

113TH CONGRESS
2D SESSION

S. 2757

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

IN THE SENATE OF THE UNITED STATES

JULY 31, 2014

Mr. ROCKEFELLER (for himself, Mr. DURBIN, Mr. NELSON, Mr. PRYOR, Mr. COONS, and Mr. MARKEY) 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, to improve the competitiveness of the United States, and for other purposes.

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

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

4 (a) SHORT TITLE.—This Act may be cited as the
5 “America COMPETES Reauthorization Act of 2014” or
6 “America Creating Opportunities to Meaningfully Pro-
7 mote Excellence in Technology, Education, and Science
8 Reauthorization Act of 2014”.

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

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

TITLE I—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

- Sec. 101. Federal research and development funding.
 Sec. 102. Federal 5-year STEM education strategic plan.
 Sec. 103. Administrative burdens in federally sponsored research.
 Sec. 104. Prize competitions.
 Sec. 105. Repeal of Space Act limitation on prize competitions.
 Sec. 106. Coordinated Federal science agency policy for family caregivers.
 Sec. 107. Scientific and technical conferences.

TITLE II—NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

- Sec. 201. Definitions.
 Sec. 202. NASA education programs.
 Sec. 203. Experimental program to stimulate competitive research.
 Sec. 204. Foundational engineering.

TITLE III—NATIONAL OCEANIC AND ATMOSPHERIC
 ADMINISTRATION

- Sec. 301. NOAA education programs.

TITLE IV—NATIONAL INSTITUTE OF STANDARDS AND
 TECHNOLOGY

- Sec. 401. Authorization of appropriations.
 Sec. 402. Manufacturing extension partnership.
 Sec. 403. Education and outreach.
 Sec. 404. National Institute of Standards and Technology Foundation.
 Sec. 405. Implementation activities.
 Sec. 406. Standards and conformity assessment.
 Sec. 407. Visiting committee on advanced technology.
 Sec. 408. Grants and cooperative agreements.
 Sec. 409. Consumer Product Safety Commission.

TITLE V—SCIENCE, TECHNOLOGY, ENGINEERING, AND
 MATHEMATICS SUPPORT PROGRAMS

Subtitle A—National Science Foundation

- Sec. 501. Definitions.
 Sec. 502. Authorization of appropriations.
 Sec. 503. Sense of Congress on National Science Foundation basic research investments.
 Sec. 504. National Science Foundation merit review.
 Sec. 505. National Science Foundation STEM education program contribution and research dissemination.
 Sec. 506. STEM teacher training.
 Sec. 507. Robert Noyce Teacher Scholarship Program.
 Sec. 508. Early undergraduate research opportunities.

- Sec. 509. Informal STEM education.
- Sec. 510. Broadening participation.
- Sec. 511. Prizes and challenges for broadening participation.
- Sec. 512. Commercialization grants.
- Sec. 513. National Science Foundation Innovation Corps.
- Sec. 514. Graduate traineeship grant program.
- Sec. 515. The experimental program to stimulate competitive research.
- Sec. 516. Assessing national K–12 science and engineering proficiency.
- Sec. 517. Integrative Graduate Education and Research Traineeship program.
- Sec. 518. STEM education partnerships.

Subtitle B—STEM Secondary Schools

- Sec. 521. Report on STEM secondary schools.
- Sec. 522. Funding for STEM secondary schools.

TITLE VI—INNOVATION

Subtitle A—Innovation Ecosystems

- Sec. 611. Regional innovation program.
- Sec. 612. Workforce studies.
- Sec. 613. National strategic plan for advanced manufacturing.
- Sec. 614. Sense of Congress; optics and photonics innovations.

Subtitle B—National Nanotechnology Initiative

- Sec. 621. Short title.
- Sec. 622. Findings.
- Sec. 623. Enhancement of management of National Nanotechnology Initiative.
- Sec. 624. Quadrennial reports by National Nanotechnology Advisory Panel.
- Sec. 625. Quadrennial external review of National Nanotechnology Initiative.
- Sec. 626. Nanotechnology transfer, commercialization, and roadmaps.
- Sec. 627. Publication of data concerning nanotechnology.
- Sec. 628. National Science Foundation evaluation of investments of National Nanotechnology Initiative in education and workforce training.
- Sec. 629. Sharing of best practices of centers, networks, and user facilities.
- Sec. 630. Sense of Congress regarding environment, health, and safety matters concerning nanotechnology.

1 SEC. 2. DEFINITIONS.

2 In this Act:

- 3 (1) APPLIED RESEARCH.**—The term “applied
4 research” means a systematic study to gain knowl-
5 edge or understanding necessary to determine the
6 means by which a recognized and specific need may
7 be met.

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

7 (3) BASIC RESEARCH.—The term “basic re-
8 search” means a systematic study directed toward
9 fuller knowledge or understanding of the funda-
10 mental aspects of phenomena and of observable facts
11 without specific applications toward processes or
12 products in mind.

13 (4) EVIDENCE OR EVIDENCE-BASED.—With re-
14 spect to STEM education programs or activities au-
15 thorized under this Act, the term “evidence” or “evi-
16 dence-based” means the systematic collection and
17 analysis of information about the characteristics and
18 outcomes of Federal STEM education programs and
19 activities to improve effectiveness, efficiency, quality,
20 or other desired characteristics and to inform deci-
21 sions about current and future programming, includ-
22 ing collection and analysis through a variety of re-
23 search methods or combination of methods, as ap-
24 propriate to the research question.

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

5 (6) STEM.—The term “STEM” has the mean-
6 ing given the term in section 2 of the America COM-
7 PETES Reauthorization Act of 2010 (42 U.S.C.
8 6621 note).

9 **TITLE I—OFFICE OF SCIENCE**
10 **AND TECHNOLOGY POLICY**

11 **SEC. 101. FEDERAL RESEARCH AND DEVELOPMENT FUND-**
12 **ING.**

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

15 (1) investments in research and development
16 activities have historically delivered significant bene-
17 fits, including contributing to economic growth,
18 workforce development, national security, and other
19 priorities;

20 (2) maintaining U.S. economic competitiveness
21 requires a robust research foundation, the promotion
22 of a scientifically literate workforce, and the effective
23 commercialization of research products;

24 (3) many research and development initiatives,
25 due to the long time periods required to achieve

1 completion, can benefit from stable and predictable
2 investments and from multi-year financial planning;

3 (4) the Federal science agencies should receive
4 sustained and steady growth in funding for research
5 and development activities, including basic research,
6 across a wide range of disciplines, including physical,
7 geological, and life sciences, mathematics, engineer-
8 ing, and social, behavioral, and economic sciences;
9 and

10 (5) to enhance and maintain the quality and
11 credibility of Federal research and development
12 funding decisions, the Federal science agencies
13 should continue—

14 (A) to utilize competitive, merit-review
15 processes in evaluating external proposals for
16 research and development funding; and

17 (B) to solicit advice from independent sci-
18 entific advisory boards and committees rep-
19 resenting the nation's geographic diversity.

