

114TH CONGRESS
2D SESSION

S. 3084

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

IN THE SENATE OF THE UNITED STATES

JUNE 22, 2016

Mr. GARDNER (for himself, Mr. PETERS, Mr. THUNE, and Mr. NELSON) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

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,*

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

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

6 (b) TABLE OF CONTENTS.—The table of contents of
7 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. High-energy physics coordination.
- Sec. 107. Laboratory program improvements.
- Sec. 108. International activities.
- Sec. 109. Standard Reference Data Act update.
- Sec. 110. NSF mid-scale project investments.
- Sec. 111. Oversight of NSF large-scale research facility projects.
- Sec. 112. Conflicts of interest.
- Sec. 113. Management of the NSF Antarctic Program.
- Sec. 114. NIST campus security.

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.

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. Grant programs to expand STEM opportunities.
- Sec. 306. Centers of excellence for inclusion in STEM.
- Sec. 307. NIST education and outreach.
- Sec. 308. Presidential awards for excellence in STEM mentoring.
- Sec. 309. Working group on inclusion in STEM fields.
- Sec. 310. Improving undergraduate STEM experiences.
- Sec. 311. Computer science education research.

TITLE IV—LEVERAGING THE PRIVATE SECTOR

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

TITLE V—MANUFACTURING

- Sec. 501. Hollings manufacturing extension partnership improvements.
- Sec. 502. Federal loan guarantees for innovative technologies in manufacturing.

TITLE VI—INNOVATION, COMMERCIALIZATION, AND TECHNOLOGY TRANSFER

- Sec. 601. Innovation corps.
- Sec. 602. Translational research grants.
- Sec. 603. Optics and photonics technology innovations.

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).

13 (3) **FOUNDATION.**—The term “Foundation”
14 means the National Science Foundation.

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

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

21 (6) **STEM.**—The term “STEM” has the mean-
22 ing given the term in section 2 of the American
23 COMPETES Reauthorization Act of 2010 (42
24 U.S.C. 6621 note).

25 (7) **STEM EDUCATION.**—The term “STEM
26 education” has the meaning given the term in sec-

tion 2 of the STEM Education Act of 2015 (42 U.S.C. 6621 note).

TITLE I—MAXIMIZING BASIC RESEARCH

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

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

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

(2) evaluating proposals on the basis of the Foundation’s intellectual merit and broader impacts criteria assures that—

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

(B) the Foundation’s overall funding portfolio addresses societal needs through research findings or through related activities; and

(3) as evidenced by the Foundation’s contributions to scientific advancement, economic development, human health, and national security, its peer review and merit review processes have successfully

1 identified and funded scientifically and societally rel-
2 evant research and should be preserved.

3 (b) MERIT REVIEW CRITERIA.—The Foundation
4 shall maintain the intellectual merit and broader impacts
5 criteria, among other specific criteria as appropriate, as
6 the basis for evaluating grant proposals in the merit re-
7 view process.

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

13 **SEC. 102. TRANSPARENCY AND ACCOUNTABILITY.**

14 (a) FINDINGS.—Congress finds that the Foundation
15 has improved transparency and accountability of the out-
16 comes made through the merit review process.

17 (b) GUIDANCE.—

18 (1) IN GENERAL.—The Director of the Founda-
19 tion shall issue and periodically update, as appro-
20 priate, policy guidance for both Foundation staff
21 and other Foundation merit review process partici-
22 pants, clarifying the importance of transparency and
23 accountability of the outcomes made through the
24 merit review process.

1 (2) REQUIREMENTS.—The guidance under
2 paragraph (1) shall require that each abstract for a
3 Foundation-funded research project—

4 (A) provide a clear justification for any
5 Federal funds that will be expended, including
6 by—

7 (i) describing how the project—

8 (I) reflects the mission statement
9 of the Foundation; and

10 (II) addresses both of the Na-
11 tional Science Board-approved merit
12 review criteria; and

13 (ii) clearly identifying the research
14 priorities of the project in a manner that
15 can be easily understood by both technical
16 and nontechnical audiences; and

17 (B) be publicly available at the time of
18 award.

19 (c) EXAMINATION.—Not later than 180 days after
20 the date of enactment of this Act, the National Science
21 Board shall—

22 (1) examine the efforts by the Foundation to
23 improve transparency and accountability in the
24 merit review process; and

1 (2) submit to the appropriate committees of
 2 Congress a report on the examination, including any
 3 recommendations for how to further improve trans-
 4 parency and accountability of the outcomes made
 5 through the merit review process.

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

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

10 (1) in paragraph (1)—

11 (A) by striking “The National” and insert-
 12 ing “the National”; and

13 (B) by striking “education,” and inserting
 14 “education”;

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

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

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

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

2 “(4) first established at the National Science
3 Foundation in 1979, the Experimental Program to
4 Stimulate Competitive Research (referred to in this
5 section as ‘EPSCoR’) assists States and jurisdic-
6 tions historically underserved by Federal research
7 and development funding in strengthening their re-
8 search and innovation capabilities;

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

13 “(6) EPSCoR has been credited with advancing
14 the research competitiveness of participating States,
15 improving awareness of science, promoting policies
16 that link scientific investment and economic growth,
17 and encouraging partnerships between government,
18 industry, and academia;

19 “(7) EPSCoR proposals are evaluated through
20 a rigorous and competitive merit review process to
21 ensure that awarded research and development ef-
22 forts meet high scientific standards; and

23 “(8) according to the National Academy of
24 Sciences, EPSCoR has strengthened the national re-
25 search infrastructure and enhanced the educational

1 opportunities needed to develop the science and engi-
2 neering workforce.”.

3 (b) SENSE OF CONGRESS.—

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

6 (A) since maintaining the Nation’s sci-
7 entific and economic leadership requires the
8 participation of talented individuals nationwide,
9 EPSCoR investments into State research and
10 education capacities are in the Federal interest
11 and should be sustained; and

12 (B) EPSCoR should maintain its experi-
13 mental component by supporting innovative
14 methods for improving research capacity and
15 competitiveness.

16 (2) DEFINITION OF EPSCOR.—In this sub-
17 section, the term “EPSCoR” has the meaning given
18 the term in section 502 of the America COMPETES
19 Reauthorization Act of 2010 (42 U.S.C. 1862p
20 note).

21 (c) AWARD STRUCTURE UPDATES.—Section 517 of
22 the America COMPETES Reauthorization Act of 2010
23 (42 U.S.C. 1862p–9) is amended by adding at the end
24 the following:

1 “(g) AWARD STRUCTURE UPDATES.—In imple-
 2 menting the mandate to maximize the impact of Federal
 3 EPSCoR support on building competitive research infra-
 4 structure, and based on the inputs and recommendations
 5 of previous EPSCoR reviews, the head of each Federal
 6 agency administering an EPSCoR program shall—

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

10 “(A) to more closely align with current
 11 agency priorities and initiatives;

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

15 “(C) to encourage collaboration between
 16 EPSCoR-eligible institutions and researchers,
 17 including with institutions and researchers in
 18 other States and jurisdictions;

19 “(D) to improve communication between
 20 State and Federal agency proposal reviewers;
 21 and

22 “(E) to continue to reduce administrative
 23 burdens associated with EPSCoR;

24 “(2) consider modifications to EPSCoR award
 25 structures—

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

5 “(B) to allow the agency, States, and juris-
6 dictions to experiment with new research and
7 development funding models; and

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

10 “(A) to increase collaboration between
11 EPSCoR-funded researchers and agency staff,
12 including by providing opportunities for men-
13 toring young researchers and for the use of
14 Federal facilities;

15 “(B) to identify and disseminate best prac-
16 tices; and

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

19 (d) REPORTS.—

20 (1) CONGRESSIONAL REPORTS.—Section 517 of
21 the America COMPETES Reauthorization Act of
22 2010 (42 U.S.C. 1862p–9), as amended, is further
23 amended—

24 (A) by striking subsection (c);

1 (B) by redesignating subsections (d)
 2 through (g) as subsections (c) through (f), re-
 3 spectively;

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

5 (i) in paragraph (1), by striking “Ex-
 6 perimental Programs to Stimulate Com-
 7 petitive Research” and inserting
 8 “EPSCoR”; and

9 (ii) in paragraph (2)—

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

14 (II) in subparagraph (E), by
 15 striking “EPSCoR or Federal
 16 EPSCoR-like programs” and inserting
 17 “each EPSCoR”; and

18 (III) in subparagraph (G), by
 19 striking “EPSCoR programs” and in-
 20 serting “each EPSCoR”;

21 (D) by amending subsection (d), as redes-
 22 igned, to read as follows:

23 “(d) FEDERAL AGENCY REPORTS.—Each Federal
 24 agency that administers an EPSCoR shall submit to Con-
 25 gress, 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.”.

1 (2) TECHNICAL AND CONFORMING AMEND-
 2 MENTS.—Section 113 of the National Science Foun-
 3 dation Authorization Act of 1988 (42 U.S.C. 1862g)
 4 is amended—

5 (A) in the heading, by striking “**EXPERI-**
 6 **MENTAL**” and inserting “**ESTABLISHED**”;

7 (B) in subsection (a), by striking “an Ex-
 8 perimental Program to Stimulate Competitive
 9 Research” and inserting “a program to stimu-
 10 late competitive research (known as the ‘Estab-
 11 lished Program to Stimulate Competitive Re-
 12 search’)”; and

13 (C) in subsection (b), by striking “the pro-
 14 gram” and inserting “the Program”.

15 **SEC. 104. CYBERSECURITY RESEARCH.**

16 (a) FOUNDATION CYBERSECURITY RESEARCH.—Sec-
 17 tion 4(a)(1) of the Cyber Security Research and Develop-
 18 ment Act, as amended (15 U.S.C. 7403(a)(1)) is amend-
 19 ed—

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

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

24 (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, in coordination with the Sec-
9 retary of Homeland Security, shall continue to raise
10 public awareness of the voluntary, industry-led cy-
11 bersecurity standards and best practices for critical
12 infrastructure developed under section 2(c)(15) of
13 the National Institute of Standards and Technology
14 Act (15 U.S.C. 272(c)(15)).

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

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

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

24 (i) to research and identify or, if nec-
25 essary, develop cryptography standards

and guidelines for future cybersecurity needs, including quantum-resistant cryptography standards; and

(ii) to provide recommendations to Congress, Federal agencies, and industry for a secure and smooth transition to the standards under clause (i).

(3) 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 voting systems to ensure voters can vote securely and privately.”.

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

(a) NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT.—Section 101(a)(1) of

1 the High-Performance Computing Act of 1991 (15 U.S.C.
2 5511(a)(1)) is amended—

3 (1) in the matter preceding subparagraph (A),
4 by inserting “IN GENERAL.—” before “The Presi-
5 dent”;

6 (2) in subparagraph (H), by striking “and” at
7 the end;

8 (3) in subparagraph (I), by striking the period
9 at the end and inserting a semicolon; and

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

11 “(J) provide for research on the interplay
12 of computing and people, including social com-
13 puting and human-robot interaction;

14 “(K) provide for research on cyber-physical
15 systems and improving the methods available
16 for the design, development, and operation of
17 those systems that are characterized by high re-
18 liability, safety, and security;

19 “(L) provide for the understanding of the
20 science, engineering, policy, and privacy protec-
21 tion related to networking and information
22 technology;

23 “(M) provide for the understanding of the
24 human facets of cyber threats and secure cyber
25 systems;

1 “(N) provide for the transition of high-per-
 2 formance computing in hardware, system soft-
 3 ware, development tools, and applications into
 4 development and operations; and

5 “(O) foster public-private collaboration
 6 with government, industry research labora-
 7 tories, academia, and nonprofit organizations to
 8 maximize research and development efforts and
 9 the benefits of networking and information
 10 technology, including high-performance com-
 11 puting.”.

12 (b) REVIEW AND PLAN.—Section 101 of the High-
 13 Performance Computing Act of 1991 (15 U.S.C. 5511)
 14 is amended by adding at the end the following:

15 “(d) PERIODIC REVIEWS.—The heads of the applica-
 16 ble agencies and departments working through the Na-
 17 tional Science and Technology Council and the Net-
 18 working and Information Technology Research and Devel-
 19 opment Program shall—

20 “(1) not later than 1 year after the date the ad-
 21 visory committee submits a report under subsection
 22 (b)(2), assess the structure of the Program, includ-
 23 ing the Program Component Areas and associated
 24 contents and funding levels, taking into consider-

1 ation any relevant recommendations of the advisory
2 committee; and

3 “(2) ensure that the Program includes
4 foundational and interdisciplinary information tech-
5 nology research and development activities.

6 “(e) STRATEGIC PLANS.—

7 “(1) IN GENERAL.—The heads of the applicable
8 agencies and departments, working through the Na-
9 tional Science and Technology Council and the Net-
10 working and Information Technology Research and
11 Development Program shall develop and implement
12 strategic plans to guide emerging activities in spe-
13 cific Program Component Areas, as the advisory
14 committee determines relevant under subsection (b),
15 of Federal networking and information technology
16 research and development, and to guide the activities
17 described in subsection (a)(1).

18 “(2) UPDATES.—The heads of the applicable
19 agencies and departments shall update the strategic
20 plans as appropriate.

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

22 “(A) specify near-term and long-term ob-
23 jectives for the Program, the anticipated sched-
24 ule for achieving the near-term and long-term
25 objectives, and the metrics to be used for as-

1 sessing progress toward the near-term and
2 long-term objectives;

3 “(B) specify how the near-term and long-
4 term objectives complement research and devel-
5 opment areas in which academia and the pri-
6 vate sector is actively engaged;

7 “(C) describe how the heads of the applica-
8 ble agencies and departments will support
9 mechanisms for foundational and interdiscipli-
10 nary research and development in networking
11 and information technology, including through
12 collaborations—

13 “(i) across Federal agencies and de-
14 partments;

15 “(ii) across Program Component
16 Areas; and

17 “(iii) with industry, Federal and pri-
18 vate research laboratories, research enti-
19 ties, universities, institutions of higher
20 education, relevant nonprofit organizations,
21 and international partners of the United
22 States;

23 “(D) describe how the heads of the applica-
24 ble agencies and departments will foster the

1 rapid transfer of research and development re-
2 sults into new technologies and applications;

3 “(E) describe how the Program will ad-
4 dress long-term challenges for which solutions
5 require large-scale, long-term, foundational and
6 interdisciplinary research and development; and

7 “(F) place emphasis on innovative and
8 high-risk projects having the potential for sub-
9 stantial societal returns on the research invest-
10 ment.

11 “(4) PRIVATE SECTOR EFFORTS.—In devel-
12 oping, implementing, and updating strategic plans,
13 the heads of the applicable agencies and depart-
14 ments, working through the National Science and
15 Technology Council and Networking and Informa-
16 tion Technology Research and Development Pro-
17 gram, shall coordinate with industry, academia, and
18 other interested stakeholders to ensure, to the extent
19 practicable, that the Federal networking and infor-
20 mation technology research and development activi-
21 ties carried out under this section do not duplicate
22 the efforts of the private sector.

23 “(5) RECOMMENDATIONS.—In developing and
24 updating strategic plans, the heads of the applicable

1 agencies and departments shall solicit recommenda-
 2 tions and advice from—

3 “(A) the advisory committee under sub-
 4 section (b); and

5 “(B) a wide range of stakeholders, includ-
 6 ing industry, academia, including representa-
 7 tives of minority serving institutions and com-
 8 munity colleges, National Laboratories, and
 9 other relevant organizations and institutions.

10 “(f) REPORTS.—The heads of the applicable agencies
 11 and departments, working through the National Science
 12 and Technology Council and the Networking and Informa-
 13 tion Technology Research and Development Program,
 14 shall submit to the advisory committee, the Committee on
 15 Commerce, Science, and Transportation of the Senate,
 16 and the Committee on Science, Space, and Technology of
 17 the House of Representatives—

18 “(1) the strategic plans developed under sub-
 19 section (e)(1); and

20 “(2) each update under subsection (e)(2).

