (15
10 U.S.C. 278k).”.

11 (d) REPORTS.—

12 (1) IN GENERAL.—Not later than 2 years after
13 the date of enactment of this Act, the Comptroller
14 General of the United States, in consultation with
15 the MEP Advisory Board (as defined in section 25
16 of the National Institute of Standards and Tech-
17 nology Act (15 U.S.C. 278k)), shall submit to the
18 appropriate committees of Congress a report ana-
19 lyzing—

20 (A) the effectiveness of the changes in the
21 cost share to Centers under section 25 of the
22 National Institute of Standards and Technology
23 Act (15 U.S.C. 278k);

24 (B) the engagement in services and the
25 characteristics of services provided by 2 types of

Centers, including volume and type of service;
and

(C) whether the cost-sharing ratio has any
effect on the services provided by either type of
Center.

(2) INDEPENDENT ASSESSMENT.—

(A) IN GENERAL.—Not later than 3 years
after the date of submission of the report under
paragraph (1), the Director of NIST shall con-
tract with an independent organization to per-
form an assessment of the implementation of
the reapplication competition process.

(B) CONSULTATION.—The independent or-
ganization performing the assessment under
subparagraph (A) may consult with the MEP
Advisory Board (as defined in section 25 of the
National Institute of Standards and Technology
Act (15 U.S.C. 278k)).

(3) COMPARISON OF CENTERS.—

(A) IN GENERAL.—Not later than 2 years
after the date of enactment of this Act, the Di-
rector shall submit to the appropriate commit-
tees of Congress a report providing information
on the first and second years of operations for
Centers (as defined in section 25 of the Na-

1 tional Institute of Standards and Technology
 2 Act (15 U.S.C. 278k)) operating from new com-
 3 petitions or recompetition as compared to long-
 4 standing Centers.

5 (B) CONTENTS.—The report shall provide
 6 detail on the engagement in services provided
 7 by Centers and the characteristics of services
 8 provided, including volume and type of services,
 9 so that the appropriate committees of Congress
 10 can evaluate whether the cost-sharing ratio has
 11 an effect on the services provided at Centers.

12 (e) CONFORMING AMENDMENTS.—

13 (1) DEFINITIONS.—Section 2199(3) of title 10,
 14 United States Code, is amended—

15 (A) by striking “regional center” and in-
 16 serting “manufacturing extension center”;

17 (B) by inserting “and best business prac-
 18 tices” before “referred”; and

19 (C) by striking “25(a)” and inserting
 20 “25(b)”.

21 (2) ENTERPRISE INTEGRATION INITIATIVE.—
 22 Section 3(a) of the Enterprise Integration Act of
 23 2002 (15 U.S.C. 278g–5(a)) is amended by inserting
 24 “Hollings” before “Manufacturing Extension Part-
 25 nership”.

1 (3) ASSISTANCE TO STATE TECHNOLOGY PRO-
2 GRAMS.—Section 26(a) of the National Institute of
3 Standards and Technology Act (15 U.S.C. 278l(a))
4 is amended by striking “Centers program created”
5 and inserting “Hollings Manufacturing Extension
6 Partnership”.

7 (f) SAVINGS PROVISIONS.—Notwithstanding the
8 amendments made by subsections (a) and (b) of this sec-
9 tion, the Secretary of Commerce may carry out section
10 25 of the National Institute of Standards and Technology
11 Act (15 U.S.C. 278k) as that section was in effect on the
12 day before the date of enactment of this Act, with respect
13 to existing grants, agreements, cooperative agreements, or
14 contracts, and with respect to applications for such items
15 that are received by the Secretary prior to the date of en-
16 actment of this Act.

17 (g) PATENT RIGHTS.—The provisions of chapter 18
18 of title 35, United States Code, shall apply, to the extent
19 not inconsistent with section 25 of the National Institute
20 of Standards and Technology Act (15 U.S.C. 278k) and
21 section 25 of that Act, to the promotion of technology
22 from research by Centers under those sections, except for
23 contracts for such specific technology extension or transfer
24 services as may be specified by the Director of NIST or
25 under other law.