20 (b) DECLARATION OF POLICY.—Since research and
21 development activities constitute a national need, it is the
22 policy of the United States that—

23 (1) in developing and implementing their re-
24 search and development strategies, Federal science
25 agencies should encourage collaboration among in-

1 industry, the Federal Government, academia, and
2 other public and nonprofit entities; and

3 (2) research and development funding priorities
4 of Federal science agencies should be informed by
5 the independent, expert advice of Federal scientific
6 advisory committees and boards, within the broader
7 context of agency mission requirements.

8 **SEC. 102. FEDERAL 5-YEAR STEM EDUCATION STRATEGIC**
9 **PLAN.**

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

12 (1) STEM knowledge and skills are more im-
13 portant than ever before to jobs throughout the
14 economy and STEM education is critical to impart-
15 ing those skills to future workers.

16 (2) Increasing the number and diversity of stu-
17 dents trained in STEM fields and retaining STEM
18 professionals is critical to supporting U.S. competi-
19 tiveness within a global economy.

20 (3) STEM literacy, a basic understanding of
21 STEM concepts and principles, is critical to U.S.
22 consumers' evaluation of scientific information and
23 to informing national, local, and personal decisions
24 in a range of areas, including healthcare and crimi-
25 nal justice.

1 (b) SENSE OF CONGRESS.—It is the sense of Con-
2 gress that updates to the Federal 5-year STEM education
3 strategic plan required by section 101 of the America
4 COMPETES Reauthorization Act of 2010 (42 U.S.C.
5 6621), actions to implement the plan and its updates, and
6 the Federal STEM education investments should—

7 (1) support the development of a STEM work-
8 force that is responsive to the needs of industry,
9 academia, and Federal, State, and local govern-
10 ments;

11 (2) leverage and incorporate the expertise of a
12 broad range of STEM educators and beneficiaries,
13 including—

14 (A) public and private sector employers
15 that rely on an educated STEM workforce;

16 (B) institutions of higher education;

17 (C) non-profit STEM education groups
18 and informal STEM education providers; and

19 (D) Federal, State, and local agencies in-
20 volved in STEM education;

21 (3) seek to optimize Federal STEM education
22 initiatives and decisions related to the expansion,
23 consolidation, or reorganization of STEM programs,
24 and be supported both by program evaluations and

1 by careful consideration of each affected program’s
2 contribution to STEM education;

3 (4) encourage student exposure to scientists
4 and engineers by maintaining the role of Federal
5 science agencies, such as the National Aeronautics
6 and Space Administration, and STEM professionals
7 in education and outreach activities; and

8 (5) support active, collaborative, and inquiry-
9 based STEM learning approaches that develop cre-
10 ative thinking and critical analysis skills rather than
11 solely emphasizing memorization.

12 (c) COMPETES REAUTHORIZATION AMEND-
13 MENTS.—Section 101 of the America COMPETES Reau-
14 thorization Act of 2010 (42 U.S.C. 6621) is amended by
15 adding at the end the following:

16 “(d) PUBLIC REVIEW AND COMMENT.—The Chair-
17 person of the National Science and Technology Council
18 Committee on STEM Education shall publish in the Fed-
19 eral Register notice of any pending draft updates to the
20 5-year STEM education strategic plan and provide an op-
21 portunity for public comment on the draft updated plan.
22 To encourage alignment between the strategic plan and
23 national STEM needs, the Chairperson shall encourage
24 comment, in particular, from State and local educational
25 agencies, informal STEM education groups, nonprofit

1 STEM education organizations, STEM-related industries,
2 and institutions of higher education, including community
3 colleges. For purposes of this subsection, the term ‘com-
4 munity college’ means an institution of higher education
5 (as defined under section 101 of the Higher Education
6 Act of 1965 (20 U.S.C. 1001)) at which the highest degree
7 that is predominately awarded to students is an associate’s
8 degree.

9 “(e) INFORMAL STEM EDUCATION.—In updating
10 and implementing the 5-year STEM education strategic
11 plan, the National Science and Technology Council Com-
12 mittee on STEM Education shall develop guidance and
13 best practices for Federal agencies on incorporating and
14 encouraging informal STEM education efforts to support
15 youth and public engagement in STEM fields.

16 “(f) STEM CAREER AWARENESS.—In updating and
17 implementing the 5-year STEM education strategic plan,
18 the National Science and Technology Council Committee
19 on STEM Education shall consider Federal cross-agency
20 efforts to improve awareness of STEM careers among K–
21 12 students, including among underrepresented and rural
22 populations.”.

23 (d) SENSE OF CONGRESS; STEM REORGANIZA-
24 TION.—It is the sense of Congress that Federal STEM
25 education programs benefit from the participation and

1 leadership of the Federal science agencies and from the
2 involvement of scientists and engineers in the development
3 and implementation of STEM curricula. Any reorganiza-
4 tion of Federal STEM education programs that dimin-
5 ishes the participation of Federal science agency scientists
6 or engineers, including in the awarding of STEM-related
7 education grants, should be avoided.

8 **SEC. 103. ADMINISTRATIVE BURDENS IN FEDERALLY SPON-**
9 **SORED RESEARCH.**

10 (a) ESTABLISHMENT.—The Director of the Office of
11 Science and Technology Policy shall convene a sub-
12 committee on research productivity under the Committee
13 on Science of the National Science and Technology Coun-
14 cil, consistent with the Committee’s charter obligation to
15 increase the productivity of federally sponsored research
16 efforts.

17 (1) MEMBERSHIP.—The subcommittee shall
18 consist, at a minimum, of representatives from the
19 Department of Health and Human Services, the Na-
20 tional Science Foundation, the Department of De-
21 fense, the Department of Energy, and the Office of
22 Management and Budget.

23 (2) RECOMMENDATIONS.—The subcommittee
24 shall develop and propose for adoption by the Fed-
25 eral science agencies, recommendations for reducing

1 the costs and administrative burdens associated with
2 competing for, completing, and reporting on Federal
3 research grants. The recommendations may include
4 changes to the requirements, procedures, and docu-
5 mentation for—

6 (A) grant proposal submission, such as col-
7 lecting information only if necessary for merit
8 review;

9 (B) conflict of interest reporting;

10 (C) budget reports, such as by making the
11 requirements commensurate to the size of the
12 Federal grant awarded;

13 (D) annual progress reports, such as by
14 making the requirements commensurate to the
15 size of the Federal grant awarded and to the
16 level of risk; and

17 (E) meeting the regulations established by
18 the major Federal research agencies and the
19 Office of Management and Budget, including
20 those regulations relating to training, Institu-
21 tional Review Boards, payroll certification, and
22 budget auditing.