21 “(g) DEFINITION OF APPLICABLE AGENCIES AND
 22 DEPARTMENTS.—In this section, the term ‘applicable
 23 agencies and departments’ means the Federal agencies
 24 and departments identified in subsection (a)(3)(B) or des-
 25 ignated under clause (xii) of that subsection.”.

1 (c) RESEARCH COORDINATION.—Section 101(a)(2)
2 of the High-Performance Computing Act of 1991 (15
3 U.S.C. 5511(a)(2)) is amended—

4 (1) in the matter preceding subparagraph (A),
5 by inserting “REQUIREMENTS.—” before “The Di-
6 rector”; and

7 (2) by amending subparagraph (C) to read as
8 follows:

9 “(C) provide for the coordination of Fed-
10 eral networking and information technology re-
11 search, development, networking, and other ac-
12 tivities—

13 “(i) among the applicable agencies
14 and departments under the Program; and

15 “(ii) to the extent practicable, with
16 other Federal agencies not identified in
17 subsection (a)(3)(B), other Federal and
18 private research laboratories, industry, re-
19 search entities, universities, institutions of
20 higher education, relevant nonprofit orga-
21 nizations, and international partners of the
22 United States;”.

23 (d) BUDGET.—Section 101(a)(3) of the High-Per-
24 formance Computing Act of 1991 (15 U.S.C. 5511(a)(3))
25 is amended—

1 (1) in the matter preceding subparagraph (A),
2 by inserting “CONTENTS OF ANNUAL REPORTS.—”;
3 (2) in subparagraph (B), by striking clauses (i)
4 through (xi) and inserting the following—
5 “(i) the Department of Commerce;
6 “(ii) the Department of Defense;
7 “(iii) the Department of Education;
8 “(iv) the Department of Energy;
9 “(v) the Department of Health and
10 Human Services;
11 “(vi) the Department of Homeland
12 Security;
13 “(vii) the Department of Justice;
14 “(viii) the Environmental Protection
15 Agency;
16 “(ix) the National Aeronautics and
17 Space Administration;
18 “(x) the National Archives and
19 Records Administration;
20 “(xi) the National Science Founda-
21 tion; and
22 “(xii) such other agencies and depart-
23 ments as the President or the Director
24 considers appropriate.”;

1 (3) in subparagraph (C), by striking “is sub-
 2 mitted,” and inserting “is submitted, the levels for
 3 the previous fiscal year,”;

4 (4) in subparagraph (D)—

5 (A) by striking “is submitted,” and insert-
 6 ing “is submitted, the levels for the previous
 7 fiscal year,”; and

8 (B) by striking “and” after the semicolon;

9 (5) by redesignating subparagraph (E) as sub-
 10 paragraph (F); and

11 (6) by inserting after subparagraph (D) the fol-
 12 lowing:

13 “(E) include a description of how the ob-
 14 jectives for each Program Component Area, and
 15 the objectives for activities that involve multiple
 16 Program Component Areas, relate to the objec-
 17 tives of the Program identified in the strategic
 18 plan under subsection (e);”.

19 (e) CONFORMING AMENDMENTS TO HIGH-PERFORM-
 20 ANCE COMPUTING ACT OF 1991.—The High-Performance
 21 Computing Act of 1991 (15 U.S.C. 5501 et seq.) is
 22 amended—

23 (1) in section 2 (15 U.S.C. 5501)—

24 (A) in paragraphs (2) and (5), by striking
 25 “high-performance computing” and inserting

1 “networking and information technology, in-
2 cluding high-performance computing,”; and

3 (B) in paragraph (3), by striking “high-
4 performance computing” and inserting “net-
5 working and information technology, including
6 high-performance computing”;

7 (2) in section 3 (15 U.S.C. 5502)—

8 (A) in the matter preceding paragraph (1)
9 and paragraph (1), by striking “high-perform-
10 ance computing” and inserting “networking and
11 information technology” each place it appears;
12 and

13 (B) in paragraph (2)—

14 (i) by striking “high-performance
15 computing and” and inserting “networking
16 and information technology and”; and

17 (ii) by striking “high-performance
18 computing network” and inserting “net-
19 working and information technology”;

20 (3) in section 4 (15 U.S.C. 5503)—

21 (A) in paragraphs (2) and (3), by striking
22 “high-performance computing” and inserting
23 “networking and information technology”;

24 (B) in paragraph (6), by striking “Na-
25 tional High-Performance Computing” and in-

serting “Networking and Information Technology Research and Development”; and

(C) by redesignating paragraphs (3), (4), (5), (6), and (7) as paragraphs (5), (3), (4), (6), and (7), respectively;
(4) in section 101 (15 U.S.C. 5511)—

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

(B) in subsection (a)—

(i) in the heading, by striking “**NATIONAL HIGH-PERFORMANCE COMPUTING**” and inserting “**NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT**”;

(ii) in paragraph (1)—

(I) in the matter preceding subparagraph (A), by striking “National High-Performance Computing” and inserting “Networking and Information Technology Research and Development”;

1 (II) in subparagraph (A), by
 2 striking “high-performance com-
 3 puting, including networking” and in-
 4 serting “networking and information
 5 technology”;

6 (III) in subparagraphs (B) and
 7 (C), by striking “high-performance
 8 computing” and inserting “high-end
 9 computing, including high-perform-
 10 ance computing,”; and

11 (IV) in subparagraph (G), by
 12 striking “high-performance com-
 13 puting” and inserting “networking
 14 and information technology, including
 15 high-performance computing,”; and

16 (iii) in paragraph (2)—

17 (I) in subparagraph (A), by strik-
 18 ing “high-performance computing re-
 19 search, development, networking” and
 20 inserting “networking and information
 21 technology research and develop-
 22 ment”;

23 (II) in subparagraph (E), by
 24 striking “high-performance computing
 25 and networking systems” and insert-

1 ing “high-end computing and net-
2 working systems”; and

3 (III) in subparagraph (F), by
4 striking “high-performance com-
5 puting” and inserting “high-end, in-
6 cluding high-performance computing”;

7 (C) in subsection (b)(1), in the matter pre-
8 ceding subparagraph (A), by striking “high-per-
9 formance computing” each place it appears and
10 inserting “networking and information tech-
11 nology”;

12 (D) in subsection (b)(2), by striking “Com-
13 mittee on Science and Technology” and insert-
14 ing “Committee on Science, Space, and Tech-
15 nology”; and

16 (E) in subsection (c)(1)(A), by striking
17 “high-performance computing” and inserting
18 “networking and information technology”;

19 (5) in section 201(a) (15 U.S.C. 5521(a)), by
20 striking “high-performance computing and advanced
21 high-speed computer networking” and inserting
22 “networking and information technology”;

23 (6) in section 202(a) (15 U.S.C. 5522(a)), by
24 striking “high-performance computing” and insert-
25 ing “networking and information technology”;

1 (7) in section 203 (15 U.S.C. 5523(a))—

2 (A) by striking “high-performance com-
3 puting and networking” and inserting “net-
4 working and information technology”; and

5 (B) by striking “high-performance com-
6 puting systems” and inserting “high-end, in-
7 cluding high-performance computing systems”;

8 (8) in section 204 (15 U.S.C. 5524)—

9 (A) in subsection (a)(1)—

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

14 (ii) in subparagraph (B), by striking
15 “high-performance computing systems in
16 networks” and inserting “networking and
17 information technology systems”; and

18 (iii) in subparagraph (C), by striking
19 “high-performance computing systems”
20 and inserting “networking and information
21 technology”; and

22 (B) in subsection (b)—

23 (i) in the heading, by striking “HIGH-
24 PERFORMANCE COMPUTING AND NET-

1 WORK” and inserting “NETWORK AND IN-
2 FORMATION TECHNOLOGY SECURITY”; and

3 (ii) by striking “sensitive information
4 in Federal computer systems” and insert-
5 ing “agency information and information
6 systems”; and

7 (9) in section 207 (15 U.S.C. 5527)—

8 (A) in subsection (a)(2), by striking “sec-
9 tion 2315(a) of title 10” and inserting “section
10 3552(b)(6)(A) of title 44”; and

11 (B) in subsection (b), by striking “high-
12 performance computing systems” and inserting
13 “networking and information technology”.

14 (f) ADDITIONAL TECHNICAL AND CONFORMING
15 AMENDMENTS.—

16 (1) NATIONAL NETWORKING AND INFORMATION
17 TECHNOLOGY PROGRAM.—Section 101 of the High-
18 Performance Computing Act of 1991 (15 U.S.C.
19 5511), as amended, is further amended—

20 (A) in subsection (b)—

21 (i) in paragraph (1), by inserting
22 “ADVISORY COMMITTEE.—” before “The
23 President shall”;

1 (ii) in paragraph (2), by inserting
 2 “ADDITIONAL DUTIES.—” before “In addi-
 3 tion to”; and

4 (iii) in paragraph (3), by inserting
 5 “FACA.—” before “Section 14”; and
 6 (B) in subsection (c)—

7 (i) in paragraph (1), by inserting
 8 “REPORTS.—” before “Each Federal”;
 9 and

10 (ii) in paragraph (2), by inserting
 11 “OMB REVIEW.—” before “The Office”.

12 (2) MISCELLANEOUS.—

13 (A) NATIONAL SCIENCE FOUNDATION RE-
 14 SEARCH.—Section 4(b)(5)(K) of the Cyber Se-
 15 curity Research and Development Act (15
 16 U.S.C. 7403(b)(5)(K)) is amended by striking
 17 “high-performance computing” and inserting
 18 “networking and information technology”.

19 (B) NATIONAL INFORMATION TECH-
 20 NOLOGY RESEARCH AND DEVELOPMENT PRO-
 21 GRAM.—Section 13202(b) of the American Re-
 22 covery and Reinvestment Act of 2009 (42
 23 U.S.C. 17912(b)) is amended by striking “Na-
 24 tional High-Performance Computing Program”
 25 and inserting “Networking and Information

1 Technology Research and Development Pro-
2 gram”.

3 (C) FEDERAL CYBERSECURITY RESEARCH
4 AND DEVELOPMENT.—Section 201(a)(4) of the
5 Cybersecurity Enhancement Act of 2014 (15
6 U.S.C. 7431(a)(4)) is amended by striking
7 “clauses (i) through (x) of section 101(a)(3)(B)
8 of the High-Performance Computing Act of
9 1991 (15 U.S.C. 5511(a)(3)(B)) or designated
10 under clause (xi) of that section” and inserting
11 “clauses (i) through (xi) of section
12 101(a)(3)(B) of the High-Performance Com-
13 puting Act of 1991 (15 U.S.C. 5511(a)(3)(B))
14 or designated under clause (xii) of that sec-
15 tion”.

16 (D) NATIONAL RESEARCH AND EDUCATION
17 NETWORK.—Section 102 of the High-Perform-
18 ance Computing Act of 1991 (15 U.S.C. 5512)
19 is repealed.

20 (E) NEXT GENERATION INTERNET.—Sec-
21 tion 103 of the High-Performance Computing
22 Act of 1991 (15 U.S.C. 5513) is repealed.

23 (F) FOSTERING UNITED STATES COMPETI-
24 TIVENESS IN HIGH-PERFORMANCE COMPUTING
25 AND RELATED ACTIVITIES.—Section 208 of the

1 High-Performance Computing Act of 1991 (15
2 U.S.C. 5528) is repealed.

3 **SEC. 106. HIGH-ENERGY PHYSICS COORDINATION.**

4 (a) IN GENERAL.—The Physical Science Sub-
5 committee of the National Science and Technology Council
6 shall define and continue to coordinate Federal efforts, in-
7 cluding activities of relevant advisory committees, related
8 to high-energy physics research to maximize the efficiency
9 and effectiveness of United States investment in high-en-
10 ergy physics.

11 (b) PURPOSES.—The purposes of the Physical
12 Science Subcommittee include—

13 (1) to advise and assist the Committee on
14 Science and the National Science and Technology
15 Council on United States policies, procedures, and
16 plans in the physical sciences, including high-energy
17 physics; and

18 (2) to identify emerging opportunities, stimu-
19 late international cooperation, and foster the devel-
20 opment of the physical sciences in the United States,
21 including—

22 (A) in high-energy physics research, in-
23 cluding underground science and engineering
24 research;

1 (B) in physical infrastructure and facili-
2 ties;

3 (C) in information and analysis; and

4 (D) in coordination activities.

5 (c) RESPONSIBILITIES.—In regard to coordinating
6 Federal efforts related to high-energy physics research,
7 the Physical Science Subcommittee shall—

8 (1) provide recommendations on planning for
9 construction and stewardship of large facilities par-
10 ticipating in high-energy physics;

11 (2) provide recommendations on research co-
12 ordination and collaboration among the programs
13 and activities of Federal agencies;

14 (3) establish goals and priorities for high-en-
15 ergy physics, underground science, and research and
16 development that will strengthen United States com-
17 petitiveness in high-energy physics;

18 (4) propose methods for engagement with inter-
19 national, Federal, and State agencies and Federal
20 laboratories not represented on the National Science
21 and Technology Council to identify and reduce regu-
22 latory, logistical, and fiscal barriers that inhibit
23 United States leadership in high-energy physics and
24 related underground science; and

1 (5) develop, and update as necessary, a stra-
2 tegic plan to guide Federal programs and activities
3 in support of high-energy physics research, includ-
4 ing—

5 (A) the efforts taken in support of sub-
6 section (b) since the last strategic plan;

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

10 (C) an identification of future priorities in
11 the area of high-energy physics.

12 **SEC. 107. LABORATORY PROGRAM IMPROVEMENTS.**

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

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

19 (2) commercial and industrial applications.

20 (b) OPTIMIZING COMMERCIAL AND INDUSTRIAL AP-
21 PLICATIONS.—In accordance with the purpose under sec-
22 tion 1(b)(3) of the National Institute of Standards and
23 Technology Act (15 U.S.C. 271(b)(3)), the comprehensive
24 strategic plan shall—

1 (1) include performance metrics for the dissemi-
2 nation of fundamental research results, measure-
3 ments, and standards research results to industry,
4 including manufacturing, and other interested par-
5 ties;

6 (2) document any positive benefits of research
7 on the competitiveness of the parties described in
8 paragraph (1); and

9 (3) clarify the current approach to the tech-
10 nology transfer activities of NIST.

11 **SEC. 108. INTERNATIONAL ACTIVITIES.**

12 Section 17(a) of the National Institute of Standards
13 and Technology Act (15 U.S.C. 278g(a)) is amended to
14 read as follows:

15 “(a) FINANCIAL ASSISTANCE TO FOREIGN NATION-
16 ALS.—The Secretary is authorized, notwithstanding any
17 other provision of law, to expend such sums, within the
18 limit of appropriated funds, through direct support for ac-
19 tivities of international organizations and foreign national
20 metrology institutes with which the Institute cooperates
21 to advance measurement methods, standards, and related
22 basic technologies and, as the Secretary may deem desir-
23 able, through the grant of fellowships or any other form
24 of financial assistance, to defray the expenses of foreign
25 nationals not in service to the Government of the United

1 States while they are performing scientific or engineering
 2 work at the Institute or participating in the exchange of
 3 scientific or technical information at the Institute.”.

4 **SEC. 109. STANDARD REFERENCE DATA ACT UPDATE.**

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

7 **“SEC. 2. DEFINITIONS.**

8 “For the purposes of this Act:

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

11 “(A) either—

12 “(i) quantitative information related
 13 to a measurable physical or chemical prop-
 14 erty of a substance or system of substances
 15 of known composition and structure;

16 “(ii) measurable characteristics of a
 17 physical artifact or artifacts;

18 “(iii) engineering properties or per-
 19 formance characteristics of a system; or

20 “(iv) one or more digital data objects
 21 that serve—

22 “(I) to calibrate or characterize
 23 the performance of a detection or
 24 measurement system; or

1 “(II) to interpolate or extrapo-
2 late, or both, data described in sub-
3 paragraphs (A) through (C); and

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

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

8 **SEC. 110. NSF MID-SCALE PROJECT INVESTMENTS.**

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

11 (1) The Foundation funds major research facili-
12 ties, infrastructure, and instrumentation that pro-
13 vide unique capabilities at the frontiers of science
14 and engineering.