1 **TITLE VI—INNOVATION AND**
2 **TECHNOLOGY TRANSFER**

3 **SEC. 601. INNOVATION CORPS.**

4 (a) FINDINGS.—Congress makes the following find-
5 ings:

6 (1) The National Science Foundation Innova-
7 tion Corps (referred to in this section as the “I-
8 Corps”) was established to foster a national innova-
9 tion ecosystem by encouraging institutions, sci-
10 entists, engineers, and entrepreneurs to identify and
11 explore the innovation and commercial potential of
12 National Science Foundation-funded research well
13 beyond the laboratory.

14 (2) Through I-Corps, the Foundation invests in
15 entrepreneurship and commercialization education,
16 training, and mentoring that can ultimately lead to
17 the practical deployment of technologies, products,
18 processes, and services that improve the Nation’s
19 competitiveness, promote economic growth, and ben-
20 efit society.

21 (3) By building networks of entrepreneurs, edu-
22 cators, mentors, institutions, and collaborations, and
23 supporting specialized education and training, I-
24 Corps is at the leading edge of a strong, lasting
25 foundation for an American innovation ecosystem.

1 (4) By translating federally funded research to
2 a commercial stage more quickly and efficiently, pro-
3 grams like the I-Corps create new jobs and compa-
4 nies, help solve societal problems, and provide tax-
5 payers with a greater return on their investment in
6 research.

7 (5) The I-Corps program model has a strong
8 record of success that should be replicated at all
9 Federal science agencies.

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

12 (1) commercialization of federally funded re-
13 search can improve the Nation’s competitiveness,
14 grow the economy, and benefit society;

15 (2) I-Corps is a useful tool in promoting the
16 commercialization of federally funded research by
17 training researchers funded by the Foundation in
18 entrepreneurship and commercialization;

19 (3) I-Corps should continue to build a network
20 of entrepreneurs, educators, mentors, and institu-
21 tions and support specialized education and training;

22 (4) researchers other than those funded by the
23 Foundation may also benefit from the education and
24 training described in paragraph (3); and

1 (5) I-Corps should continue to promote a strong
2 innovation system by investing in and supporting fe-
3 male entrepreneurs through mentorship, education,
4 and training because they are historically underrep-
5 resented in entrepreneurial fields.

6 (c) I-CORPS PROGRAM.—

7 (1) IN GENERAL.—In order to promote a
8 strong, lasting foundation for the national innova-
9 tion ecosystem and increase the positive economic
10 and social impact of federally funded research, the
11 Director of the Foundation shall set forth eligibility
12 requirements and carry out a program to award
13 grants for entrepreneurship and commercialization
14 education, training, and mentoring.

15 (2) EXPANSION OF I-CORPS.—

16 (A) IN GENERAL.—The Director—

17 (i) shall encourage the development
18 and expansion of I-Corps and other train-
19 ing programs that focus on professional
20 development, including education in entre-
21 preneurship and commercialization; and

22 (ii) may establish an agreement with
23 another Federal science agency—

24 (I) to make researchers, stu-
25 dents, and institutions funded by that

1 agency eligible to participate in the I-
2 Corps program; or

3 (II) to assist that agency with
4 the design and implementation of its
5 own program that is similar to the I-
6 Corps program.

7 (B) PARTNERSHIP FUNDING.—In negoti-
8 ating an agreement with another Federal
9 science agency under subparagraph (A)(ii), the
10 Director shall require that Federal science
11 agency to provide funding for—

12 (i) the training for researchers, stu-
13 dents, and institutions selected for the I-
14 Corps program; and

15 (ii) the locations that Federal science
16 agency designates as regional and national
17 infrastructure for science and engineering
18 entrepreneurship.

19 (3) FOLLOW-ON GRANTS.—

20 (A) IN GENERAL.—Subject to subpara-
21 graph (B), the Director, in consultation with
22 the Director of the Small Business Innovation
23 Research Program, shall make funds available
24 for competitive grants, including to I-Corps par-
25 ticipants, to help support—

1 (i) prototype or proof-of-concept devel-
2 opment; and

3 (ii) such activities as the Director con-
4 siderers necessary to build local, regional,
5 and national infrastructure for science and
6 engineering entrepreneurship.