23 (b) RESPONSIBILITIES.—The subcommittee shall—

24 (1) compile and periodically update a list of all
25 Federal regulations and requirements that apply to

1 federally sponsored research and development activi-
2 ties research grants;

3 (2) evaluate the Federal regulations and re-
4 quirements based on criteria such as the severity
5 and likelihood of the risks addressed and the bene-
6 fits to safety and research integrity relative to the
7 costs imposed;

8 (3) based on the evaluation under paragraph
9 (2), make recommendations for reducing any costs
10 or administrative burden imposed by Federal regula-
11 tions and requirements, including if appropriate—

12 (A) modifying, repealing, or creating spe-
13 cific exemptions to the Federal regulations or
14 requirements; and

15 (B) harmonizing overlapping or redundant
16 research regulations or requirements across
17 Federal science agencies; and

18 (4) make recommendations for modifying, as
19 appropriate, Federal regulations and requirements
20 to improve technology transfer between academia
21 and industry and to minimize potential regulatory
22 roadblocks to research commercialization.

23 (c) CONSULTATION AND STAKEHOLDER INPUT.—In
24 meeting the responsibilities under subsection (b), the sub-
25 committee shall consult with the National Science Board

1 and the President’s Council of Advisors on Science and
2 Technology. The subcommittee shall consider any com-
3 ments or recommendations from federally funded and non-
4 federally funded research organizations, including institu-
5 tions of higher education.

6 (d) SUBCOMMITTEE REPORT.—Not later than 1 year
7 after the date of enactment of this Act, the subcommittee
8 shall report to the appropriate committees of Congress its
9 recommendations under this section. The report shall in-
10 clude—

11 (1) a list of any regulations, requirements, pro-
12 cedures, or documentation proposed to be har-
13 monized, streamlined, updated, added, or eliminated;

14 (2) a proposed plan, including a timeline, for
15 implementing the recommended changes described in
16 paragraph (1); and

17 (3) if necessary, any recommendations for legis-
18 lative action.

19 **SEC. 104. PRIZE COMPETITIONS.**

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

22 (1) in subsection (c)—

23 (A) by striking “may be one” and inserting
24 “may consist of 1”;

1 (B) in paragraph (3), by striking “com-
2 petition” each place it appears and inserting
3 “prize competition”; and

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

6 (2) in subsection (f)—

7 (A) by striking “publish a notice in the
8 Federal Register” and inserting “publish a no-
9 tice on a publicly accessible Federal Govern-
10 ment website”;

11 (B) by striking “the competition” each
12 place it appears and inserting “the prize com-
13 petition”; and

14 (C) in paragraph (4), by striking “prize”
15 and inserting “cash prize purse or non-cash
16 prize award”;

17 (3) in subsection (g)—

18 (A) by striking “win a prize” and inserting
19 “win a cash prize purse or non-cash prize
20 award”; and

21 (B) in paragraph (1), by striking “com-
22 petition” and inserting “prize competition”;

23 (4) in subsection (h), by striking “competition”
24 each place it appears and inserting “prize competi-
25 tion”;

1 (5) in subsection (i)—

2 (A) by striking “competition” each place it
3 appears and inserting “prize competition”;

4 (B) by striking “in amounts determined by
5 the head of an agency” and inserting “in that
6 amount”; and

7 (C) by inserting “The head of an agency
8 administering a prize competition shall deter-
9 mine the amount of liability insurance, which
10 may be none or insignificant, required by par-
11 ticipants in the prize competition.” before “Par-
12 ticipants shall”;

13 (6) in subsection (j)—

14 (A) in paragraph (1), by striking “competi-
15 tion” and inserting “prize competition”;

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

18 “(2) LICENSES.—To further the goals of a
19 prize competition, the Federal Government may—

20 “(A) negotiate a license for the use of in-
21 tellectual property developed by a registered
22 participant in the prize competition; or

23 “(B) require a registered participant in the
24 prize competition to provide an open source li-

1 cense to the public for the use of the registered
2 participant’s intellectual property.”; and

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

4 “(3) CONSENT DURING REGISTRATION.—The
5 Federal Government may obtain consent to the intel-
6 lectual property and licensing terms of a prize com-
7 petition from participants during the registration for
8 the prize competition.”;

9 (7) in subsection (k)—

10 (A) in paragraph (1), by striking “each
11 competition” each place it appears and insert-
12 ing “each prize competition”;

13 (B) by striking paragraph (3);

14 (C) by redesignating paragraph (2) as
15 paragraph (3);

16 (D) by amending paragraph (3), as redес-
17 igned, to read as follows:

18 “(3) REQUIREMENTS.—A judge—

19 “(A) may not have personal or financial in-
20 terests in, or be an employee, an officer, a di-
21 rector, or an agent of any entity that is a reg-
22 istered participant in a prize competition;

23 “(B) may not have a familial or financial
24 relationship with an individual who is a reg-
25 istered participant; and

1 “(C) consistent with the guidelines estab-
2 lished under paragraph (2), may—

3 “(i) be required to abide by a code of
4 conduct or judging agreement; and

5 “(ii) be required to provide financial
6 disclosures as are relevant to avoiding con-
7 flicts of interest.”; and

8 (E) by inserting after paragraph (1) the
9 following:

10 “(2) GUIDELINES.—A head of an agency that
11 carries out a prize competition under this section
12 shall develop guidelines to ensure that the panel of
13 judges appointed for the prize competition operates
14 in a transparent manner, is free of potential con-
15 flicts of interest, and is fairly balanced as appro-
16 priate to the task. The guidelines are not required
17 to necessitate each judge to be a special Government
18 employee (as defined in section 202 of title 18,
19 United States Code).”;

20 (8) in subsection (l), by striking “an agreement
21 with a private, nonprofit entity” and inserting “a
22 contract, grant, cooperative agreement, or other
23 agreement with a private sector for-profit, nonprofit,
24 or State or local government entity”;

25 (9) in subsection (m)—

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

3 “(1) IN GENERAL.—In carrying out a prize
4 competition under this section, including providing
5 financial support for the design and administration
6 of a prize competition or for funding a cash prize
7 purse or non-cash prize award, the head of an agen-
8 cy—

9 “(A) may use funds appropriated by Con-
10 gress;

11 “(B) may request and accept funds from
12 other Federal agencies or from private sector
13 for-profit or nonprofit entities or State or local
14 government agencies for such purposes; and

15 “(C) may not give special consideration to
16 any agency or entity in return for such a dona-
17 tion.”;

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

21 (C) in paragraph (3)—

22 (i) in subparagraph (A)—

23 (I) by striking “No prize” and
24 inserting “No prize competition”;

1 (II) by striking “the prize” and
2 inserting “the cash prize purse or
3 non-cash prize award”; and

4 (III) by striking “private source”
5 and inserting “non-Federal source”;
6 and

7 (ii) in subparagraph (B)—

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

11 (II) by striking “the prize” and
12 inserting “the prize competition”; and

13 (III) by striking “private source”
14 and inserting “non-Federal source”;
15 and