15 (2) Modern and effective research infrastruc-
16 ture is critical to maintaining United States leader-
17 ship in science and engineering.

18 (3) Many proposed instruments, equipment, or
19 upgrades to major research facilities fall between
20 programs currently funded by the Foundation, cre-
21 ating a gap between Major Research Instrumenta-
22 tion and Major Research Equipment and Facilities
23 Construction, including projects that have been iden-
24 tified as cost-effective additions of high priority to
25 the advancement of scientific understanding.

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

4 (b) SENSE OF CONGRESS.—It is the sense of Con-
5 gress that the addition of a competitive mid-scale funding
6 opportunity that includes both research, instrument, and
7 infrastructure is essential to the portfolio of the Founda-
8 tion and advancing scientific understanding.

9 (c) MID-SCALE PROJECTS.—

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

14 (2) STRATEGY.—The Director of the Founda-
15 tion shall develop a strategy to meet the needs iden-
16 tified in paragraph (1).

17 (3) BRIEFING.—Not later than 180 days after
18 the date of enactment of this Act, the Director of
19 the Foundation shall provide a briefing to the appro-
20 priate committees of Congress on the evaluation
21 under paragraph (1) and the strategy under para-
22 graph (2).

23 (4) DEFINITION OF MID-SCALE PROJECTS.—In
24 this subsection, the term “mid-scale projects” means
25 research, instrumentation, and infrastructure invest-

1 ments that fall between the instrumentation funded
 2 by the major research instrumentation program and
 3 the very large projects funded by the major research
 4 equipment and facilities construction program as de-
 5 scribed in section 507 of the AMERICA Competes
 6 Reauthorization Act of 2010 (Public Law 111–358;
 7 124 Stat. 4008).

8 **SEC. 111. OVERSIGHT OF NSF LARGE-SCALE RESEARCH FA-**
 9 **CILITY PROJECTS.**

10 (a) FACILITIES OVERSIGHT.—

11 (1) IN GENERAL.—The Director of the Founda-
 12 tion shall strengthen oversight and accountability
 13 over the full life-cycle of large-scale research facility
 14 projects, including planning, development, procure-
 15 ment, construction, operations, and support, and
 16 shut-down of such facilities, in order to maximize re-
 17 search investment.

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

20 (A) prioritize the scientific outcomes of
 21 large-scale research facility projects and the in-
 22 ternal management and financial oversight of
 23 the projects;

24 (B) clarify the roles and responsibilities of
 25 all organizations, including offices, panels, com-

mittees, and directorates, involved in supporting large-scale research facility projects, including the role of the Major Research Equipment and Facilities Construction Panel;

(C) establish policies and procedures for the planning, management, and oversight of large-scale research facility projects at each phase of the life-cycle of the project;

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

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

(F) coordinate the sharing of the best management practices and lessons learned from large-scale research facility projects.

(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 large-scale research facility 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) CRITERIA.—Section 14(a)(3)(D) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–4(a)(3)(D)) is amended to read as follows:

“(D) 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) IMPLEMENTATION.—Based on the pre-award analysis described in paragraph (1), the Director shall include projected operational costs with-

1 in the Foundation's out years as part of the Presi-
2 dent's yearly budget submissions to Congress.

3 (c) COST OVERSIGHT.—

4 (1) PRE-AWARD ANALYSIS.—

5 (A) IN GENERAL.—The Director of the
6 Foundation and the National Science Board
7 may not approve any proposed large-scale re-
8 search facility project unless—

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

12 (ii) the analysis under clause (i) fol-
13 lows the Government Accountability Office
14 Cost Estimating and Assessment Guide;

15 (iii) except as provided under sub-
16 paragraph (C), an analysis of the account-
17 ing systems has been conducted;

18 (iv) an independent cost estimate of
19 the construction of the project has been
20 conducted using the same detailed tech-
21 nical information as the project proposal
22 estimate to determine whether the estimate
23 is well-supported and realistic; and

24 (v) the Foundation and the National
25 Science Board has considered the analyses

1 under clauses (i) and (iii) and the inde-
2 pendent cost estimate under clause (iv)
3 and resolved any major issues identified
4 therein.

5 (B) AUDITS.—A Foundation analysis
6 under subparagraph (A)(i) may include an
7 audit.

8 (C) EXCEPTION.—The Director, at the Di-
9 rector's discretion, may waive the requirement
10 under subparagraph (A)(iii) if a similar analysis
11 of the accounting systems was conducted in the
12 prior years.

13 (2) CONSTRUCTION OVERSIGHT.—The Director
14 shall require for each large-scale research facility
15 project—

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

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

22 (C) annual incurred cost submissions of fi-
23 nancial expenditures; and

24 (D) an incurred cost audit of the project—

1 (i) at least once during construction
2 at a time determined based on risk anal-
3 ysis and length of the award, except that
4 the length of time between audits may not
5 exceed 3 years; and

6 (ii) at the completion of the construc-
7 tion phase.

8 (3) OPERATIONS COST ESTIMATE.—The Direc-
9 tor shall require an independent cost estimate of the
10 operational proposal for each large-scale research fa-
11 cility project.

12 (d) CONTINGENCY.—

13 (1) IN GENERAL.—The Foundation shall
14 strengthen internal controls to improve oversight of
15 contingency on a large-scale research facility project.

16 (2) REQUIREMENTS.—In carrying out para-
17 graph (1), not later than 180 days after the date of
18 enactment of this Act, the Foundation shall—

19 (A) retain control over a portion of the
20 budget contingency funds of each awardee;

21 (B) distribute the retained funds with
22 other incremental funds as needed; and

23 (C) track contingency use.

24 (e) OVERSIGHT IMPLEMENTATION PROGRESS.—The
25 Director of the Foundation shall—

1 (1) not later than 90 days after the date of en-
 2 actment of this Act, and periodically thereafter until
 3 the completion date, provide a briefing to the appro-
 4 priate committees of Congress on the response to or
 5 progress made toward implementation of—

6 (A) this section;

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

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

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

24 (f) DEFINITIONS.—In this section:

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

8 (2) LARGE-SCALE RESEARCH FACILITY
9 PROJECT.—The term “large-scale research facility
10 project” means a science and engineering facility
11 project funded by the major research equipment and
12 facilities construction account, or any successor
13 thereto.

14 **SEC. 112. CONFLICTS OF INTEREST.**

15 The Director of the Foundation shall update the pol-
16 icy and procedure of the Foundation relating to conflicts
17 of interest to improve documentation and management of
18 any known conflict of interest of an individual on tem-
19 porary assignment at the Foundation, including an indi-
20 vidual on assignment under the Intergovernmental Per-
21 sonnel Act of 1970 (42 U.S.C. 4701 et seq.).

22 **SEC. 113. MANAGEMENT OF THE NSF ANTARCTIC PRO-**
23 **GRAM.**

24 (a) REVIEW.—

1 (1) IN GENERAL.—The Director of the Founda-
2 tion shall continue to review the efforts by the Foun-
3 dation to sustain and strengthen scientific efforts in
4 the face of logistical challenges for the United States
5 Antarctic Program.

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

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

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

15 (ii) the U.S. Antarctic Program Blue
16 Ribbon Panel report, More and Better
17 Science in Antarctica through Increased
18 Logistical Effectiveness, issued July 23,
19 2012; and

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

1 (B) Efforts by the Foundation to track its
2 progress in addressing the issues and rec-
3 ommendations under subparagraph (A).

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

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

16 **SEC. 114. NIST CAMPUS SECURITY.**

17 (a) SUPERVISORY AUTHORITY.—Consistent with the
18 enforcement authority delegated by the Secretary of
19 Homeland Security under section 1315 of title 40, United
20 States Code, the Department of Commerce Office of Secu-
21 rity shall directly manage the law enforcement and secu-
22 rity programs of NIST through an assigned Director of
23 Security for NIST.

24 (b) REPORTS.—The Director of Security for NIST
25 shall provide an activities and security report on a quar-

1 terly basis for the first year after the date of enactment
2 of this Act, and on an annual basis thereafter, to the
3 Under Secretary for Standards and Technology.

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

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

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

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

15 (2) Federally funded grants are increasingly
16 competitive, with the Foundation funding only ap-
17 proximately 1 in every 5 grant proposals.

18 (3) Researchers spend as much as 42 percent
19 of their time complying with Federal regulations, in-
20 cluding administrative tasks such as applying for
21 grants or meeting reporting requirements.

22 (4) The time spent on the activities described in
23 paragraph (3) affects efficiency and reduces valuable
24 research time.

1 (b) SENSE OF CONGRESS.—It is the sense of Con-
 2 gress that administrative burdens faced by researchers
 3 may be reducing the return on investment of federally
 4 funded research and development.

5 (c) ESTABLISHMENT.—The Director of the Office of
 6 Management and Budget, in coordination with the Office
 7 of Science and Technology Policy, shall establish an inter-
 8 agency working group (referred to in this section as the
 9 “Working Group”) to reduce administrative burdens on
 10 federally funded researchers while protecting the public in-
 11 terest in the transparency of and accountability for feder-
 12 ally funded activities.

13 (d) RESPONSIBILITIES.—

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

15 (A) regularly review relevant, administra-
 16 tion-related regulations imposed on federally
 17 funded researchers; and

18 (B) recommend those regulations or proc-
 19 esses that may be eliminated, streamlined, or
 20 otherwise improved for the purpose described in
 21 subsection (c).

22 (2) GRANT REVIEW.—

23 (A) IN GENERAL.—The Working Group, in
 24 consultation with the Office of Management
 25 and Budget, shall—

1 (i) conduct a comprehensive review of
 2 Federal science agency grant proposal doc-
 3 uments; and

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

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

10 (i) procedures for preliminary project
 11 proposals in advance of peer-review selec-
 12 tion;

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

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

19 (iv) detailed budget proposals for ap-
 20 plicants that peer review selection identi-
 21 fies as likely to be funded.

22 (3) CENTRALIZED RESEARCHER PROFILE DATA-
 23 BASE.—

24 (A) ESTABLISHMENT.—The Working
 25 Group shall establish, to the extent practicable,

1 a secure, centralized database for investigator
2 biosketches, curriculum vitae, licenses, publica-
3 tions, and other documents considered relevant
4 by the Working Group.

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

9 (C) GRANT PROPOSALS.—To the extent
10 practicable, all grant proposals shall utilize the
11 centralized researcher profile database estab-
12 lished under subparagraph (A).

13 (D) REQUIREMENTS.—Each investigator
14 shall—

15 (i) be responsible for ensuring the in-
16 vestigator’s profile is current and accurate;
17 and

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

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

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

1 (B) provide guidance to universities and
 2 Federal science agencies on the use of the cen-
 3 tralized assurances repository.

4 (5) COMPREHENSIVE REVIEW.—

5 (A) IN GENERAL.—The Working Group, in
 6 consultation with the Office of Management
 7 and Budget, shall—

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

11 (ii) develop a strategy to simplify in-
 12 vestigator progress reports.

13 (B) CONSIDERATIONS.—In developing the
 14 strategy, the Working Group shall consider lim-
 15 iting progress reports to performance outcomes.

16 (e) CONSULTATION.—In carrying out its responsibil-
 17 ities under subsection (d)(1), the Working Group shall
 18 consult with academic researchers outside the Federal
 19 Government, including—

20 (1) federally funded researchers;

21 (2) nonfederally funded researchers;

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

24 (4) scientific and engineering disciplinary soci-
 25 eties and associations;

- 1 (5) nonprofit research institutions;
- 2 (6) industry, including small businesses;
- 3 (7) federally funded research and development
- 4 centers; and
- 5 (8) members of the public with a stake in en-
- 6 suring effectiveness, efficiency, and accountability in
- 7 the performance of scientific research.

8 (f) REPORTS.—Not later than 1 year after the date
9 of enactment of this Act, and periodically thereafter, the
10 Working Group shall submit to the appropriate commit-
11 tees of Congress an annual report on its responsibilities
12 under this section, including recommendations under sub-
13 section (d)(1)(B).

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

15 (a) DEFINITION OF SCIENTIFIC AND TECHNICAL
16 WORKSHOP.—In this section, the term “scientific and
17 technical workshop” means a symposium, seminar, or any
18 other organized, formal gathering where scientists or engi-
19 neers working in STEM research and development fields
20 assemble to coordinate, exchange and disseminate infor-
21 mation or to explore or clarify a defined subject, problem
22 or area of knowledge in the STEM fields.

23 (b) POLICY.—It is the policy of the United States to
24 encourage broad dissemination Federal research findings

1 and engagement of Federal researchers with the scientific
2 and technical community.

3 (c) AUTHORITY.—Laboratory, test center, and field
4 center directors and other similar heads of offices may ap-
5 prove scientific and technical workshop attendance if—

6 (1) that attendance would meet the mission of
7 the laboratory or test center; and

8 (2) sufficient laboratory or test center funds are
9 available for that purpose.

10 (d) ATTENDANCE POLICIES.—

11 (1) IN GENERAL.—Not later than 180 days
12 after the date of enactment of this Act, the Director
13 of the Office of Management and Budget, in con-
14 sultation with the Director of the Office of Science
15 and Technology Policy and the heads of other rel-
16 evant Federal science agencies, shall revise current
17 policies and streamline processes, in accordance with
18 the policy under subsection (b), for attendance at
19 scientific and technical workshops while ensuring ap-
20 propriate oversight, accountability, and trans-
21 parency.

22 (2) CONSIDERATIONS.—In revising the policy
23 under paragraph (1), the Director of the Office of
24 Management and Budget shall consider the goal of
25 adjudicating a request to attend a scientific and

1 technical workshop not later than 30 days after the
2 date of the request.

3 (3) IMPLEMENTATION.—Not later than 90 days
4 after the date the Director of the Office of Manage-
5 ment and Budget revises the policies under para-
6 graph (1), the head of each Federal science agency
7 shall update that agency’s policies for attendance at
8 scientific and technical workshops.

9 (e) NIST WORKSHOPS.—Section 2(c) of the National
10 Institute of Standards and Technology Act (15 U.S.C.
11 272(c)), as amended by section 104 of this Act, is further
12 amended—

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

16 (2) by inserting after paragraph (18) the fol-
17 lowing:

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

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

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

5 **SEC. 203. NIST GRANTS AND COOPERATIVE AGREEMENTS**
 6 **UPDATE.**

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

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

13 (a) REPEAL OF CERTAIN OBSOLETE REPORTS.—

14 (1) NIST REPORTS.—

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

20 (i) in paragraph (1), by striking “(1)
 21 IN GENERAL.—” and indenting appro-
 22 priately; and

23 (ii) by striking paragraph (2).

24 (B) THREE-YEAR PROGRAMMATIC PLAN-
 25 NING DOCUMENT.—

1 (i) IN GENERAL.—Section 23 of the
 2 National Institute of Standards and Tech-
 3 nology Act (15 U.S.C. 278i) is amended by
 4 striking subsections (c) and (d).

5 (ii) CONFORMING AMENDMENT.—Sec-
 6 tion 10(h)(1) of the National Institute of
 7 Standards and Technology Act (15 U.S.C.
 8 278(h)(1)) is amended by striking the last
 9 sentence.

10 (2) MULTIAGENCY REPORT ON INNOVATION AC-
 11 CELERATION RESEARCH.—Section 1008 of the
 12 America COMPETES Act (42 U.S.C. 6603) is
 13 amended—

14 (A) by striking subsection (c); and

15 (B) by redesignating subsection (d) as sub-
 16 section (c).

17 (3) NSF REPORTS.—

18 (A) FUNDING FOR SUCCESSFUL STEM
 19 EDUCATION PROGRAMS; REPORT TO CON-
 20 GRESS.—Section 7012 of the America COM-
 21 PETES Act (42 U.S.C. 1862o–4) is amended
 22 by striking subsection (c).