7 (B) LIMITATION.—Grants under subpara-
8 graph (A) shall be limited to participants with
9 innovations that because of the early stage of
10 development are not eligible to participate in a
11 Small Business Innovation Research Program
12 or a Small Business Technology Transfer Pro-
13 gram.

14 (4) STATE AND LOCAL PARTNERSHIPS.—The
15 Director may engage in partnerships with State and
16 local governments, economic development organiza-
17 tions, and nonprofit organizations to provide access
18 to the I-Corps program to support entrepreneurship
19 education and training for researchers, students, and
20 institutions under this subsection.

21 (5) REPORTS.—The Director shall submit to
22 the appropriate committees of Congress a biennial
23 report on I-Corps program efficacy, including
24 metrics on the effectiveness of the program. Each
25 Federal science agency participating in the I-Corps

1 program or that implements a similar program
2 under paragraph (2)(A) shall contribute to the re-
3 port.

4 (6) DEFINITIONS.—In this subsection, the
5 terms “Small Business Innovation Research Pro-
6 gram” and “Small Business Technology Transfer
7 Program” have the meanings given those terms in
8 section 9 of the Small Business Act (15 U.S.C.
9 638).

10 **SEC. 602. TRANSLATIONAL RESEARCH GRANTS.**

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

13 (1) commercialization of federally funded re-
14 search may benefit society and the economy; and

15 (2) not-for-profit organizations support the
16 commercialization of federally funded research by
17 providing useful business and technical expertise to
18 researchers.

19 (b) COMMERCIALIZATION PROMOTION.—The Direc-
20 tor of the Foundation shall continue to award grants on
21 a competitive, merit-reviewed basis to eligible entities to
22 promote the commercialization of federally funded re-
23 search results.

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

1 (1) identifying Foundation-sponsored research
2 and technologies that have the potential for acceler-
3 ated commercialization;

4 (2) supporting prior or current Foundation-
5 sponsored investigators, institutions of higher edu-
6 cation, and non-profit organizations that partner
7 with an institution of higher education in under-
8 taking proof-of-concept work, including development
9 of prototypes of technologies that are derived from
10 Foundation-sponsored research and have potential
11 market value;

12 (3) promoting sustainable partnerships between
13 Foundation-funded institutions, industry, and other
14 organizations within academia and the private sector
15 with the purpose of accelerating the transfer of tech-
16 nology;

17 (4) developing multi-disciplinary innovation eco-
18 systems which involve and are responsive to specific
19 needs of academia and industry; and

20 (5) providing professional development, men-
21 toring, and advice in entrepreneurship, project man-
22 agement, and technology and business development
23 to innovators.

24 (d) ELIGIBILITY.—

1 (1) IN GENERAL.—The following organizations
2 may be eligible for grants under this section:

3 (A) Institutions of higher education.

4 (B) Public or nonprofit technology transfer
5 organizations.

6 (C) A nonprofit organization that partners
7 with an institution of higher education.

8 (D) A consortia of 2 or more of the organi-
9 zations described under subparagraphs (A)
10 through (C).

11 (2) LEAD ORGANIZATIONS.—Any eligible orga-
12 nization under paragraph (1) may apply as a lead
13 organization.

14 (e) APPLICATIONS.—An eligible entity seeking a
15 grant under this section shall submit an application to the
16 Director at such time, in such manner, and containing
17 such information as the Director may require.

18 **SEC. 603. OPTICS AND PHOTONICS TECHNOLOGY INNOVA-**
19 **TIONS.**

20 (a) FINDINGS.—Congress makes the following find-
21 ings:

22 (1) The 1998 National Research Council Re-
23 port, “Harnessing Light” presented a comprehensive
24 overview on the importance of optics and photonics
25 to various sectors of the United States economy.