16 (D) in paragraph (4)—

17 (i) in subparagraph (A), by striking
18 “a prize” and inserting “a cash prize purse
19 or non-cash prize award”; and

20 (ii) in subparagraph (B), by striking
21 “the award of more than \$1,000,000 in
22 cash prizes” and inserting “the award of
23 more than \$1,000,000 in cash prize
24 purses”;

1 (10) in subsection (o), by striking “a prize
2 under this section” and inserting “a prize competi-
3 tion under this section”; and

4 (11) in subsection (p)—

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

7 (B) in paragraph (1)—

8 (i) by striking “Not later than March
9 1 of each year,” and inserting “Not later
10 than 2 years after the date of enactment
11 of the America COMPETES Reauthoriza-
12 tion Act of 2014, and biennially there-
13 after,”; and

14 (ii) by striking “the preceding fiscal
15 year” and inserting “the preceding 2 fiscal
16 years”; and

17 (C) in paragraph (2)—

18 (i) by striking “for a fiscal year”;

19 (ii) in subparagraph (C)—

20 (I) in the heading, by striking
21 “CASH PRIZES” and inserting “CASH
22 PRIZE PURSES”; and

23 (II) by striking “cash prizes”
24 each place it appears and inserting

1 “cash prize purses and non-cash prize
2 awards”;

3 (iii) by redesignating subparagraph
4 (F) as subparagraph (G); and

5 (iv) by inserting after subparagraph
6 (E) the following:

7 “(F) LIABILITY.—The amount of liability
8 insurance required by registered participants in
9 each prize competition and, if the amount is ei-
10 ther none or insignificant, an explanation for
11 that determination.”.

12 **SEC. 105. REPEAL OF SPACE ACT LIMITATION ON PRIZE**
13 **COMPETITIONS.**

14 Section 20144(a) of title 51, United States Code, is
15 amended by striking “The Administration may carry out
16 a program to award prizes only in conformity with this
17 section.”.

18 **SEC. 106. COORDINATED FEDERAL SCIENCE AGENCY POL-**
19 **ICY FOR FAMILY CAREGIVERS.**

20 (a) FINDINGS.—Congress makes the following find-
21 ings:

22 (1) Family responsibilities have been identified
23 as a driver in reducing the number of students, in-
24 cluding minorities, who complete postsecondary de-
25 grees.

1 (2) In particular, starting a family has been
2 identified as a prominent factor in reducing the
3 number of women advancing in academic careers in
4 the sciences.

5 (3) According to the Council of Economic Advi-
6 sors, workplace policies that permit greater flexi-
7 bility, including for activities related to family care,
8 can improve worker retention and increase produc-
9 tivity.

10 (4) To support family caregivers, several Fed-
11 eral agencies have adopted family-responsive policies,
12 including through programs such as the National
13 Science Foundation’s Career-Life Balance Initiative.

14 (5) Improved coordination among Federal
15 science agencies and those entities that receive Fed-
16 eral funding can ensure the consistency of family-re-
17 sponsive policies.

18 (b) POLICY EVALUATION.—Not later than 180 days
19 after the date of enactment of this Act, the Director of
20 the Office of Science and Technology Policy shall evaluate
21 ongoing Federal science agency programs and policies re-
22 garding career-life balance, workplace flexibility, and fam-
23 ily-responsive initiatives.

24 (c) GUIDANCE.—Not later than 1 year after the date
25 of enactment of this Act, the Director of the Office of

1 Science and Technology Policy shall provide guidance to
2 Federal science agencies to establish policies that—

3 (1) as appropriate, consider the needs of sci-
4 entific, engineering, and technical personnel, includ-
5 ing postdoctoral fellows, who—

6 (A) receive Federal funding through intra-
7 mural or extramural research awards; and

8 (B) have family caregiving responsibilities;
9 and

10 (2) based on the evaluation in subsection (b),
11 build on proven best practices, taking into consider-
12 ation—

13 (A) flexibility in the initiation of approved
14 research awards;

15 (B) no-cost extensions or suspensions of
16 research grants to permit for family caregiving
17 activities;

18 (C) grant supplements to sustain research
19 activities during absences related to family
20 caregiving;

21 (D) communications and training efforts
22 related to family-responsive initiatives; and

23 (E) evaluating programs and policies with
24 respect to the recruitment and retention of
25 STEM professionals.

1 (d) EXTERNAL INPUT.—The Director of the Office
2 of Science and Technology Policy, in developing guidance
3 under this section, shall consider input from entities re-
4 ceiving Federal research and development funding as well
5 as from professional societies and other organizations in-
6 volved in supporting women and underrepresented groups
7 in the sciences, as appropriate.

8 (e) CONSISTENCY IN POLICY.—The Director of the
9 Office of Science and Technology Policy, in developing
10 guidance under this section, shall encourage the Federal
11 science agencies and entities receiving Federal research
12 and development funding to adopt proven, consistent, and
13 complementary policies, programs, and best practices re-
14 garding career-life balance, workplace flexibility, and fam-
15 ily-responsive initiatives.

16 **SEC. 107. SCIENTIFIC AND TECHNICAL CONFERENCES.**

17 (a) FINDINGS.—Congress makes the following find-
18 ings:

19 (1) Cooperative research and development ac-
20 tivities, including collaboration between domestic and
21 international government, industry, and academic
22 science and engineering organizations, are important
23 to promoting innovation and knowledge creation.

24 (2) Scientific and technical conferences and
25 trade events support the sharing of information,

1 processes, and data within the scientific and engi-
2 neering communities.

3 (3) In hosting and attending scientific and tech-
4 nical conferences and trade events, Federal agen-
5 cies—

6 (A) gain greater access to top researchers
7 and to new and potentially transformative
8 ideas;

9 (B) keep abreast of developments relevant
10 to their respective missions, as is relevant for
11 future program planning;

12 (C) help disseminate Federal research re-
13 sults;

14 (D) provide opportunities both for em-
15 ployee professional development and for recruit-
16 ing new employees;

17 (E) participate in scientific peer review;
18 and

19 (F) support the reputation, visibility, and
20 leadership both of the specific agency and of
21 the United States.

22 (4) For those Federal agencies that provide fi-
23 nancial support for external research and develop-
24 ment activities, participation in scientific and tech-
25 nical conferences can help ensure that funds are di-

1 rected toward the most promising ideas, thereby
2 maximizing the Federal investment.

3 (b) POLICY.—To the extent practicable given budget,
4 security, and other constraints, each Federal science agen-
5 cy under this Act should support Federal employee and
6 contractor attendance at scientific and technical con-
7 ferences and trade events as relevant both to employee and
8 contractor duties and to the agency’s mission.

9 (c) OVERSIGHT.—Consistent with other relevant law,
10 the Federal agencies, through appropriate oversight, shall
11 aim to minimize the costs to the Federal Government re-
12 lated to conference and trade event attendance, through
13 methods such as—

14 (1) ensuring that related fees collected by the
15 Federal agency help offset total costs to the Govern-
16 ment;

17 (2) developing or maintaining procedures for in-
18 vestigating unexpected increases in related costs;
19 and

20 (3) strengthening policies and training relevant
21 to conference and trade event planning and partici-
22 pation.