23 (B) ENCOURAGING PARTICIPATION; EVAL-
 24 UATION AND REPORT.—Section 7031 of the

1 America COMPETES Act (42 U.S.C. 1862o–
2 11) is amended by striking subsection (b).

3 (C) MATH AND SCIENCE PARTNERSHIPS
4 PROGRAM COORDINATION REPORT.—Section
5 9(e) of the National Science Foundation Au-
6 thorization Act of 2002 (42 U.S.C. 1862n(c)) is
7 amended—

8 (i) by striking paragraph (4); and

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

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

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

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

21 “(A) the near-term and long-term objec-
22 tives for the Program;

23 “(B) the anticipated schedule for achieving
24 the near-term objectives;

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

4 “(D) how the Program will move results
5 out of the laboratory and into application for
6 the benefit of society;

7 “(E) the Program’s support for long-term
8 funding for interdisciplinary research and devel-
9 opment in nanotechnology; and

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

12 (2) by amending section 4(d) (15 U.S.C.
13 7503(d)) to read as follows:

14 “(d) REPORTS.—Not later than 4 years after the
15 date of the most recent assessment under subsection (c),
16 and quadrennially thereafter, the Advisory Panel shall
17 submit to the President, the Committee on Commerce,
18 Science, and Transportation of the Senate, and the Com-
19 mittee on Science, Space, and Technology of the House
20 of Representatives a report of its assessments under sub-
21 section (c) and its recommendations for ways to improve
22 the Program.”; and

23 (3) in section 5 (15 U.S.C. 7504)—

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

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

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

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

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

10 “(d) REPORT.—

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

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

23 (c) MAJOR RESEARCH EQUIPMENT AND FACILITIES
24 CONSTRUCTION.—Section 14 of the National Science

1 Foundation Authorization Act of 2002 (42 U.S.C. 1862n—
 2 4) is amended—

3 (1) by amending subsection (a) to read as fol-
 4 lows:

5 “(a) PRIORITIZATION OF PROPOSED MAJOR RE-
 6 SEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—

7 “(1) DEVELOPMENT OF PRIORITIES.—The Di-
 8 rector shall—

9 “(A) develop a list indicating by number
 10 the relative priority for funding under the
 11 major research equipment and facilities con-
 12 struction account that the Director assigns to
 13 each project the Board has approved for inclu-
 14 sion in a future budget request; and

15 “(B) submit the list described in subpara-
 16 graph (A) to the Board for approval.

17 “(2) UPDATES.—The Director shall update the
 18 list prepared under paragraph (1) each time the
 19 Board approves a new project that would receive
 20 funding under the major research equipment and fa-
 21 cilities construction account and periodically submit
 22 any updated list to the Board for approval.”;

23 (2) by striking subsection (e);

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

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

2 “(c) BOARD APPROVAL OF MAJOR RESEARCH
3 EQUIPMENT AND FACILITIES PROJECTS.—The Board
4 shall explicitly approve any project to be funded out of
5 the major research equipment and facilities construction
6 account before any funds may be obligated from such account 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.—Section
14 4226(b) of the Small Business Act of 2010
15 (15 U.S.C. 278n note) is repealed.

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

1 Technology Act (15 U.S.C. 278(h)(1)) is
 2 amended by striking “, including the Program
 3 established under section 28,”.

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

10 **TITLE III—SCIENCE, TECH-**
 11 **NOLOGY, ENGINEERING, AND**
 12 **MATH EDUCATION**

13 **SEC. 301. ROBERT NOYCE TEACHER SCHOLARSHIP PRO-**
 14 **GRAM UPDATE.**

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

18 “(k) **STEM TEACHER SERVICE AND RETENTION.**—

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

23 “(A) fulfill the service obligation required
 24 under subsection (h); and

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

4 “(2) PRACTICES.—The practices described
5 under paragraph (1) may include—

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

15 “(B) increasing recruitment from high
16 need districts;

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

21 “(D) conducting research to better under-
22 stand factors relevant to teacher service and re-
23 tention; and

24 “(E) conducting pilot programs to improve
25 teacher service and retention.”.

1 **SEC. 302. SPACE GRANTS.**

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

10 (b) ADMINISTRATIVE COSTS.—Section 40303 of title
11 51, United States Code, is amended by adding at the end
12 the following:

13 “(d) PROGRAM ADMINISTRATION COSTS.—In car-
14 rying out the provisions of this chapter, the Adminis-
15 trator—

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

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

23 “(e) REPORTS.—For any fiscal year in which the Ad-
24 ministrator cannot meet the administration cost target
25 under subsection (d)(2), if the Administration is unable
26 to limit program costs under subsection (b), the Adminis-

1 trator shall submit to the appropriate committees of Con-
 2 gress a report, including—

3 “(1) a description of why the Administrator did
 4 not meet the cost target under subsection (d); and
 5 “(2) the measures the Administrator will take
 6 in the next fiscal year to meet the cost target under
 7 subsection (d) without drawing upon other Federal
 8 funding.”.

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

10 (a) ESTABLISHMENT.—Not later than 180 days after
 11 the date of enactment this Act, Director of the Founda-
 12 tion, the Secretary of Education, the Administrator of the
 13 National Aeronautics and Space Administration, and the
 14 Administrator of the National Oceanic and Atmospheric
 15 Administration shall jointly establish an advisory panel
 16 (referred to in this section as the “STEM Education Advi-
 17 sory Panel”) to advise the Committee on STEM Edu-
 18 cation of the National Science and Technology Council
 19 (referred to in this section as “CoSTEM”) on matters re-
 20 lating to STEM education.

21 (b) MEMBERS.—

22 (1) IN GENERAL.—The STEM Education Advi-
 23 sory Panel shall be composed of not less than 11
 24 members.

25 (2) APPOINTMENT.—

1 (A) IN GENERAL.—Subject to subpara-
2 graph (B), the Director of the Foundation, in
3 consultation with the Secretary of Education
4 and the heads of the Federal science agencies,
5 shall appoint the members of the STEM Edu-
6 cation Advisory Panel.

7 (B) CONSIDERATION.—In selecting individ-
8 uals to appoint under subparagraph (A), the
9 Director of the Foundation shall seek and give
10 consideration to recommendations from Con-
11 gress, industry, the scientific community, in-
12 cluding the National Academy of Sciences, sci-
13 entific professional societies, academia, State
14 and local governments, and such other organi-
15 zations as the Director considers appropriate.

16 (C) QUALIFICATIONS.—Members shall—

17 (i) primarily be individuals from aca-
18 demic institutions, nonprofit organizations,
19 and industry, including in-school, out-of-
20 school, and informal education practi-
21 tioners; and

22 (ii) be individuals who are qualified to
23 provide advice and information on STEM
24 education research, development, training,
25 implementation, interventions, professional

1 development, or workforce needs or con-
2 cerns.

3 (c) RESPONSIBILITIES.—

4 (1) ASSESSMENT.—

5 (A) IN GENERAL.—The STEM Education
6 Advisory Panel shall advise CoSTEM and peri-
7 odically assess its progress in carrying out its
8 responsibilities under section 101(b) of the
9 America COMPETES Reauthorization Act of
10 2010 (42 U.S.C. 6621(b)).

11 (B) CONSIDERATIONS.—In its advisory
12 role, the STEM Education Advisory Panel shall
13 consider—

14 (i) the appropriateness of criteria used
15 by Federal agencies to evaluate the effec-
16 tiveness of Federal STEM education pro-
17 grams and activities;

18 (ii) ways to leverage private and non-
19 profit STEM investments and encourage
20 public-private partnerships to strengthen
21 STEM education and help build the STEM
22 workforce pipeline; and

23 (iii) how Federal agencies incentivize
24 colleges and universities to improve reten-
25 tion of STEM students.

1 (2) RECOMMENDATIONS.—The STEM Edu-
2 cation Advisory Panel shall make recommendations
3 to improve Federal STEM education programs and
4 activities based on the assessment under paragraph
5 (1).

6 (d) FUNDING.—The Director of the Foundation, the
7 Secretary of Education, the Administrator of the National
8 Aeronautics and Space Administration, and the Adminis-
9 trator of the National Oceanic and Atmospheric Adminis-
10 tration shall jointly make funds available on an annual
11 basis to support the activities of the STEM Education Ad-
12 visory Panel.

13 (e) REPORTS.—Not later than 1 year after the date
14 of enactment of this Act, and every 3 years thereafter,
15 the STEM Education Advisory Panel shall submit to the
16 appropriate committees of Congress, and CoSTEM a re-
17 port on its assessment under subsection (c)(1) and rec-
18 ommendations under subsection (c)(2).

19 (f) TRAVEL EXPENSES OF NON-FEDERAL MEM-
20 BERS.—

21 (1) IN GENERAL.—Non-Federal members of the
22 STEM Education Advisory Panel, while attending
23 meetings of the panel or while otherwise serving at
24 the request of a co-chairperson away from their
25 homes or regular places of business, may be allowed

1 travel expenses, including per diem in lieu of subsist-
2 ence, as authorized by section 5703 of title 5,
3 United States Code, for individuals in the Govern-
4 ment serving without pay.

5 (2) RULE OF CONSTRUCTION.—Nothing in this
6 subsection shall be construed to prohibit members of
7 the STEM Advisory Panel who are officers or em-
8 ployees of the United States from being allowed
9 travel expenses, including per diem in lieu of subsist-
10 ence, in accordance with existing law.

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

12 (a) RESPONSIBILITIES.—Section 101(b) of the Amer-
13 ica COMPETES Reauthorization Act of 2010 (42 U.S.C.
14 6621(b)) is amended—

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

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

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

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

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

4 “(9) request and review feedback from States
5 on how the States are utilizing Federal STEM edu-
6 cation programs and activities; and

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

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

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

17 (2) by striking “(b) RESPONSIBILITIES OF
18 OSTP.—” and inserting “(c) RESPONSIBILITIES OF
19 OSTP.—”; and

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

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

23 (B) in paragraph (5), by striking the pe-
24 riod at the end and inserting “; and”; and

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

1 “(6) a description of all consolidations and ter-
 2 minations of Federal STEM education programs
 3 and activities implemented in the previous fiscal
 4 year, including an explanation for the consolidations
 5 and terminations;

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

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

11 **SEC. 305. GRANT PROGRAMS TO EXPAND STEM OPPORTU-**
 12 **NITIES.**

13 (a) FINDINGS.—Congress makes the following find-
 14 ings:

15 (1) Economic projections by the Bureau of
 16 Labor Statistics indicate that by 2018, there could
 17 be 2.4 million unfilled STEM jobs.

18 (2) Women represent slightly more than half
 19 the United States population, and projections indi-
 20 cate that 54 percent of the population will be a
 21 member of a racial or ethnic minority group by
 22 2050.

23 (3) Despite representing half the population,
 24 women comprise only about 30 percent of STEM

1 workers according to a 2015 report by the National
2 Center for Science and Engineering Statistics.

3 (4) A 2014 National Center for Education Sta-
4 tistics study found that women and underrep-
5 resented minorities leave the STEM fields at higher
6 rates than their counterparts.

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

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

16 (7) Many of the numbers in the American In-
17 dian or Alaskan Native and Native Hawaiian or
18 Other Pacific Islander categories for different fac-
19 ulty ranks were too small for the National Science
20 Foundation to report publicly without potentially
21 compromising confidential information about the in-
22 dividuals being surveyed.

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

1 (1) it is critical to our Nation's economic lead-
2 ership and global competitiveness that we educate,
3 train, and retain more scientists and engineers;

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

7 (3) women, minorities, and persons with disabil-
8 ities are the largest untapped STEM talent pools in
9 the United States; and

10 (4) given the shifting demographic landscape,
11 the United States should encourage full participation
12 of individuals described in paragraph (3) in STEM
13 fields.

14 (c) REAFFIRMATION.—The Director of the Founda-
15 tion shall continue to support existing programs designed
16 to broaden participation of women, minorities, and per-
17 sons with disabilities in STEM fields.

18 (d) PROGRAM TO BROADEN PARTICIPATION IN
19 STEM FIELDS.—

20 (1) IN GENERAL.—The Director of the Founda-
21 tion shall award grants on a competitive, merit-re-
22 viewed basis, to eligible entities to increase the par-
23 ticipation of women and groups underrepresented in
24 STEM fields.

1 (2) APPLICATIONS.—An applicant seeking a
2 grant under this section shall submit an application
3 to the Director at such time, in such manner, and
4 containing such information as the Director may re-
5 quire.

6 (3) USE OF FUNDS.—Activities supported by
7 grants under this section may include the following:

8 (A) Online workshops.

9 (B) Mentoring programs that partner
10 science, technology, engineering, or mathe-
11 matics professionals with applicable students.

12 (C) Internships for applicable under-
13 graduate and graduate students in STEM
14 fields.

15 (D) Conducting outreach programs that
16 provide applicable elementary school and sec-
17 ondary school students with opportunities to in-
18 crease their exposure to STEM fields.

19 (E) Programs to increase the recruitment
20 and retention of underrepresented faculty.

21 (F) Such additional programs as the Di-
22 rector of the Foundation may consider appro-
23 priate.

24 (e) GRANT PROGRAM FOR GRADES K THROUGH 8.—

1 (1) IN GENERAL.—The Director of the Founda-
2 tion shall award grants to be used for research to
3 advance the engagement of students in grades kin-
4 dergarten through 8 in STEM that are designed to
5 encourage interest, engagement, and skills develop-
6 ment of students in STEM fields, particularly those
7 who are members of groups underrepresented in
8 STEM fields.

9 (2) USE OF FUNDS.—Activities supported by
10 grants under this section may include—

11 (A) development and implementation of
12 programming described in paragraph (1) for
13 the purpose of research;

14 (B) use of a variety of engagement meth-
15 ods, including cooperative and hands-on learn-
16 ing;

17 (C) exposure of students who are members
18 of groups underrepresented in STEM fields to
19 role models, including near-peers, in STEM
20 fields;

21 (D) mentors;

22 (E) training of informal learning educators
23 and youth-serving professionals using evidence-
24 based methods consistent with the target stu-
25 dent population being served;

1 (F) education of students on the relevance
2 and significance of STEM careers, provision of
3 academic advice and assistance, and activities
4 designed to help students make real-world con-
5 nections to STEM content activities;

6 (G) attendance of underrepresented stu-
7 dents at events, competitions, and academic
8 programs to provide content expertise and en-
9 courage career exposure in STEM;

10 (H) activities designed to engage parents
11 of underrepresented students;

12 (I) innovative strategies to engage under-
13 represented students, such as using leadership
14 skill outcome measures to encourage youth with
15 the confidence to pursue STEM course work
16 and academic study;

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

23 (K) acquisition of instructional materials
24 or technology-based tools to conduct applicable
25 grant activity.

1 (3) APPLICATIONS.—

2 (A) IN GENERAL.—Subject to subpara-
3 graph (B), an applicant seeking a grant under
4 the section shall submit an application to the
5 Director at such time, in such manner, and
6 containing such information as the Director
7 may require.

8 (B) REQUIREMENTS.—The application
9 shall include, at a minimum, the following:

10 (i) A description of the target audi-
11 ence to be served by the program.

12 (ii) A description of the process for
13 recruitment and selection of students, as
14 appropriate.

15 (iii) A description of how such re-
16 search activity may inform programming
17 that engages underrepresented students in
18 grades kindergarten through 8 in STEM.

19 (iv) A description of how such re-
20 search activity may inform programming
21 that promotes student academic achieve-
22 ment in STEM.

23 (v) An evaluation plan to determine
24 the impact and efficacy of activities being
25 researched.

1 (4) CONSIDERATION.—In awarding grants
2 under this section, the Director shall give consider-
3 ation to applicants which, for the purpose of grant
4 activity, include or partner with an organization that
5 has extensive experience and expertise in increasing
6 the participation of underrepresented students in
7 STEM.

8 (f) ACCOUNTABILITY AND DISSEMINATION.—

9 (1) EVALUATION.—

10 (A) IN GENERAL.—Not later than 5 years
11 after the date of enactment of this Act, the Di-
12 rector shall evaluate the grants provided under
13 this section.

14 (B) REQUIREMENTS.—In conducting the
15 evaluation under subparagraph (A), the Direc-
16 tor shall—

17 (i) use a common set of benchmarks
18 and assessment tools to identify best prac-
19 tices and materials developed or dem-
20 onstrated by the research; and

21 (ii) to the extent practicable, combine
22 the research resulting from the grant activ-
23 ity under subsection (e) with the current
24 research on serving underrepresented stu-
25 dents in grades kindergarten through 8.