1 (2) In 2012, in response to increased coordina-
2 tion and investment by other nations, the National
3 Research Council released a follow up study recom-
4 mending a national photonics initiative to increase
5 collaboration and coordination among United States
6 industry, Federal and State government, and aca-
7 demia to identify and further advance areas of
8 photonics critical to regaining United States com-
9 petitiveness and maintaining national security.

10 (3) Publicly-traded companies focused on optics
11 and photonics in the United States enable more than
12 \$3 trillion in revenue annually.

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

15 (1) optics and photonics research and tech-
16 nologies promote United States global competitive-
17 ness in industry sectors, including telecommuni-
18 cations and information technology, energy,
19 healthcare and medicine, manufacturing, and de-
20 fense;

21 (2) Federal science agencies, industry, and aca-
22 demia should seek partnerships with each other to
23 develop basic research in optics and photonics into
24 more mature technologies and capabilities; and

(3) each Federal science agency, as appropriate,
should—

(A) survey and identify optics and
photonics-related programs within that Federal
science agency and share results with other
Federal science agencies for the purpose of gen-
erating multiple applications and uses;

(B) partner with the private sector and
academia to leverage knowledge and resources
to maximize opportunities for innovation in op-
tics and photonics;

(C) explore research and development op-
portunities, including Federal and private sec-
tor-sponsored internships, to ensure a highly
trained optics and photonics workforce in the
United States;

(D) encourage partnerships between aca-
demia and industry to promote improvement in
the education of optics and photonics techni-
cians at the secondary school level, under-
graduate level, and 2-year college level, includ-
ing through the Foundation's Advanced Tech-
nological Education program; and

(E) assess existing programs and explore
alternatives to modernize photonics laboratory

1 equipment in undergraduate institutions in the
 2 United States to facilitate critical hands-on
 3 learning.

4 **SEC. 604. UNITED STATES CHIEF TECHNOLOGY OFFICER.**

5 (a) SHORT TITLE.—This section may be cited as the
 6 “United States Chief Technology Officer Act”.

7 (b) IN GENERAL.—Section 203 the National Science
 8 and Technology Policy, Organization, and Priorities Act
 9 of 1976 (42 U.S.C. 6612) is amended—

10 (1) by inserting “(b) ASSOCIATE DIRECTORS.—
 11 ” before “The President is authorized” and indent-
 12 ing appropriately;

13 (2) by inserting “(a) IN GENERAL.—” before
 14 “There shall be” and indenting appropriately; and

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

16 “(c) CHIEF TECHNOLOGY OFFICER.—Subject to sub-
 17 section (b), the President is authorized to designate 1 of
 18 the Associate Directors under that subsection as a United
 19 States Chief Technology Officer.”.

20 **SEC. 605. NATIONAL RESEARCH COUNCIL STUDY ON TECH-**
 21 **NOLOGY FOR EMERGENCY NOTIFICATIONS**
 22 **ON CAMPUSES.**

23 (a) IN GENERAL.—Not later than 90 days after the
 24 date of enactment of this Act, the Director of the Office
 25 of Science and Technology Policy shall enter into an ar-

1 rangement with the National Research Council to conduct
2 and complete a study to identify and review technologies
3 employed at institutions of higher education to provide no-
4 tifications to students, faculty, and other personnel during
5 emergency situations in accordance with law.

6 (b) CONTENTS.—The study shall address—

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

9 (2) the durability of the technologies in deliv-
10 ering the notifications to students, faculty, and other
11 personnel; and

12 (3) the limitations exhibited by the technologies
13 to successfully deliver the notifications not more
14 than 30 seconds after the institution of higher edu-
15 cation transmits the notifications.

16 (c) REPORT REQUIRED.—Not later than 1 year after
17 the date that the National Research Council enters into
18 the arrangement under subsection (a), the Director of the
19 Office of Science and Technology Policy shall submit to
20 Congress a report on the study, including recommenda-

1 tions for addressing any limitations identified under sub-
2 section (b)(3).

Passed the Senate December 10 (legislative day, December 9), 2016.

Attest:

Secretary.

114TH CONGRESS
2D Session

S. 3084

AN ACT

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