1 **TITLE II—NATIONAL AERO-**
2 **NAUTICS AND SPACE ADMIN-**
3 **ISTRATION**

4 **SEC. 201. DEFINITIONS.**

5 In this title:

6 (1) ADMINISTRATOR.—The term “Adminis-
7 trator” means the Administrator of the National
8 Aeronautics and Space Administration.

9 (2) NASA.—The term “NASA” means the Na-
10 tional Aeronautics and Space Administration.

11 **SEC. 202. NASA EDUCATION PROGRAMS.**

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

14 (1) NASA is well-positioned to leverage its
15 workforce and facilities, together with the excitement
16 induced by space exploration, in providing students
17 and educators with authentic STEM experiences;

18 (2) whereas the Nation’s STEM programs have
19 traditionally focused on mathematics and the
20 sciences, NASA’s aeronautics and space exploration
21 mission allows it a unique ability to engage students
22 in engineering and technology development; and

23 (3) NASA’s education and outreach programs
24 have made a significant contribution to the Nation’s
25 K–12 education efforts.

1 (b) IN GENERAL.—The Administrator shall continue
2 to provide education and outreach activities, including op-
3 portunities for experiential learning, designed to improve
4 interest and proficiency among students and educators in
5 mathematics and the sciences, as well as in engineering
6 and technology development. Before finalizing any reorga-
7 nization of NASA education programs, the Administrator
8 shall consider the long-term research and workforce needs
9 of each mission directorate.

10 (c) METRICS.—The Administrator shall ensure that
11 NASA education programs have measurable objectives
12 and milestones, as well as clear, documented metrics for
13 evaluating programs. The Administrator, for each NASA
14 education program or portfolio of similar programs,
15 shall—

16 (1) encourage the collection of evidence as rel-
17 evant to the measurable objectives and milestones;
18 and

19 (2) ensure that program or portfolio evaluations
20 focus on educational outcomes and not just inputs,
21 activities completed, or the number of participants.

22 (d) BEST PRACTICES.—The Administrator or the Ad-
23 ministrator’s designee shall ensure—

1 (1) through participation in the National
2 Science and Technology Council Committee on
3 STEM Education, that—

4 (A) best practices developed through
5 NASA education programs, including proven
6 methods in areas such as engineering education
7 and outreach to underrepresented groups, are
8 considered in the development, updating, and
9 implementation of the Federal 5-year STEM
10 education strategic plan; and

11 (B) NASA education programs reflect best
12 practices and educational research developed
13 within other Federal agencies; and

14 (2) NASA leverages its limited education re-
15 sources by collaborating with external organizations
16 in adapting or replicating successful NASA STEM
17 education efforts.

18 **SEC. 203. EXPERIMENTAL PROGRAM TO STIMULATE COM-**
19 **PETITIVE RESEARCH.**

20 The Administrator shall continue to conduct the Ex-
21 perimental Program to Stimulate Competitive Research
22 (EPSCoR) in order to enhance research competitiveness
23 of States and jurisdictions historically underserved by
24 Federal research and development funding.

1 **SEC. 204. FOUNDATIONAL ENGINEERING.**

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

4 (1) The Nation’s basic research and
5 foundational engineering activities support innova-
6 tion and can provide novel and transformative solu-
7 tions to complex problems.

8 (2) NASA investments in basic research,
9 foundational engineering, and technology develop-
10 ment have advanced the NASA mission, including
11 through supporting materials design, modeling, and
12 manufacturing.

13 (3) NASA investments in basic research,
14 foundational engineering, and the development of
15 early-stage technologies remain critical to NASA’s
16 long-term mission.

17 (b) REAFFIRMATION OF POLICY.—Congress reaf-
18 firms its support, as articulated in section 20102 of title
19 51, United States Code, for NASA’s efforts to expand un-
20 derstanding in the aeronautical and space sciences and to
21 identify long-term opportunities relevant to operating in
22 the atmosphere and in space. Congress further affirms the
23 importance of technology development in supporting na-
24 tional leadership in these areas.

25 (c) FOUNDATIONAL ENGINEERING CAPABILITY.—
26 The Administrator shall ensure that NASA maintains a

1 core capability to identify and support activities related
2 to foundational engineering. The purpose of this capability
3 shall be—

4 (1) to forecast NASA’s future capability needs,
5 including those needs not directly related to current
6 missions;

7 (2) to develop or identify potentially trans-
8 formative technology concepts relevant to achieving
9 the needs under paragraph (1);

10 (3) to determine and implement an agency-wide
11 strategy, that may include increasing research ca-
12 pacity and coordinating with external partners, for
13 supporting research in foundational engineering; and

14 (4) to support translating basic scientific re-
15 search into new technology development.

16 **TITLE III—NATIONAL OCEANIC**
17 **AND ATMOSPHERIC ADMINIS-**
18 **TRATION**

19 **SEC. 301. NOAA EDUCATION PROGRAMS.**

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

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

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

1 “(d) METRICS.—In executing the NOAA science edu-
2 cation plan under subsection (c), the Administrator shall
3 maintain a comprehensive system for evaluating the agen-
4 cy’s educational programs and activities. In so doing, the
5 Administrator shall ensure that NOAA education pro-
6 grams have measurable objectives and milestones as well
7 clear, documented metrics for evaluating programs. For
8 each NOAA education program or portfolio of similar pro-
9 grams, the Administrator shall—

10 “(1) encourage the collection of evidence as rel-
11 evant to the measurable objectives and milestones;
12 and

13 “(2) ensure that program or portfolio evalua-
14 tions focus on educational outcomes and not just in-
15 puts, activities completed, or the number of partici-
16 pants.”.

17 **TITLE IV—NATIONAL INSTITUTE**
18 **OF STANDARDS AND TECH-**
19 **NOLOGY**

20 **SEC. 401. AUTHORIZATION OF APPROPRIATIONS.**

21 (a) FISCAL YEAR 2015.—

22 (1) IN GENERAL.—There are authorized to be
23 appropriated to the Secretary of Commerce
24 \$912,672,000 for the National Institute of Stand-
25 ards and Technology for fiscal year 2015.

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

3 (A) \$697,872,000 shall be authorized for
4 scientific and technical research and services
5 laboratory activities;

6 (B) \$58,800,000 shall be authorized for
7 the construction and maintenance of facilities;
8 and

9 (C) \$156,000,000 shall be authorized for
10 industrial technology services activities, of
11 which \$141,000,000 shall be authorized for the
12 Hollings Manufacturing Extension Partnership
13 program under sections 25 and 26 of the Na-
14 tional Institute of Standards and Technology
15 Act (15 U.S.C. 278k, 278l).