1 (2) REPORT ON EVALUATIONS.—Not later than
 2 180 days after the completion of the evaluation
 3 under paragraph (1), the Director shall submit to
 4 the appropriate committees of Congress and make
 5 widely available to the public a report that in-
 6 cludes—

7 (A) the results of the evaluation; and

8 (B) any recommendations for administra-
 9 tive and legislative action that could optimize
 10 the effectiveness of the program.

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

16 (h) DEFINITION OF GROUPS UNDERREPRESENTED
 17 IN STEM FIELDS.—In this section, the term “groups
 18 underrepresented in STEM fields” has the meaning given
 19 the term “underrepresented in science and engineering”
 20 in section 637.4(b) of title 34, Code of Federal Regula-
 21 tions.

22 **SEC. 306. CENTERS OF EXCELLENCE FOR INCLUSION IN**
 23 **STEM.**

24 (a) ESTABLISHMENT.—The Director of the Founda-
 25 tion shall carry out a program to award merit-reviewed,

1 competitive grants to institutions of higher education, or
2 consortia thereof, to establish not less than 1 Center of
3 Excellence (referred to in this section as the “Center”),
4 to collect, maintain, and disseminate information to in-
5 crease participation of women and groups underrep-
6 resented in STEM fields (as defined in section 305(d)(4)).

7 (b) PURPOSE.—The purpose of the Center is to pro-
8 mote diversity in STEM fields by building on the success
9 of the INCLUDES programs, providing technical assist-
10 ance, maintaining best practices, and providing related
11 training at federally funded academic institutions.

12 (c) PROGRAM.—The Director of the Foundation shall
13 establish each Center through a merit-reviewed, competi-
14 tive award to an eligible entity for at least 3, but not more
15 than to 5 years.

16 (d) PUBLIC DOMAIN.—All program information de-
17 veloped, collected, or maintained by a Center, except for
18 personally identifiable information, is and shall remain
19 part of the public domain.

20 (e) APPLICATION.—To be eligible to receive a grant
21 under this section, an eligible institution shall prepare and
22 submit to the Director an application at such a time, in
23 such form, and containing such information as the Direc-
24 tor may require.

1 (f) ACTIVITIES.—Activities of a Center may in-
2 clude—

3 (1) conducting and disseminating research on—

4 (A) systemic factors and institutional poli-
5 cies that impede or facilitate the recruitment,
6 retention, and success of underrepresented
7 groups in STEM fields; and

8 (B) best practices for mitigating the sys-
9 temic factors and institutional policies that im-
10 pede inclusion of underrepresented groups in
11 STEM fields;

12 (2) collaborating with institutions of higher
13 education, Federal agencies, industry, and relevant
14 stakeholders to develop policies and practices to fa-
15 cilitate the recruitment, retention, and success of
16 underrepresented groups in STEM;

17 (3) providing educational opportunities for
18 STEM faculty members, staff, students, trainees,
19 fellows, and administrators to learn about inclusion
20 in STEM and to improve STEM mentoring;

21 (4) developing and hosting intra- or inter-
22 institutional workshops, and providing ongoing sup-
23 port to workshop participants, to propagate best
24 practices in recruiting, retaining, and advancing
25 STEM faculty members, staff, students, trainees,

1 fellows, and administrators from underrepresented
 2 groups at institutions of higher education;

3 (5) assessing the effectiveness of efforts funded
 4 by a Center or related efforts designed to increase
 5 inclusion in STEM;

6 (6) assessing how modern STEM learning envi-
 7 ronments can increase the inclusion, engagement,
 8 and retention of students in STEM fields, particu-
 9 larly for women and groups underrepresented in
 10 STEM fields; and

11 (7) such other actions as a Center determines
 12 are necessary to further the inclusion of underrep-
 13 resented groups in STEM.

14 **SEC. 307. NIST EDUCATION AND OUTREACH.**

15 (a) REPEALS.—The National Institute of Standards
 16 and Technology Act (15 U.S.C. 271 et seq.) is amended—

17 (1) by striking section 18 (15 U.S.C. 278g–1);
 18 and

19 (2) by striking section 19A (15 U.S.C. 278g–
 20 2a).

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

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

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

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

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

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

23 “(3) to improve staff diversity;

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

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

3 “(c) VOLUNTEERS.—

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

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

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

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

15 “(3) FEDERAL EMPLOYEE STATUS.—Any indi-
16 vidual who provides voluntary service under this sub-
17 section shall not be considered a Federal employee,
18 except for purposes of chapter 81 of title 5, United
19 States Code (relating to compensation for injury),
20 and sections 2671 through 2680 of title 28, United
21 States Code (relating to tort claims).

22 “(d) RESEARCH FELLOWSHIPS.—

23 “(1) IN GENERAL.—The Director may expend
24 funds appropriated for activities of the Institute in
25 any fiscal year, as the Director considers appro-

1 priate, for awards of research fellowships and other
2 forms of financial and logistical assistance, including
3 direct stipend awards to—

4 “(A) students at institutions of higher
5 learning within the United States who show
6 promise as present or future contributors to the
7 mission of the Institute; and

8 “(B) United States citizens for research
9 and technical activities of the Institute, includ-
10 ing programs.

11 “(2) SELECTION CRITERIA.—The selection of
12 persons to receive such fellowships and assistance
13 shall be made on the basis of ability and of the rel-
14 evance of the proposed work to the mission and pro-
15 grams of the Institute.

16 “(3) FINANCIAL AND LOGISTICAL ASSIST-
17 ANCE.—Notwithstanding section 1345 of title 31,
18 United States Code, or any other law to the con-
19 trary, the Director may include as a form of finan-
20 cial or logistical assistance under this subsection
21 temporary housing and transportation to and from
22 Institute facilities.

23 “(e) EDUCATIONAL OUTREACH ACTIVITIES.—The
24 Director may—

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

4 “(2) sponsor summer internships for STEM
5 high school teachers as appropriate;

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

8 “(4) document publications, presentations, and
9 interactions with visiting researchers and sponsoring
10 interns as performance metrics for improving and
11 continuing interactions with those individuals; and

12 “(5) facilitate laboratory tours and provide
13 presentations for educational, industry, and commu-
14 nity groups.”.

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

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

20 “(a) IN GENERAL.—The Institute and the National
21 Academy of Sciences, jointly, shall establish and conduct
22 a post-doctoral fellowship program, subject to the avail-
23 ability of appropriations.

1 “(b) ORGANIZATION.—The post-doctoral fellowship
2 program shall include not less than 20 nor more than 120
3 new fellows per fiscal year.

4 “(c) EVALUATIONS.—In evaluating applications for
5 post-doctoral fellowships under this section, the Director
6 of the Institute and the President of the National Acad-
7 emy of Sciences shall give consideration to the goal of pro-
8 moting the participation of underrepresented minorities in
9 research areas supported by the Institute.”.

10 (d) SAVINGS CLAUSES.—

11 (1) RESEARCH FELLOWSHIPS AND OTHER FI-
12 NANCIAL ASSISTANCE TO STUDENTS AT INSTITUTES
13 OF HIGHER EDUCATION.—The repeal made by sub-
14 section (a)(1) of this section shall not affect any
15 award of a research fellowship or other form of fi-
16 nancial assistance made under section 18 of the Na-
17 tional Institute of Standards and Technology Act
18 (15 U.S.C. 278g–1) before the date of enactment of
19 this Act. Such award shall continue to be subject to
20 the requirements to which such funds were subject
21 under that section before the date of enactment of
22 this Act.

23 (2) POST-DOCTORAL FELLOWSHIP PROGRAM.—
24 The amendment made by subsection (c) of this sec-
25 tion shall not affect any award of a post-doctoral fel-

1 lowship or other form of financial assistance made
2 under section 19 of the National Institute of Stand-
3 ards and Technology Act (15 U.S.C. 278g–2) before
4 the date of enactment of this Act. Such awards shall
5 continue to be subject to the requirements to which
6 such funds were subject under that section before
7 the date of enactment of this Act.

8 **SEC. 308. PRESIDENTIAL AWARDS FOR EXCELLENCE IN**
9 **STEM MENTORING.**

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

14 (b) ANNUAL AWARD RECIPIENTS.—The Director of
15 the Foundation shall provide Congress with a list of award
16 recipients, including the name, institution, and a brief syn-
17 oopsis of the impact of the mentoring efforts.

18 **SEC. 309. WORKING GROUP ON INCLUSION IN STEM**
19 **FIELDS.**

20 (a) ESTABLISHMENT.—The Office of Science and
21 Technology Policy, in collaboration with Federal depart-
22 ments and agencies, shall establish an interagency work-
23 ing group to compile and summarize available research
24 and best practices on how to promote diversity and inclu-
25 sions in STEM fields and examine whether barriers exist

1 to promoting diversity and inclusion within Federal agen-
2 cies employing scientists and engineers.

3 (b) RESPONSIBILITIES.—The working group shall be
4 responsible for reviewing and assessing research, best
5 practices, and policies across Federal science agencies re-
6 lated to the inclusion of underrepresented groups in the
7 Federal STEM workforce, including available research
8 and best practices on how to promote diversity and inclu-
9 sion in STEM fields, including—

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

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

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

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

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

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

3 (2) federally funded and nonfederally funded re-
4 searchers, institutions of higher education, scientific
5 disciplinary societies, and associations;

6 (3) nonprofit research institutions;

7 (4) industry, including small businesses;

8 (5) federally funded research and development
9 centers;

10 (6) nongovernmental organizations; and

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

14 (d) PUBLIC REPORTS.—Not later than 1 year after
15 the date of enactment of this Act, and periodically there-
16 after, the working group shall publish a report on the re-
17 view and assessment under subsection (b), including a
18 summary of available research and best practices, any rec-
19 ommendations for Federal actions to promote a diverse
20 and inclusive Federal STEM workforce, and updates on
21 the implementation of previous recommendations for Fed-
22 eral actions.

23 (e) TERMINATION OF EFFECTIVENESS.—The author-
24 ity provided by subsection (a) terminates effective on the

1 date that is 10 years after the date that the working group
2 is established.

3 **SEC. 310. IMPROVING UNDERGRADUATE STEM EXPERI-**
4 **ENCES.**

5 (a) SENSE OF CONGRESS.—It is the sense of Con-
6 gress that each Federal science agency should invest in
7 and expand research opportunities for undergraduate stu-
8 dents attending institutions of higher education during the
9 undergraduate student’s first 2 academic years of postsec-
10 ondary education.

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

16 (c) BROADER IMPACTS.—Section 526(a)(6) of the
17 America COMPETES Act of 2010 (Public Law 111–358;
18 124 Stat. 4019) is amended to read as follows:

19 “(6) Improved undergraduate STEM education
20 and instruction.”.

21 **SEC. 311. COMPUTER SCIENCE EDUCATION RESEARCH.**

22 (a) FINDINGS.—Congress finds that as the lead Fed-
23 eral agency for building the research knowledge base for
24 computer science education, the Foundation is well posi-
25 tioned to make investments that will accelerate ongoing

1 efforts to enable rigorous and engaging computer science
2 throughout the Nation.

3 (b) GRANT PROGRAM.—

4 (1) IN GENERAL.—The Director of the Founda-
5 tion shall award grants to eligible entities to re-
6 search computer science education and computa-
7 tional thinking.

8 (2) RESEARCH.—The research described in
9 paragraph (1) may include the development or adap-
10 tation, piloting or full implementation, and testing
11 of—

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

15 (B) scalable and sustainable models of pro-
16 fessional development and ongoing support for
17 the teachers described in subparagraph (A);

18 (C) tools and models for teaching and
19 learning aimed at supporting student success
20 and inclusion in computing within and across
21 diverse populations, particularly poor, rural,
22 and tribal populations and other populations
23 that have been traditionally underrepresented in
24 computer science and STEM fields; and

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

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

13 (d) METRICS.—The Director of the Foundation shall
 14 develop metrics to measure the success of the grant pro-
 15 gram funded under this section in achieving program
 16 goals.

17 (e) DEFINITION OF ELIGIBLE ENTITY.—In this sec-
 18 tion, the term “eligible entity” means an institution of
 19 higher education or a nonprofit research organization.

20 **TITLE IV—LEVERAGING THE** 21 **PRIVATE SECTOR**

22 **SEC. 401. PRIZE COMPETITION AUTHORITY UPDATE.**

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

25 (1) in subsection (c)—

1 (A) in the subsection heading, by striking
 2 “PRIZES” and by inserting “PRIZE COMPETI-
 3 TIONS”;

4 (B) in the matter preceding paragraph (1),
 5 by striking “prize may be one or more of the
 6 following” and inserting “prize competition may
 7 be one or more of the following types of activi-
 8 ties”;

9 (C) in paragraph (2), by inserting “com-
 10 petition” after “prize”; and

11 (D) in paragraphs (3) and (4), by striking
 12 “prizes” and inserting “prize competitions”;
 13 (2) in subsection (f)—

14 (A) in the matter preceding paragraph (1),
 15 by striking “in the Federal Register” and in-
 16 serting “on a publicly accessible Government
 17 website, such as www.challenge.gov,”;

18 (B) in paragraphs (1), (2), and (3), by in-
 19 serting “prize” before “competition” each place
 20 it appears; and

21 (C) in paragraph (4), by striking “prize”
 22 and inserting “cash prize purse or non-cash
 23 prize award”;

24 (3) in subsection (g)—

1 (A) in the matter preceding paragraph (1),
2 by striking “prize” and inserting “cash prize
3 purse”; and

4 (B) in paragraph (1), by inserting “prize”
5 before “competition”;

6 (4) in subsection (h), by inserting “prize” be-
7 fore “competition” each place it appears;

8 (5) in subsection (i)—

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

11 (B) in paragraph (2)(A), by inserting
12 “prize” before “competition” each place it ap-
13 pears;

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

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

18 “(3) WAIVERS.—

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

21 “(B) LIST.—The Director shall include a
22 list of all of the waivers granted under this
23 paragraph during the preceding fiscal year, in-
24 cluding a detailed explanation of the reason for
25 granting the waiver.”;

1 (6) in subsection (j)—

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

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

6 “(2) LICENSES.—As appropriate and to further
7 the goals of a prize competition, the Federal Govern-
8 ment may—

9 “(A) negotiate a license for the use of in-
10 tellectual property developed by a registered
11 participant in a prize competition; or

12 “(B) require a registered participant in a
13 prize competition to provide an open license to
14 the public for the use of the intellectual prop-
15 erty if that requirement is disclosed prior to
16 registration.”; and

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

18 “(3) ELECTRONIC CONSENT.—The Federal
19 Government may obtain consent to the intellectual
20 property and licensing terms of a prize competition
21 from participants during the online registration for
22 the prize competition.”;

23 (7) in subsection (k)—

1 (A) in paragraph (1), by striking “each
2 competition” and inserting “each prize competi-
3 tion” each place it appears;

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

6 (C) in paragraph (3), by inserting “prize”
7 before “competitions” each place it appears;

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

15 (9) in subsection (m)—

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

18 “(1) IN GENERAL.—Support for a prize com-
19 petition under this section, including financial sup-
20 port for the design and administration of a prize
21 competition or funds for a cash prize purse, may
22 consist of Federal appropriated funds and funds
23 provided by private sector for-profit and nonprofit
24 entities. The head of an agency may request and ac-
25 cept funds from other Federal agencies, State,

1 United States territory, local, or tribal government
 2 agencies, private sector for-profit entities, and non-
 3 profit entities, to be available to the extent provided
 4 by appropriations Acts, to support such prize com-
 5 petitions. The head of an agency may not give any
 6 special consideration to any agency or entity in re-
 7 turn for a donation.”;

8 (B) in paragraph (2), by striking “prize
 9 awards” and inserting “cash prize purses or
 10 non-cash prize awards”;

11 (C) in paragraph (3)—

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

14 “(A) ANNOUNCEMENT.—No prize competi-
 15 tion may be announced under subsection (f)
 16 until all the funds needed to pay out the an-
 17 nounced amount of the cash prize purse have
 18 been appropriated or committed in writing by a
 19 private or State, United States territory, local,
 20 or tribal government source.”; and

21 (ii) in subparagraph (B)—

22 (I) in the matter preceding clause

23 (i), by striking “a prize” and inserting
 24 “a cash prize purse or non-cash prize
 25 award”;

1 (II) in clause (i), by inserting
2 “competition” after “prize”; and

3 (III) in clause (ii), by inserting
4 “or State, United States territory,
5 local, or tribal government” after
6 “private”; and

7 (D) in paragraph (4)—

8 (i) in subparagraph (A)—

9 (I) by striking “a prize” and in-
10 serting “a cash prize purse or a non-
11 cash prize award”; and

12 (II) by striking “Science and
13 Technology” and inserting “Science,
14 Space, and Technology”; and

15 (ii) in subparagraph (B), by striking
16 “cash prizes” and inserting “cash prize
17 purses or non-cash prize awards”;

18 (10) in subsection (n)—

19 (A) in the heading, by striking “SERVICE”
20 and inserting “SERVICES”;

21 (B) by striking “the date of the enactment
22 of the America COMPETES Reauthorization
23 Act of 2010” and inserting “the date of enact-
24 ment of the American Innovation and Competi-
25 tiveness Act,”; and

1 (C) by inserting “for both for-profit and
 2 nonprofit entities and State, United States ter-
 3 ritory, local, and tribal government entities,”
 4 after “contract vehicle”;

5 (11) in subsection (o)(1), by striking “or pro-
 6 viding a prize” and inserting “a prize competition or
 7 providing a cash prize purse or non-cash prize
 8 award”; and

9 (12) in subsection (p)—

10 (A) in the heading, by striking “ANNUAL”
 11 and inserting “BIENNIAL”;

12 (B) in paragraph (1)—

13 (i) by striking “each year” and insert-
 14 ing “every other year”;

15 (ii) by striking “Science and Tech-
 16 nology” and inserting “Science, Space, and
 17 Technology”; and

18 (iii) by striking “fiscal year” and in-
 19 serting “2 fiscal years”; and

20 (C) in paragraph (2)—

21 (i) by striking “The report for a fiscal
 22 year” and inserting “A report”;

23 (ii) in subparagraph (C)—

24 (I) in the heading, by striking
 25 “PRIZES” and inserting “PRIZE

1 PURSES OR NON-CASH PRIZE
2 AWARDS”; and

3 (II) by striking “cash prizes”
4 each place it appears and inserting
5 “cash prize purses or non-cash prize
6 awards”; and

7 (iii) by adding at the end the fol-
8 lowing:

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

14 **SEC. 402. CROWDSOURCING AND CITIZEN SCIENCE.**

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

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

22 (2) crowdsourcing and citizen science projects
23 have a number of additional unique benefits, includ-
24 ing accelerating scientific research, addressing soci-
25 etal needs, providing hands-on learning in STEM,

1 and connecting members of the public directly to
 2 Federal agency missions and to each other; and

3 (3) granting Federal agencies the direct, ex-
 4 plicit authority to use crowdsourcing and citizen
 5 science will encourage its appropriate use to advance
 6 agency missions and stimulate and facilitate broader
 7 public participation in the innovation process, yield-
 8 ing numerous benefits to the Federal Government
 9 and citizens who participate in such projects.

10 (b) DEFINITIONS.—In this section:

11 (1) CITIZEN SCIENCE.—The term “citizen
 12 science” means a form of open collaboration in
 13 which individuals or organizations participate volun-
 14 tarily in the scientific process in various ways, in-
 15 cluding—

16 (A) enabling the formulation of research
 17 questions;

18 (B) creating and refining project design;

19 (C) conducting scientific experiments;

20 (D) collecting and analyzing data;

21 (E) interpreting the results of data;

22 (F) developing technologies and applica-
 23 tions;

24 (G) making discoveries; and

25 (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 (c) CROWDSOURCING AND CITIZEN SCIENCE.—

11 (1) IN GENERAL.—The head of each Federal
12 agency, or the heads of multiple Federal agencies
13 working cooperatively, may utilize crowdsourcing
14 and citizen science to conduct activities designed to
15 advance the mission of the respective Federal agency
16 or the joint mission of Federal agencies, as applica-
17 ble.

18 (2) VOLUNTARY SERVICES.—Notwithstanding
19 section 1342 of title 31, United States Code, the
20 head of a Federal agency may accept, subject to reg-
21 ulations issued by the Director of the Office of Per-
22 sonnel Management, services from participants
23 under this section 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 agency engaged in a crowdsourcing or citizen science
10 project under this section shall make public and pro-
11 mote such project to encourage broad participation.

12 (4) CONSENT, REGISTRATION, AND TERMS OF
13 USE.—

14 (A) IN GENERAL.—Each Federal agency is
15 authorized to determine the appropriate level of
16 consent, registration, or acknowledgment of the
17 terms of use that are required from participants
18 in crowdsourcing or citizen science projects
19 under this section on a per-project basis.

20 (B) DISCLOSURES.—In seeking consent,
21 conducting registration, or developing terms of
22 use for a project under this subsection, a Fed-
23 eral agency shall disclose the privacy, intellec-
24 tual property, data ownership, compensation,

1 service, program, and other terms of use to the
 2 participant in a clear and reasonable manner.

3 (C) MODE OF CONSENT.—A Federal agen-
 4 cy or Federal agencies, as applicable, may ob-
 5 tain consent electronically or in written form
 6 from participants under this section.

7 (5) PROTECTIONS FOR HUMAN SUBJECTS.—
 8 Any crowdsourcing or citizen science project under
 9 this section that involves research involving human
 10 subjects shall be subject to part 46 of title 28, Code
 11 of Federal Regulations (or any successor regulation).

12 (6) DATA.—

13 (A) IN GENERAL.—A Federal agency shall,
 14 where appropriate and to the extent practicable,
 15 make data collected through a crowdsourcing or
 16 citizen science project under this section avail-
 17 able to the public, in a machine readable for-
 18 mat, unless prohibited by law.

19 (B) NOTICE.—As part of the consent proc-
 20 ess, the Federal agency shall notify all partici-
 21 pants—

22 (i) of the expected uses of the data
 23 compiled through the project;

24 (ii) if the Federal agency will retain
 25 ownership of such data;

1 (iii) if and how the data and results
2 from the project would be made available
3 for public or third party use; and

4 (iv) if participants are authorized to
5 publish such data.

6 (7) TECHNOLOGIES AND APPLICATIONS.—Fed-
7 eral agencies shall endeavor to make technologies,
8 applications, code, and derivations of such intellec-
9 tual property developed through a crowdsourcing or
10 citizen science project under this section available to
11 the public.

12 (8) LIABILITY.—Each participant in a
13 crowdsourcing or citizen science project under this
14 section shall agree—

15 (A) to assume any and all risks associated
16 with such participation; and

17 (B) to waive all claims against the Federal
18 Government and its related entities, except for
19 claims based on willful misconduct, for any in-
20 jury, death, damage, or loss of property, rev-
21 enue, or profits (whether direct, indirect, or
22 consequential) arising from participation in the
23 project.

24 (9) SCIENTIFIC INTEGRITY.—Federal agencies
25 coordinating crowdsourcing or citizen science

1 projects under this section shall make all practicable
2 efforts to ensure that participants adhere to all rel-
3 evant scientific integrity or other applicable ethics
4 policies.

5 (10) MULTISECTOR PARTNERSHIPS.—The head
6 of each Federal agency engaged in crowdsourcing or
7 citizen science under this section, or the heads of
8 multiple Federal agencies working cooperatively,
9 may enter into a contract or other agreement to
10 share administrative duties for such activities with—

11 (A) a for-profit or nonprofit private sector
12 entity, including a private institution of higher
13 education;

14 (B) a State, tribal, local, or foreign govern-
15 ment agency, including a public institution of
16 higher education; or

17 (C) a public-private partnership.

18 (11) FUNDING.—In carrying out crowdsourcing
19 and citizen science projects under this section, the
20 head of a Federal agency, or the heads of multiple
21 Federal agencies working cooperatively—

22 (A) may use funds appropriated by Con-
23 gress;

(B) may publicize projects and solicit and accept funds or in-kind support for such activities from—

(i) other Federal agencies;

(ii) for-profit or nonprofit private sector entities, including private institutions of higher education; or

(iii) State, tribal, local, or foreign government agencies, including public institutions of higher education; and

(C) may not give any special consideration to any entity described in subparagraph (B)(ii) in return for such funds or in-kind support.

(12) FACILITATION.—

(A) GENERAL SERVICES ADMINISTRATION ASSISTANCE.—The Administrator of the General Services Administration, in coordination with the Director of the Office of Personnel Management, shall, at no cost to Federal agencies, identify and develop relevant products, training, and services to facilitate the use of crowdsourcing and citizen science projects under this section, including by specifying the appropriate contract vehicles and technology and organizational platforms to enhance the

1 ability of Federal agencies to carry out the ac-
2 tivities under this section.

3 (B) ADDITIONAL GUIDANCE.—The head of
4 each Federal agency engaged in crowdsourcing
5 or citizen science under this section is encour-
6 aged—

7 (i) to consult any guidance provided
8 by the Director of the Office of Science
9 and Technology Policy, including the Fed-
10 eral Crowdsourcing and Citizen Science
11 Toolkit;

12 (ii) to designate a coordinator for that
13 Federal agency’s crowdsourcing and citizen
14 science projects; and

15 (iii) to share best practices with other
16 Federal agencies, including participation of
17 staff in the Federal Community of Practice
18 for Crowdsourcing and Citizen Science.

19 (d) REPORT.—

20 (1) IN GENERAL.—Not later than 2 years after
21 the date of the enactment of this Act, the Director
22 of the Office of Science and Technology Policy shall
23 include, as a component of a report required under
24 section 24(p) of the Stevenson-Wydler Technology

1 Innovation Act of 1980 (15 U.S.C. 3719(p)), a re-
2 port on the activities carried out under this section.

3 (2) INFORMATION INCLUDED.—The report re-
4 quired under paragraph (1) shall include—

5 (A) a summary of each crowdsourcing and
6 citizen science project conducted by a Federal
7 agency during the most recently completed 2
8 fiscal years, including a description of the pro-
9 posed goals of each crowdsourcing and citizen
10 science project;

11 (B) the participation rates, submission lev-
12 els, number of consents, or any other statistic
13 that might be considered relevant in each
14 crowdsourcing and citizen science project;

15 (C) a description of—

16 (i) the resources (including personnel
17 and funding) that were used in the execu-
18 tion of each crowdsourcing and citizen
19 science project;

20 (ii) the activities for which such re-
21 sources were used; and

22 (iii) how the obligations and expendi-
23 tures relating to the project's execution
24 were allocated among the accounts of the
25 Federal agency;

1 (D) a summary of the use of
2 crowdsourcing and citizen science by all Federal
3 agencies, including interagency and multisector
4 partnerships; and

5 (E) any other information that the Direc-
6 tor of the Office of Science and Technology Pol-
7 icy considers relevant.

8 (e) SAVINGS PROVISION.—Nothing in this section
9 may be construed—

10 (1) to affect the authority to conduct
11 crowdsourcing and citizen science authorized by any
12 other provision of law; or

13 (2) to displace Federal Government resources
14 allocated to the Federal agencies that use
15 crowdsourcing or citizen science authorized under
16 this section to carry out a project.

17 **SEC. 403. NIST OTHER TRANSACTION AUTHORITY UPDATE.**

18 Section 2(b)(4) of the National Institute of Stand-
19 ards and Technology Act (15 U.S.C. 272(b)(4)) is amend-
20 ed to read as follows:

21 “(4) to enter into and perform such contracts,
22 including cooperative research and development ar-
23 rangements, grants, cooperative agreements, real
24 property leases, or other transactions, as may be
25 necessary in furtherance of the purposes of this Act

1 and on such terms as the Director considers appro-
 2 priate;”.

3 **SEC. 404. NIST VISITING COMMITTEE ON ADVANCED TECH-**
 4 **NOLOGY UPDATE.**

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

7 (1) in the second sentence, by striking “15
 8 members appointed by the Director, at least 10 of
 9 whom” and “not fewer than 9 members appointed
 10 by the Director, a majority of whom”; and

11 (2) in the third sentence, by striking “National
 12 Bureau of Standards” and inserting “National Insti-
 13 tute of Standards and Technology”.

14 **TITLE V—MANUFACTURING**

15 **SEC. 501. HOLLINGS MANUFACTURING EXTENSION PART-**
 16 **NERSHIP IMPROVEMENTS.**

17 (a) IN GENERAL.—Section 25 of the National Insti-
 18 tute of Standards and Technology Act (15 U.S.C. 278k)
 19 is amended to read as follows:

20 **“SEC. 25. HOLLINGS MANUFACTURING EXTENSION PART-**
 21 **NERSHIP.**

22 “(a) DEFINITIONS.—In this section:

23 “(1) APPROPRIATE COMMITTEES OF CON-
 24 GRESS.—The term ‘appropriate committees of Con-
 25 gress’ means—

1 “(A) the Committee on Commerce,
2 Science, and Transportation of the Senate; and

3 “(B) the Committee on Science, Space,
4 and Technology of the House of Representa-
5 tives.

6 “(2) AREA CAREER AND TECHNICAL EDU-
7 CATION SCHOOL.—The term ‘area career and tech-
8 nical education school’ has the meaning given the
9 term in section 3 of the Vocational Education Act of
10 1963 (20 U.S.C. 2302).

11 “(3) CENTER.—The term ‘Center’ means a
12 manufacturing extension center that—

13 “(A) is created under subsection (b); and

14 “(B) is affiliated with an eligible entity
15 that applies for and is awarded financial sup-
16 port under subsection (e).

17 “(4) COMMUNITY COLLEGE.—The term ‘com-
18 munity college’ means an institution of higher edu-
19 cation (as defined under section 101(a) of the High-
20 er Education Act of 1965 (20 U.S.C. 1001(a))) at
21 which the highest degree that is predominately
22 awarded to students is an associate’s degree.

23 “(5) ELIGIBLE ENTITY.—The term ‘eligible en-
24 tity’ means a United States-based nonprofit institu-
25 tion, or consortium thereof, an institution of higher

1 education, or a State, United States territory, local,
2 or tribal government.

3 “(6) HOLLINGS MANUFACTURING EXTENSION
4 PARTNERSHIP OR PROGRAM.—The term ‘Hollings
5 Manufacturing Extension Partnership’ or ‘Program’
6 means the program established under subsection (b).

7 “(7) MEP ADVISORY BOARD.—The term ‘MEP
8 Advisory Board’ means the Manufacturing Exten-
9 sion Partnership Advisory Board established under
10 subsection (n).

11 “(b) ESTABLISHMENT AND PURPOSE.—The Sec-
12 retary, acting through the Director and, if appropriate,
13 through other Federal officials, shall establish a program
14 to provide assistance for the creation and support of man-
15 ufacturing extension centers for the transfer of manufac-
16 turing technology and best business practices.

17 “(c) OBJECTIVE.—The objective of the Program shall
18 be to enhance competitiveness, productivity, and techno-
19 logical performance in United States manufacturing
20 through—

21 “(1) the transfer of manufacturing technology
22 and techniques developed at the Institute to Centers
23 and, through them, to manufacturing companies
24 throughout the United States;

1 “(2) the participation of individuals from indus-
2 try, institutions of higher education, State govern-
3 ments, other Federal agencies, and, when appro-
4 priate, the Institute in cooperative technology trans-
5 fer activities;

6 “(3) efforts to make new manufacturing tech-
7 nology and processes usable by United States-based
8 small and medium-sized companies;

9 “(4) the active dissemination of scientific, engi-
10 neering, technical, and management information
11 about manufacturing to industrial firms, including
12 small and medium-sized manufacturing companies;

13 “(5) the utilization, when appropriate, of the
14 expertise and capability that exists in Federal agen-
15 cies, other than the Institute, and federally spon-
16 sored laboratories;

17 “(6) the provision to community colleges and
18 area career and technical education schools of infor-
19 mation about the job skills needed in manufacturing
20 companies, including small and medium-sized manu-
21 facturing businesses in the regions they serve;

22 “(7) the promotion and expansion of certifi-
23 cation systems offered through industry, associa-
24 tions, and community colleges, when appropriate;
25 and

1 “(8) the growth in employment and wages at
2 United States-based small and medium-sized compa-
3 nies.