16 (b) FISCAL YEAR 2016.—

17 (1) IN GENERAL.—There are authorized to be
18 appropriated to the Secretary of Commerce
19 \$973,659,000 for the National Institute of Stand-
20 ards and Technology for fiscal year 2016.

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

23 (A) \$748,119,000 shall be authorized for
24 scientific and technical research and services
25 laboratory activities;

1 (B) \$61,740,000 shall be authorized for
2 the construction and maintenance of facilities;
3 and

4 (C) \$163,800,000 shall be authorized for
5 industrial technology services activities, of
6 which \$148,050,000 shall be authorized for the
7 Hollings Manufacturing Extension Partnership
8 program under sections 25 and 26 of the Na-
9 tional Institute of Standards and Technology
10 Act (15 U.S.C. 278k, 278l).

11 (c) FISCAL YEAR 2017.—

12 (1) IN GENERAL.—There are authorized to be
13 appropriated to the Secretary of Commerce
14 \$1,038,800,000 for the National Institute of Stand-
15 ards and Technology for fiscal year 2017.

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

18 (A) \$801,983,000 shall be authorized for
19 scientific and technical research and services
20 laboratory activities;

21 (B) \$64,827,000 shall be authorized for
22 the construction and maintenance of facilities;
23 and

24 (C) \$171,990,000 shall be authorized for
25 industrial technology services activities, of

1 which \$155,453,000 shall be authorized for the
2 Hollings Manufacturing Extension Partnership
3 program under sections 25 and 26 of the Na-
4 tional Institute of Standards and Technology
5 Act (15 U.S.C. 278k, 278l).

6 (d) FISCAL YEAR 2018.—

7 (1) IN GENERAL.—There are authorized to be
8 appropriated to the Secretary of Commerce
9 \$1,108,384,000 for the National Institute of Stand-
10 ards and Technology for fiscal year 2018.

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

13 (A) \$859,726,000 shall be authorized for
14 scientific and technical research and services
15 laboratory activities;

16 (B) \$68,068,000 shall be authorized for
17 the construction and maintenance of facilities;
18 and

19 (C) \$180,590,000 shall be authorized for
20 industrial technology services activities, of
21 which \$163,225,000 shall be authorized for the
22 Hollings Manufacturing Extension Partnership
23 program under sections 25 and 26 of the Na-
24 tional Institute of Standards and Technology
25 Act (15 U.S.C. 278k, 278l).

1 (e) FISCAL YEAR 2019.—

2 (1) IN GENERAL.—There are authorized to be
3 appropriated to the Secretary of Commerce
4 \$1,182,717,000 for the National Institute of Stand-
5 ards and Technology for fiscal year 2019.

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

8 (A) \$921,626,000 shall be authorized for
9 scientific and technical research and services
10 laboratory activities;

11 (B) \$71,472,000 shall be authorized for
12 the construction and maintenance of facilities;
13 and

14 (C) \$189,619,000 shall be authorized for
15 industrial technology services activities, of
16 which \$171,386,000 shall be authorized for the
17 Hollings Manufacturing Extension Partnership
18 program under sections 25 and 26 of the Na-
19 tional Institute of Standards and Technology
20 Act (15 U.S.C. 278k, 278l).

21 **SEC. 402. MANUFACTURING EXTENSION PARTNERSHIP.**

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

1 **“SEC. 25. HOLLINGS MANUFACTURING EXTENSION PART-**
2 **nership.**

3 “(a) ESTABLISHMENT.—

4 “(1) IN GENERAL.—The Secretary, through the
5 Director and, if appropriate, through other officials,
6 shall assist in creating and supporting manufac-
7 turing extension centers for the transfer of manufac-
8 turing technology and the dissemination of best busi-
9 ness practices.

10 “(2) AFFILIATION.—The Centers may be affili-
11 ated with any United States-based public or non-
12 profit institution or organization, or group thereof,
13 that applies for and is awarded financial assistance
14 under this section.

15 “(3) OBJECTIVE.—The objective of the Hollings
16 Manufacturing Extension Partnership is to enhance
17 productivity, competitiveness, and technological per-
18 formance in U.S. manufacturing through—

19 “(A) the demonstration of manufacturing
20 technologies and techniques, including auto-
21 mated manufacturing systems and other ad-
22 vanced production technologies, based on re-
23 search or development efforts at the Institute;

24 “(B) the transfer of technologies and tech-
25 niques under subparagraph (A) to manufac-
26 turing companies throughout the United States;

1 “(C) the participation of individuals from
2 industry, universities, State governments, other
3 Federal agencies, and, when appropriate, the
4 Institute in cooperative technology transfer ac-
5 tivities;

6 “(D) efforts to make new manufacturing
7 technologies and processes usable by United
8 States-based small- and medium-sized manufac-
9 turing companies;

10 “(E) the active dissemination to industrial
11 firms, including small- and medium-sized manu-
12 facturing companies, of scientific, engineering,
13 technical, and management information about
14 manufacturing;

15 “(F) the use, if appropriate, of the exper-
16 tise and capabilities of Federal laboratories;

17 “(G) the provision to community colleges
18 of information regarding the job skills needed
19 in United States-based small- and medium-sized
20 manufacturing companies in the regions the
21 community colleges serve; and

22 “(H) assisting Federal agencies in achiev-
23 ing their domestic preference requirements
24 under chapter 83 of title 41, United States
25 Code, and similar laws, by identifying small-

1 and medium-sized manufacturing companies
2 throughout the United States and providing
3 those companies with technical assistance in
4 meeting Federal procurement and acquisition
5 requirements.

6 “(b) FINANCIAL ASSISTANCE.—

7 “(1) IN GENERAL.—The Secretary may provide
8 financial assistance to any Center, except that the
9 Secretary may not provide to a Center more than 50
10 percent of the capital and annual operating and
11 maintenance funds required to create and maintain
12 the Center.

13 “(2) REGULATIONS.—The Secretary shall pro-
14 mulgate or revise regulations, as necessary, to imple-
15 ment this section and review and update the regula-
16 tions at least once every 5 years to comply with any
17 applicable change in law that affects the policy or
18 program goals under this section. The Secretary
19 may publish in the Federal Register an updated de-
20 scription of the program establishing the Centers, as
21 the Secretary considers necessary.

22 “(3) APPLICATION ELIGIBILITY AND REQUIRE-
23 MENTS.—

24 “(A) IN GENERAL.—Any public or non-
25 profit institution, including State and local gov-

1 ernment, or group thereof, or consortia of pub-
2 lic or nonprofit institutions, may submit to the
3 Secretary an application for financial assistance
4 under this subsection, in accordance with the
5 procedures established by the Secretary.

6 “(B) COST SHARING.—Each applicant
7 shall provide adequate assurances that non-
8 Federal assets obtained from the applicant and
9 the applicant’s partnering organizations will be
10 used as a funding source to meet not less than
11 50 percent of the costs incurred. In this sub-
12 paragraph, the term ‘costs incurred’ means the
13 costs incurred in connection with the activities
14 undertaken to improve the management, pro-
15 ductivity, competitiveness, and technological
16 performance of small- and medium-sized manu-
17 facturing companies.