4 “(d) ACTIVITIES.—The activities of a Center shall in-
5 clude—

6 “(1) the establishment of automated manufac-
7 turing systems and other advanced production tech-
8 nologies, based on Institute-supported research, for
9 the purpose of demonstrations and technology trans-
10 fer;

11 “(2) the active transfer and dissemination of re-
12 search findings and Center expertise to a wide range
13 of companies and enterprises, particularly small and
14 medium-sized manufacturers; and

15 “(3) the facilitation of collaborations and part-
16 nerships between small and medium-sized manufac-
17 turing companies, community colleges, and area ca-
18 reer and technical education schools, to help those
19 entities better understand the specific needs of man-
20 ufacturers and to help manufacturers better under-
21 stand the skill sets that students learn in the pro-
22 grams offered by such colleges and schools.

23 “(e) FINANCIAL ASSISTANCE.—

24 “(1) AUTHORIZATION.—Except as provided in
25 paragraph (2), the Secretary may provide financial

1 assistance for the creation and support of a Center
 2 through a cooperative agreement with an eligible en-
 3 tity.

4 “(2) COST SHARING.—The Secretary may not
 5 provide more than 50 percent of the capital and an-
 6 nual operating and maintenance funds required to
 7 establish and support a Center.

8 “(3) RULE OF CONSTRUCTION.—For purposes
 9 of paragraph (2), any amount received by an eligible
 10 entity for a Center under a provision of law other
 11 than paragraph (1) shall not be considered an
 12 amount provided under paragraph (1).

13 “(f) APPLICATIONS.—

14 “(1) IN GENERAL.—An eligible entity shall sub-
 15 mit an application to the Secretary at such time, in
 16 such manner, and containing such information as
 17 the Secretary may require.

18 “(2) PROGRAM DESCRIPTION.—The Secretary
 19 shall establish and update, as necessary—

20 “(A) a description of the Program;

21 “(B) the application procedures;

22 “(C) performance metrics;

23 “(D) criteria for determining qualified ap-
 24 plicants;

1 “(E) criteria for choosing recipients of fi-
 2 nancial assistance from among the qualified ap-
 3 plicants;

4 “(F) procedures for determining allowable
 5 cost share contributions; and

6 “(G) such other program policy objections
 7 and operational procedures as the Secretary
 8 deems necessary.

9 “(3) COST SHARING.—

10 “(A) IN GENERAL.—To be considered for
 11 financial assistance under this section, an appli-
 12 cant shall provide adequate assurances that the
 13 applicant and if applicable, the applicant’s
 14 partnering organizations, will obtain funding
 15 for not less than 50 percent of the capital and
 16 annual operating and maintenance funds re-
 17 quired to establish and support the Center from
 18 sources other than the financial assistance pro-
 19 vided under subsection (e).

20 “(B) AGREEMENTS WITH OTHER ENTI-
 21 TIES.—In meeting the cost-sharing requirement
 22 under subparagraph (A), an eligible entity may
 23 enter into an agreement with one or more other
 24 entities, such as a private industry, an institu-
 25 tion of higher education, or a State, United

1 States territory, local, or tribal government for
 2 the contribution by that other entity of funding
 3 if the Secretary determines the agreement—

4 “(i) is programmatically reasonable;

5 “(ii) will help accomplish pro-
 6 grammatic objectives; and

7 “(iii) is allocable under Program pro-
 8 cedures under subsection (f)(2).

9 “(4) LEGAL RIGHTS.—Each applicant shall in-
 10 clude in the application a proposal for the allocation
 11 of the legal rights associated with any intellectual
 12 property which may result from the activities of the
 13 Center.

14 “(5) MERIT REVIEW OF APPLICATIONS.—

15 “(A) IN GENERAL.—The Secretary shall
 16 subject each application to merit review.

17 “(B) CONSIDERATIONS.—In making a de-
 18 cision whether to approve an application and
 19 provide financial assistance under subsection
 20 (e), the Secretary shall consider, at a min-
 21 imum—

22 “(i) the merits of the application, par-
 23 ticularly those portions of the application
 24 regarding technology transfer, training and
 25 education, and adaptation of manufac-

1 turing technologies to the needs of par-
 2 ticular industrial sectors;

3 “(ii) the quality of service to be pro-
 4 vided;

5 “(iii) the geographical diversity and
 6 extent of the service area; and

7 “(iv) the type and percentage of fund-
 8 ing from other sources under paragraph
 9 (3).

10 “(g) EVALUATIONS.—

11 “(1) THIRD AND EIGHTH YEAR EVALUATIONS
 12 BY PANEL.—

13 “(A) IN GENERAL.—The Secretary shall
 14 ensure that each Center is evaluated during its
 15 third and eighth years of operation by an eval-
 16 uation panel appointed by the Secretary.

17 “(B) COMPOSITION.—The Secretary shall
 18 ensure that each evaluation panel appointed
 19 under subparagraph (A) is composed of—

20 “(i) private experts, none of whom are
 21 connected with the Center evaluated by the
 22 panel; and

23 “(ii) Federal officials.

24 “(C) CHAIRPERSON.—For each evaluation
 25 panel appointed under subparagraph (B), the

1 Secretary shall appoint a chairperson who is an
2 official of the Institute.

3 “(2) FIFTH YEAR EVALUATIONS BY SEC-
4 RETARY.—In the fifth year of operation of a Center,
5 the Secretary shall conduct a review of the Center.

6 “(3) PERFORMANCE MEASUREMENT.—In evalu-
7 ating a Center an evaluation panel or the Secretary,
8 as applicable, shall measure the performance of the
9 Center against—

10 “(A) the objective specified in subsection
11 (c);

12 “(B) the performance metrics under sub-
13 section (f)(2)(C); and

14 “(C) such other criterion as deemed appro-
15 priate by the Secretary.

16 “(4) POSITIVE EVALUATIONS.—If an evaluation
17 of a Center is positive, the Secretary may continue
18 to provide financial assistance for the Center—

19 “(A) in the case of an evaluation occurring
20 in the third year of a Center, through the fifth
21 year of the Center;

22 “(B) in the case of an evaluation occurring
23 in the fifth year of a Center, through the eighth
24 year of the Center; and

1 “(C) in the case of an evaluation occurring
2 in the eighth year of a Center, through the
3 tenth year of the Center.

4 “(5) OTHER THAN POSITIVE EVALUATIONS.—

5 “(A) PROBATION.—If an evaluation of a
6 Center is other than positive, the Secretary
7 shall put the Center on probation during the
8 period beginning on the date that the Center
9 receives notice under subparagraph (B)(i) and
10 ending on the date that the reevaluation is com-
11 plete under subparagraph (B)(iii).

12 “(B) NOTICE AND REEVALUATION.—If a
13 Center receives an evaluation that is other than
14 positive, the evaluation panel or Secretary, as
15 applicable, shall—

16 “(i) notify the Center of the reason,
17 including any deficiencies in the perform-
18 ance of the Center identified during the
19 evaluation;

20 “(ii) assist the Center in remedying
21 the deficiencies by providing the Center,
22 not less frequently than once every 3
23 months, an analysis of the Center, if con-
24 sidered appropriate by the panel or Sec-
25 retary, as applicable; and

1 “(iii) reevaluate the Center not later
2 than 1 year after the date of the notice
3 under clause (i).

4 “(C) CONTINUED SUPPORT DURING PE-
5 RIOD OF PROBATION.—The Secretary may con-
6 tinue to provide financial assistance under sub-
7 section (e) for a Center during the probation
8 period.

9 “(6) FAILURE TO REMEDY.—

10 “(A) IN GENERAL.—If a Center fails to
11 remedy a deficiency or to show significant im-
12 provement in performance before the end of the
13 probation period under paragraph (5), the Sec-
14 retary shall conduct a competition to select an
15 operator for the Center under subsection (h).

16 “(B) TREATMENT OF CENTERS SUBJECT
17 TO NEW COMPETITION.—Upon the selection of
18 an operator for a Center under subsection (h),
19 the Center shall be considered a new Center
20 and the calculation of the years of operation of
21 that Center for purposes of paragraphs (1)
22 through (5) of this subsection and subsection
23 (h)(1) shall start anew.

24 “(h) REAPPLICATION COMPETITION FOR FINANCIAL
25 ASSISTANCE AFTER 10 YEARS.—

1 “(1) IN GENERAL.—If an eligible entity has op-
 2 erated a Center under this section for a period of 10
 3 consecutive years, the Secretary shall conduct a com-
 4 petition to select an eligible entity to operate the
 5 Center in accordance with the process plan under
 6 subsection (i).

7 “(2) INCUMBENT ELIGIBLE ENTITIES.—An eli-
 8 gible entity that has received financial assistance
 9 under this section for a period of 10 consecutive
 10 years and that the Secretary determines is in good
 11 standing shall be eligible to compete in the competi-
 12 tion under paragraph (1).

13 “(3) TREATMENT OF CENTERS SUBJECT TO RE-
 14 APPLICATION COMPETITION.—Upon the selection of
 15 an operator for a Center under paragraph (1), the
 16 Center shall be considered a new Center and the cal-
 17 culation of the years of operation of that Center for
 18 purposes of paragraphs (1) through (5) of sub-
 19 section (g) shall start anew.

20 “(i) PROCESS PLAN.—Not later than 180 days after
 21 the date of the enactment of the American Innovation and
 22 Competitiveness Act, the Secretary shall implement and
 23 submit to Congress a plan for how the Institute will con-
 24 duct an evaluation, competition, and reapplication com-
 25 petition under this section.

1 “(j) OPERATIONAL REQUIREMENTS.—

2 “(1) PROTECTION OF CONFIDENTIAL INFORMA-
3 TION OF CENTER CLIENTS.—The following informa-
4 tion, if obtained by the Federal Government in con-
5 nection with an activity of a Center or the Program,
6 shall be exempt from public disclosure under section
7 552 of title 5, United States Code:

8 “(A) Information on the business operation
9 of any participant in the Program or of a client
10 of a Center.

11 “(B) Trade secrets of any client of a Cen-
12 ter.

13 “(k) OVERSIGHT BOARDS.—

14 “(1) IN GENERAL.—As a condition on receipt of
15 financial assistance for a Center under subsection
16 (e), an eligible entity shall establish a board to over-
17 see the operations of the Center.

18 “(2) STANDARDS.—

19 “(A) IN GENERAL.—The Director shall es-
20 tablish appropriate standards for each board
21 described under paragraph (1).

22 “(B) CONSIDERATIONS.—In establishing
23 the standards, the Director shall take into ac-
24 count the type and organizational structure of
25 an eligible entity.

1 “(C) REQUIREMENTS.—The standards
2 shall address, at a minimum—

3 “(i) membership;

4 “(ii) composition;

5 “(iii) term limits;

6 “(iv) conflicts of interest; and

7 “(v) whether to limit board members
8 serving on multiple boards under this sec-
9 tion.

10 “(3) MEMBERSHIP.—

11 “(A) IN GENERAL.—Each board estab-
12 lished under paragraph (1) shall be composed
13 of members as follows:

14 “(i) The membership of each board
15 shall be representative of stakeholders in
16 the region in which the Center is located.

17 “(ii) A majority of the members of the
18 board shall be selected from among indi-
19 viduals who own or are employed by small
20 or medium-sized manufacturers.

21 “(B) LIMITATION.—A member of a board
22 established under paragraph (1) may not serve
23 on more than 1 board established under that
24 paragraph.

25 “(4) BYLAWS.—

1 “(A) IN GENERAL.—Each board estab-
2 lished under paragraph (1) shall adopt and sub-
3 mit to the Director bylaws to govern the oper-
4 ation of the board.

5 “(B) CONFLICTS OF INTEREST.—Bylaws
6 adopted under subparagraph (A) shall include
7 policies to minimize conflicts of interest, includ-
8 ing such policies relating to disclosure of rela-
9 tionships and recusal as may be necessary to
10 minimize conflicts of interest.

11 “(l) ACCEPTANCE OF FUNDS.—In addition to such
12 sums as may be appropriated to the Secretary and Direc-
13 tor to operate the Program, the Secretary and Director
14 may also accept funds from other Federal departments
15 and agencies and from the private sector under section
16 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available
17 to the extent provided by appropriations Acts, for the pur-
18 pose of strengthening United States manufacturing.

19 “(m) MEP ADVISORY BOARD.—

20 “(1) ESTABLISHMENT.—There is established
21 within the Institute a Manufacturing Extension
22 Partnership Advisory Board.

23 “(2) MEMBERSHIP.—

24 “(A) COMPOSITION.—

1 “(i) IN GENERAL.—The MEP Advi-
2 sory Board shall consist of not fewer than
3 10 members appointed by the Director and
4 broadly representative of stakeholders.

5 “(ii) REQUIREMENTS.—Of the mem-
6 bers appointed under clause (i)—

7 “(I) at least 2 members shall be
8 employed by or on an advisory board
9 for a Center; and

10 “(II) at least 5 other members
11 shall be from United States small
12 businesses in the manufacturing sec-
13 tor.

14 “(iii) LIMITATION.—No member of
15 the MEP Advisory Board shall be an em-
16 ployee of the Federal Government.

17 “(B) TERM.—Except as provided in sub-
18 paragraph (C), the term of office of each mem-
19 ber of the MEP Advisory Board shall be 3
20 years.

21 “(C) VACANCIES.—Any member appointed
22 to fill a vacancy occurring prior to the expira-
23 tion of the term for which his predecessor was
24 appointed shall be appointed for the remainder
25 of such term.

1 “(D) SERVING CONSECUTIVE TERMS.—

2 Any person who has completed 2 consecutive
3 full terms of service on the MEP Advisory
4 Board shall thereafter be ineligible for appoint-
5 ment during the 1-year period following the ex-
6 piration of the second such term.

7 “(3) MEETINGS.—The MEP Advisory Board
8 shall—

9 “(A) meet not less than biannually; and

10 “(B) provide to the Director—

11 “(i) advice on the activities, plans,
12 and policies of the Program;

13 “(ii) assessments of the soundness of
14 the plans and strategies of the Program;
15 and

16 “(iii) assessments of current perform-
17 ance against the plans of the Program.

18 “(4) FACA APPLICABILITY.—

19 “(A) IN GENERAL.—In discharging its du-
20 ties under this subsection, the MEP Advisory
21 Board shall function solely in an advisory ca-
22 pacity, in accordance with the Federal Advisory
23 Committee Act (5 U.S.C. App.).

1 “(B) EXCEPTION.—Section 14 of the Fed-
 2 eral Advisory Committee Act shall not apply to
 3 the MEP Advisory Board.

4 “(5) ANNUAL REPORT.—

5 “(A) IN GENERAL.—At a minimum, the
 6 MEP Advisory Board shall transmit an annual
 7 report to the Secretary for transmittal to Con-
 8 gress not later than 30 days after the submis-
 9 sion to Congress of the President’s annual
 10 budget request in each year.

11 “(B) CONTENTS.—The report shall ad-
 12 dress the status of the Program and describe
 13 the relevant sections of the programmatic plan-
 14 ning document and updates thereto transmitted
 15 to Congress by the Director under subsections
 16 (c) and (d) of section 23 (15 U.S.C. 278i).

17 “(n) SMALL MANUFACTURERS.—

18 “(1) EVALUATION OF OBSTACLES.—As part of
 19 the Program, the Director shall—

20 “(A) identify obstacles that prevent small
 21 manufacturers from effectively competing in the
 22 global market;

23 “(B) implement a comprehensive plan to
 24 train the Centers to address the obstacles iden-
 25 tified in paragraph (2); and

1 “(C) facilitate improved communication be-
2 tween the Centers to assist such manufacturers
3 in implementing appropriate, targeted solutions
4 to the obstacles identified in paragraph (2).

5 “(2) DEVELOPMENT OF OPEN ACCESS RE-
6 SOURCES.—As part of the Program, the Secretary
7 shall develop open access resources that address best
8 practices related to inventory sourcing, supply chain
9 management, manufacturing techniques, available
10 Federal resources, and other topics to further the
11 competitiveness and profitability of small manufac-
12 turers.”.

13 (b) COMPETITIVE AWARDS PROGRAM.—The National
14 Institute of Standards and Technology Act (15 U.S.C. 271
15 et seq.) is amended by inserting after section 25 the fol-
16 lowing:

17 **“SEC. 25A. COMPETITIVE AWARDS PROGRAM.**

18 “(a) ESTABLISHMENT.—The Director shall establish
19 within the Hollings Manufacturing Extension Partnership
20 under section 25 (15 U.S.C. 278k) and section 26 (15
21 U.S.C. 278l) a program of competitive awards among par-
22 ticipants described in subsection (b) of this section for the
23 purposes described in subsection (c).

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

4 “(c) PURPOSE, THEMES, AND REIMBURSEMENT.—

5 “(1) PURPOSE.—The purpose of the program
6 established under subsection (a) is to add capabili-
7 ties to the Hollings Manufacturing Extension Part-
8 nership, including the development of projects to
9 solve new or emerging manufacturing problems as
10 determined by the Director, in consultation with the
11 Director of the Hollings Manufacturing Extension
12 Partnership, the MEP Advisory Board, other Fed-
13 eral agencies, and small and medium-sized manufac-
14 turers.

15 “(2) THEMES.—The Director may identify one
16 or more themes for a competition carried out under
17 this section, which may vary from year to year, as
18 the Director considers appropriate after assessing
19 the needs of manufacturers and the success of pre-
20 vious competitions.

21 “(3) REIMBURSEMENT.—Centers may be reim-
22 bursed for costs incurred by the Centers under this
23 section.

24 “(d) APPLICATIONS.—Applications for awards under
25 this section shall be submitted in such manner, at such

1 time, and containing such information as the Director
2 shall require in consultation with the MEP Advisory
3 Board.

4 “(e) SELECTION.—

5 “(1) PEER REVIEW AND COMPETITIVELY
6 AWARDED.—The Director shall ensure that awards
7 under this section are peer reviewed and competi-
8 tively awarded.

9 “(2) GEOGRAPHIC DIVERSITY.—The Director
10 shall endeavor to have broad geographic diversity
11 among selected proposals.

12 “(3) CRITERIA.—The Director shall select ap-
13 plications to receive awards that the Director deter-
14 mines will achieve one or more of the following:

15 “(A) Improve the competitiveness of indus-
16 tries in the region in which the Center or Cen-
17 ters are located.

18 “(B) Create jobs or train newly hired em-
19 ployees.

20 “(C) Promote the transfer and commer-
21 cialization of research and technology from in-
22 stitutions of higher education, national labora-
23 tories or other federally funded research pro-
24 grams, and nonprofit research institutes.

1 “(D) Recruit a diverse manufacturing
2 workforce, including through outreach to
3 women and minorities.

4 “(E) Such other result as the Director de-
5 termines will advance the objective set forth in
6 section 25(c) (15 U.S.C. 278k) or in section 26
7 (15 U.S.C. 278l).

8 “(f) PROGRAM CONTRIBUTION.—Recipients of
9 awards under this section shall not be required to provide
10 a matching contribution.

11 “(g) GLOBAL MARKETPLACE PROJECTS.—In making
12 an award under this section, the Director, in consultation
13 with the MEP Advisory Board and the Secretary, may
14 take into consideration whether an application has signifi-
15 cant potential for enhancing the competitiveness of small
16 and medium-sized United States manufacturers in the
17 global marketplace.

18 “(h) DURATION.—The duration of an award under
19 this section shall be for not more than 3 years.

20 “(i) DEFINITIONS.—The terms used in this section
21 have the meanings given the terms in section 25 (15
22 U.S.C. 278k).”.

23 (c) GAO REPORT.—Not later than 2 years after the
24 date of enactment of this Act, the Comptroller General
25 of the United States, in consultation with the MEP Advi-

1 sory Board (as defined in section 25 of the National Insti-
 2 tute of Standards and Technology Act (15 U.S.C. 278k),
 3 shall submit to the Committee on Commerce, Science, and
 4 Transportation of the Senate and the Committee on
 5 Science, Space, and Technology of the House of Rep-
 6 resentatives a report analyzing—

7 (1) the effectiveness of the changes in the cost
 8 share to Centers under section 25 of the National
 9 Institute of Standards and Technology Act (15
 10 U.S.C. 278k);

11 (2) the engagement in services and the charac-
 12 teristics of services provided by 2 types of Centers,
 13 including volume and type of service; and

14 (3) whether the cost-sharing ratio has any ef-
 15 fect on the services provided by either type of Cen-
 16 ter.

17 (d) CONFORMING AMENDMENTS.—

18 (1) DEFINITIONS.—Section 2199(3) of title 10,
 19 United States Code, is amended—

20 (A) by striking “regional center” and in-
 21 serting “manufacturing extension center”;

22 (B) by inserting “and best business prac-
 23 tices” before “referred”; and

24 (C) by striking “25(a)” and inserting
 25 “25(b)”.

1 (2) ENTERPRISE INTEGRATION INITIATIVE.—
2 Section 3(a) of the Enterprise Integration Act of
3 2002 (15 U.S.C. 278g–5(a)) is amended by inserting
4 “Hollings” before “Manufacturing Extension Part-
5 nership”.

6 (3) ASSISTANCE TO STATE TECHNOLOGY PRO-
7 GRAMS.—Section 26(a) of the National Institute of
8 Standards and Technology Act (15 U.S.C. 278l(a))
9 is amended by striking “Centers program created”
10 and inserting “Hollings Manufacturing Extension
11 Partnership”.

12 (e) SAVINGS PROVISIONS.—Notwithstanding the
13 amendments made by subsections (a) and (b) of this sec-
14 tion, the Secretary of Commerce may carry out section
15 25 of the National Institute of Standards and Technology
16 Act (15 U.S.C. 278k) as that section was in effect on the
17 day before the date of enactment of this Act, with respect
18 to existing grants, agreements, cooperative agreements, or
19 contracts, and with respect to applications for such items
20 that are received by the Secretary prior to the date of en-
21 actment of this Act.

22 **SEC. 502. FEDERAL LOAN GUARANTEES FOR INNOVATIVE**
23 **TECHNOLOGIES IN MANUFACTURING.**

24 Section 26(o) of the Stevenson-Wydler Technology
25 Innovation Act of 1980 (15 U.S.C. 3721(o)) is amended—

1 (1) by inserting “(1) IN GENERAL.—” before
 2 “To the maximum” and indenting appropriately;
 3 and

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

5 “(2) ACCESS TO CAPITAL.—The Secretary, in
 6 coordination with the Small Business Administration
 7 and the National Institute of Standards and Tech-
 8 nology, shall identify any gaps in the access of small
 9 or medium-sized manufacturers to capital for the
 10 use or production of innovative technologies that the
 11 program could fill, and develop marketing materials
 12 and conduct outreach to target those gaps.”.

13 **TITLE VI—INNOVATION, COM-**
 14 **MERCIALIZATION, AND TECH-**
 15 **NOLOGY TRANSFER**

16 **SEC. 601. INNOVATION CORPS.**

17 (a) FINDINGS.—Congress makes the following find-
 18 ings:

19 (1) The National Science Foundation Innova-
 20 tion Corps (referred to in this section as the “I-
 21 Corps”) was established to foster a national innova-
 22 tion ecosystem by encouraging institutions, sci-
 23 entists, engineers, and entrepreneurs to identify and
 24 explore the innovation and commercial potential of

1 National Science Foundation-funded research well
2 beyond the laboratory.

3 (2) Through I-Corps, the Foundation invests in
4 entrepreneurship and commercialization education,
5 training, and mentoring that can ultimately lead to
6 the practical deployment of technologies, products,
7 processes, and services that improve the Nation's
8 competitiveness, promote economic growth, and ben-
9 efit society.

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

15 (4) By translating federally funded research to
16 a commercial stage more quickly and efficiently, pro-
17 grams like the I-Corps create new jobs and compa-
18 nies, help solve societal problems, and provide tax-
19 payers with a greater return on their investment in
20 research.

21 (5) The I-Corps program model has a strong
22 record of success that should be replicated at all
23 Federal science agencies.

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

1 (1) commercialization of federally funded re-
2 search can improve the Nation's competitiveness,
3 grow the economy, and benefit society;

4 (2) I-Corps is a useful tool in promoting the
5 commercialization of federally funded research by
6 training researchers funded by the Foundation in
7 entrepreneurship and commercialization;

8 (3) I-Corps should continue to build a network
9 of entrepreneurs, educators, mentors, and institu-
10 tions and support specialized education and training;
11 and

12 (4) researchers other than those funded by the
13 Foundation may also benefit from the education and
14 training described in paragraph (3).

15 (c) I-CORPS PROGRAM.—

16 (1) IN GENERAL.—In order to promote a
17 strong, lasting foundation for the national innova-
18 tion ecosystem and increase the positive economic
19 and social impact of federally funded research, the
20 Director of the Foundation shall set forth eligibility
21 requirements and carry out a program to award
22 grants for entrepreneurship and commercialization
23 education, training, and mentoring.

24 (2) EXPANSION OF I-CORPS.—

25 (A) IN GENERAL.—The Director—

1 (i) shall encourage the development
2 and expansion of I-Corps and other train-
3 ing programs that focus on professional
4 development, including education in entre-
5 preneurship and commercialization; and

6 (ii) may establish an agreement with
7 another Federal science agency—

8 (I) to make researchers, stu-
9 dents, and institutions funded by that
10 agency eligible to participate in the I-
11 Corps program; or

12 (II) to assist that agency with
13 the design and implementation of its
14 own program that is similar to the I-
15 Corps program.

16 (B) PARTNERSHIP FUNDING.—In negoti-
17 ating an agreement with another Federal
18 science agency under subparagraph (A)(ii), the
19 Director shall require that Federal science
20 agency to provide funding for—

21 (i) the training for researchers, stu-
22 dents, and institutions selected for the I-
23 Corps program; and

24 (ii) the locations that Federal science
25 agency designates as regional and national

1 infrastructure for science and engineering
2 entrepreneurship.

3 (3) FOLLOW-ON COMMERCIALIZATION
4 GRANTS.—

5 (A) IN GENERAL.—Subject to subpara-
6 graph (B), the Director, in consultation with
7 the Director of the Small Business Innovation
8 Research Program, shall make funds available
9 for competitive grants, including to I-Corps par-
10 ticipants, to help support—

11 (i) prototype or proof-of-concept devel-
12 opment; and

13 (ii) such activities as the Director con-
14 siders necessary to build local, regional,
15 and national infrastructure for science and
16 engineering entrepreneurship.

17 (B) LIMITATION.—Grants under subpara-
18 graph (A) shall be limited to participants with
19 innovations that because of the early stage of
20 development are not eligible to participate in a
21 Small Business Innovation Research Program
22 or a Small Business Technology Transfer Pro-
23 gram.

24 (4) STATE AND LOCAL PARTNERSHIPS.—The
25 Director may engage in partnerships with State and

1 local governments, economic development organiza-
2 tions, and nonprofit organizations to provide access
3 to the I-Corps program to support entrepreneurship
4 and commercialization education and training for re-
5 searchers, students, and institutions under this sub-
6 section.

7 (5) REPORTS.—The Director shall submit to
8 the appropriate committees of Congress a biennial
9 report on I-Corps program efficacy, including
10 metrics on the effectiveness of the program. Each
11 Federal science agency participating in the I-Corps
12 program or that implements a similar program
13 under paragraph (2)(A) shall contribute to the re-
14 port.

15 (6) DEFINITIONS.—In this subsection, the
16 terms “Small Business Innovation Research Pro-
17 gram” and “Small Business Technology Transfer
18 Program” have the meanings given those terms in
19 section 9 of the Small Business Act (15 U.S.C.
20 638).

21 **SEC. 602. TRANSLATIONAL RESEARCH GRANTS.**

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

24 (1) commercialization of federally funded re-
25 search may benefit society and the economy; and

1 (2) not-for-profit organizations support the
2 commercialization of federally funded research by
3 providing useful business and technical expertise to
4 researchers.

5 (b) COMMERCIALIZATION GRANTS PROGRAM.—The
6 Director of the Foundation shall continue to award grants
7 on a competitive, merit-reviewed basis to eligible entities
8 to promote the commercialization of federally funded re-
9 search results.

10 (c) USE OF FUNDS.—Activities supported by grants
11 under this section may include—

12 (1) identifying Foundation-sponsored research
13 and technologies that have the potential for acceler-
14 ated commercialization;

15 (2) supporting prior or current Foundation-
16 sponsored investigators in undertaking proof-of-con-
17 cept work, including development of prototypes of
18 technologies that are derived from Foundation-spon-
19 sored research and have potential market value;

20 (3) promoting sustainable partnerships between
21 Foundation-funded institutions, industry, and other
22 organizations within academia and the private sector
23 with the purpose of accelerating the transfer of tech-
24 nology;

1 (4) developing multidisciplinary innovation eco-
2 systems which involve and are responsive to specific
3 needs of academia and industry; and

4 (5) providing professional development, men-
5 toring, and advice in entrepreneurship, project man-
6 agement, and technology and business development
7 to innovators.

8 (d) ELIGIBILITY.—

9 (1) IN GENERAL.—The following organizations
10 may be eligible for grants under this section:

11 (A) Institutions of higher education.

12 (B) Public or nonprofit technology transfer
13 organizations.

14 (C) A nonprofit organization that partners
15 with an institution of higher education.

16 (D) A consortia of two or more of the or-
17 ganizations described under subparagraphs (A)
18 through (C).

19 (2) LEAD ORGANIZATIONS.—Any eligible orga-
20 nization under paragraph (1) may apply as a lead
21 organization.

22 (e) APPLICATIONS.—An eligible entity seeking a
23 grant under this section shall submit an application to the
24 Director at such time, in such manner, and containing
25 such information as the Director may require.

1 **SEC. 603. OPTICS AND PHOTONICS TECHNOLOGY INNOVA-**
2 **TIONS.**

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

5 (1) The 1998 National Research Council Re-
6 port, “Harnessing Light” presented a comprehensive
7 overview on the importance of optics and photonics
8 to various sectors of the United States economy.

9 (2) In 2012, in response to increased coordina-
10 tion and investment by other nations, the National
11 Research Council released a follow up study recom-
12 mending a national photonics initiative to increase
13 collaboration and coordination among United States
14 industry, Federal and State government, and aca-
15 demia to identify and further advance areas of
16 photonics critical to regaining United States com-
17 petitiveness and maintaining national security.

18 (3) Publicly traded companies focused on optics
19 and photonics in the United States enable more than
20 \$3 trillion in revenue annually.

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

23 (1) optics and photonics research and tech-
24 nologies promote United States global competitive-
25 ness in industry sectors, including telecommuni-
26 cations and information technology, energy,

1 healthcare and medicine, manufacturing, and de-
2 fense;

3 (2) Federal science agencies, industry, and aca-
4 demia should seek partnerships with each other to
5 develop basic research in optics and photonics into
6 more mature technologies and capabilities; and

7 (3) each Federal science agency, as appropriate,
8 should—

9 (A) survey and identify optics and
10 photonics-related programs within that Federal
11 science agency and share results with other
12 Federal science agencies for the purpose of gen-
13 erating multiple applications and uses;

14 (B) partner with the private sector and
15 academia to leverage knowledge and resources
16 to maximize opportunities for innovation in op-
17 tics and photonics;

18 (C) explore research and development op-
19 portunities, including Federal and private sec-
20 tor-sponsored internships, to ensure a highly
21 trained optics and photonics workforce in the
22 United States; and

23 (D) encourage partnerships between aca-
24 demia and industry to promote improvement in
25 the education of optics and photonics techni-

1 cians at the secondary school level, under-
2 graduate level, and 2-year college level, includ-
3 ing through the Foundation's Advanced Tech-
4 nological Education program.