18 “(C) PARTNERING ORGANIZATIONS.—In
19 meeting the 50 percent requirement under sub-
20 paragraph (B), a Center may enter into 1 or
21 more agreements with 1 or more partnering or-
22 ganizations, such as private industry, univer-
23 sities, and State governments, to accomplish
24 programmatic objectives and access new and ex-
25 isting resources that will further the impact of

1 the Federal investment made on behalf of
2 small- and medium-sized manufacturing compa-
3 nies. All non-Federal costs contributed by such
4 partnering organizations and determined by a
5 Center as programmatically reasonable and al-
6 locable under Hollings Manufacturing Exten-
7 sion Partnership program procedures are in-
8 cludable as a portion of the Center's contribu-
9 tion.

10 “(D) LEGAL RIGHTS.—An applicant shall
11 also submit a proposal for the allocation of the
12 legal rights associated with any invention which
13 may result from the proposed Center's activi-
14 ties.

15 “(4) MERIT REVIEW OF APPLICATIONS.—The
16 Secretary shall subject each application under this
17 subsection to merit review. In making a decision
18 whether to approve an application and provide finan-
19 cial assistance under this subsection, the Secretary
20 shall consider, at a minimum—

21 “(A) the merits of the application, particu-
22 larly those portions of the application regarding
23 technology transfer, training and education, and
24 adaptation of manufacturing technologies to the
25 needs of particular industrial sectors;

1 “(B) the quality of service to be provided;

2 “(C) the geographical diversity and extent
3 of service area; and

4 “(D) the percentage of funding and
5 amount of in-kind commitment from other
6 sources.

7 “(5) CENTER EVALUATION.—

8 “(A) IN GENERAL.—Each Center that re-
9 ceives financial assistance under this subsection
10 shall be evaluated during its third year of oper-
11 ation by an evaluation panel appointed by the
12 Secretary.

13 “(B) COMPOSITION.—Each evaluation
14 panel shall be composed of independent experts,
15 none of whom shall be connected with the in-
16 volved Center, and Federal officials.

17 “(C) CHAIRPERSON.—An official of the In-
18 stitute shall chair the evaluation panel.

19 “(D) EVALUATION PROCEDURE.—Each
20 evaluation panel shall measure the involved
21 Center’s performance against the objective spec-
22 ified in subsection (a)(3).

23 “(E) POSITIVE EVALUATION.—If the eval-
24 uation is positive, the Secretary may provide

1 continued funding for Center operation and
2 maintenance.

3 “(F) NEGATIVE EVALUATION.—

4 “(i) PROBATION.—The Secretary shall
5 not provide funding for a Center’s oper-
6 ation or maintenance beyond its third year
7 unless the evaluation is positive. If a Cen-
8 ter does not receive a positive evaluation,
9 the evaluation panel shall notify the Center
10 of deficiencies in its performance and the
11 Center shall be placed on probation for 1
12 year.

13 “(ii) REEVALUATION.—The evaluation
14 panel shall reevaluate a Center’s perform-
15 ance following its probationary period. If
16 the Center has not addressed the defi-
17 ciencies identified by the evaluation panel
18 or shown a significant improvement in its
19 performance, the Director may either con-
20 duct a competition to select a new operator
21 for the Center or close the Center.

22 “(G) CONTINUATION OF FINANCIAL AS-
23 SISTANCE.—After the sixth year, a Center may
24 receive continued financial assistance under this
25 section only if it has received a positive evalua-

1 tion through an independent review, under pro-
2 cedures established by the Institute. Such an
3 independent review shall be required at least
4 every 2 years after the sixth year of operation.

5 “(H) RECOMPETITION.—If a Center has
6 received financial assistance for 10 years, the
7 Director shall conduct a new competition to se-
8 lect an operator for the Center. Current center
9 operators in good standing with the Institute
10 shall be eligible to compete.

11 “(6) CENTER OVERSIGHT BOARDS.—

12 “(A) IN GENERAL.—Each Center that re-
13 ceives financial assistance under this subsection
14 shall establish an oversight board that is broad-
15 ly representative of regional stakeholders with a
16 majority of board members drawn from local
17 small- and medium-sized manufacturing compa-
18 nies.

19 “(B) FINANCIAL MANAGEMENT.—Each
20 oversight board under subparagraph (A) shall
21 establish responsibility for the Center’s finan-
22 cial management and designate a chief financial
23 officer. External entities may advise on, but not
24 exclusively manage, Center finances.

1 “(C) BYLAWS AND CONFLICT OF INTER-
2 EST.—Each oversight board under subpara-
3 graph (A) shall adopt and submit to the Direc-
4 tor bylaws to govern the operation of the board,
5 including a conflict of interest policy to ensure
6 relevant relationships are disclosed and proper
7 recusal procedures are in place.

8 “(D) LIMITATIONS.—Board members may
9 not—

10 “(i) serve as a vendor or provide serv-
11 ices to the Center; or

12 “(ii) serve on more than 1 Center’s
13 oversight board simultaneously.

14 “(7) PROTECTION OF CONFIDENTIAL INFORMA-
15 TION.—The Secretary shall ensure that the following
16 are not publically disclosed:

17 “(A) Confidential information on the busi-
18 ness operations of—

19 “(i) any participant in a program
20 under the Hollings Manufacturing Exten-
21 sion Partnership; or

22 “(ii) any client of a Center.

23 “(B) Trade secrets possessed by any client
24 of a Center.

1 “(8) PATENT RIGHTS.—The provisions of chap-
2 ter 18 of title 35, United States Code, shall apply,
3 unless inconsistent with this section, to the pro-
4 motion of technology from research by Centers
5 under this section except for contracts for such spe-
6 cific technology extension or transfer services as may
7 be specified by statute or by the Director.

8 “(c) ACCEPTANCE OF FUNDS.—

9 “(1) IN GENERAL.—In addition to such sums
10 as may be appropriated to the Secretary and Direc-
11 tor to operate the Hollings Manufacturing Extension
12 Partnership program, the Secretary and Director
13 may accept, for the purpose of strengthening U.S.
14 manufacturing, funds from other Federal depart-
15 ments and agencies, and under section 2(c)(7) of
16 this Act (15 U.S.C. 272(c)(7)) from the private sec-
17 tor.

18 “(2) ALLOCATION OF FUNDS.—

19 “(A) FEDERAL DEPARTMENTS OR AGEN-
20 CIES.—The Director shall determine whether
21 funds accepted from other Federal departments
22 or agencies shall be counted in the calculation
23 of the Federal share of capital and annual oper-
24 ating and maintenance costs under subsection
25 (b).

1 “(B) PRIVATE SECTOR.—Funds accepted
2 from the private sector under section 2(c)(7) of
3 this Act (15 U.S.C. 272(c)(7)), if allocated to
4 a Center, shall not be considered in the calcula-
5 tion of the Federal share under subsection (b)
6 of this section.

7 “(d) MANUFACTURING EXTENSION PARTNERSHIP
8 ADVISORY BOARD.—

9 “(1) ESTABLISHMENT.—There is established
10 within the Institute a Manufacturing Extension
11 Partnership Advisory Board.

12 “(2) MEMBERSHIP.—

13 “(A) IN GENERAL.—The MEP Advisory
14 Board shall consist of not fewer than 10 mem-
15 bers broadly representative of stakeholders, to
16 be appointed by the Director. At least 2 mem-
17 bers shall be employed by or be on a Center ad-
18 visory board, and at least 5 other members
19 shall be from United States-based small busi-
20 nesses in the manufacturing sector. No member
21 shall be an employee of the Federal Govern-
22 ment.

23 “(B) TERM.—Except as provided in sub-
24 paragraph (C), the term of office of each mem-

1 ber of the MEP Advisory Board shall be 3
2 years.

3 “(C) VACANCIES.—Any member appointed
4 to fill a vacancy occurring prior to the expira-
5 tion of the term for which the member’s prede-
6 cessor was appointed shall be appointed for the
7 remainder of such term.

8 “(D) SERVING CONSECUTIVE TERMS.—
9 Any individual who has completed 2 consecutive
10 full terms of service on the MEP Advisory
11 Board shall thereafter be ineligible for appoint-
12 ment during the 1-year period following the ex-
13 piration of the second such term.

14 “(3) MEETINGS.—The MEP Advisory Board
15 shall—

16 “(A) meet not less than biannually; and

17 “(B) provide to the Director—

18 “(i) advice on Hollings Manufacturing
19 Extension Partnership programs, plans,
20 and policies;

21 “(ii) assessments of the soundness of
22 Hollings Manufacturing Extension Part-
23 nership plans and strategies; and

1 “(iii) assessments of current perform-
2 ance against Hollings Manufacturing Ex-
3 tension Partnership program plans.

4 “(4) FEDERAL ADVISORY COMMITTEE ACT.—

5 “(A) IN GENERAL.—In discharging its du-
6 ties under this subsection, the MEP Advisory
7 Board shall function solely in an advisory ca-
8 pacity, in accordance with the Federal Advisory
9 Committee Act (5 U.S.C. App.).

10 “(B) EXCEPTION.—Section 14 of the Fed-
11 eral Advisory Committee Act (5 U.S.C. App.
12 14) shall not apply to the MEP Advisory
13 Board.

14 “(5) REPORT.—The MEP Advisory Board shall
15 transmit an annual report to the Secretary for
16 transmittal to Congress not later than 30 days after
17 the submission to Congress of the President’s an-
18 nual budget request in each year. In the annual re-
19 port, the MEP Advisory Board shall—

20 “(A) address the status of the Hollings
21 Manufacturing Extension Partnership program;
22 and

23 “(B) comment on the relevant sections of
24 the programmatic planning document and up-
25 dates thereto transmitted to Congress by the

1 Director under subsections (c) and (d) of sec-
2 tion 23 of this Act (15 U.S.C. 278i).

3 “(e) COMPETITIVE AWARDS PROGRAM.—

4 “(1) ESTABLISHMENT.—The Director shall es-
5 tablish, within the Hollings Manufacturing Exten-
6 sion Partnership program under this section and
7 under section 26 of this Act (15 U.S.C. 278l), a pro-
8 gram of competitive awards among participants de-
9 scribed in paragraph (2) of this subsection for the
10 purpose described in paragraph (3) of this sub-
11 section.

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

15 “(3) PURPOSE.—The purpose of the program
16 under this subsection shall be to add capabilities to
17 the Hollings Manufacturing Extension Partnership
18 program, including the development of projects to
19 solve new or emerging manufacturing problems as
20 determined by the Director, in consultation with the
21 Director of the Hollings Manufacturing Extension
22 Partnership program, the MEP Advisory Board, and
23 representatives of small- and medium-sized manufac-
24 turing companies.

1 “(4) COMPETITIVE AWARDS THEMES.—The Di-
2 rector may identify 1 or more themes for the com-
3 petitive awards under this subsection. The themes
4 may—

5 “(A) be related to projects designed to in-
6 crease the viability both of traditional manufac-
7 turing sectors and other sectors, such as con-
8 struction, that increasingly rely on manufac-
9 turing through the use of manufactured compo-
10 nents and manufacturing techniques, including
11 supply chain integration and quality manage-
12 ment;

13 “(B) be related to projects related to the
14 transfer of technology based on the techno-
15 logical needs of manufacturers and available
16 technologies from institutions of higher edu-
17 cation, laboratories, and other technology pro-
18 ducing entities;

19 “(C) extend beyond these traditional areas
20 to include projects related to construction in-
21 dustry modernization; and

22 “(D) vary from year to year, depending on
23 the needs of manufacturers and the success of
24 previous competitions.

1 “(5) REIMBURSEMENTS.—The Centers may be
2 reimbursed for costs incurred under the program
3 under this subsection.

4 “(6) APPLICATIONS.—Applications for awards
5 under this subsection shall be submitted in such
6 manner and at such time, and contain such informa-
7 tion as the Director shall require, in consultation
8 with the MEP Advisory Board.

9 “(7) SELECTION.—

10 “(A) IN GENERAL.—Awards under this
11 subsection shall be peer reviewed and competi-
12 tively awarded. The Director shall endeavor to
13 have broad geographic diversity among selected
14 proposals. The Director may select proposals to
15 receive awards to—

16 “(i) create jobs or train newly hired
17 employees;

18 “(ii) promote technology transfer and
19 commercialization of environmentally fo-
20 cused materials, products, and processes;

21 “(iii) increase energy efficiency; or

22 “(iv) improve the competitiveness of
23 industries in the region in which the Cen-
24 ter or Centers are located.

1 “(B) ADDITIONAL SELECTION CRITERIA.—
2 The Director may select proposals to receive
3 awards that—

4 “(i) in the region in which the Center
5 or Centers are located, will encourage
6 greater cooperation and foster partnerships
7 with similar Federal, State, and locally
8 funded programs to encourage energy effi-
9 ciency and building technology; and

10 “(ii) will collect data and analyze the
11 increasing connection between manufac-
12 tured products and manufacturing tech-
13 niques, the future of construction prac-
14 tices, and the emerging application of
15 products from the green energy industries.

16 “(8) PROGRAM CONTRIBUTION.—Recipients of
17 awards under this subsection shall not be required
18 to provide a matching contribution.

19 “(9) GLOBAL MARKETPLACE PROJECTS.—In se-
20 lecting proposals to receive awards under this sub-
21 section, the Director, in consultation with the Sec-
22 retary and the MEP Advisory Board, may—

23 “(A) take into consideration whether an
24 application has significant potential for enhanc-
25 ing the competitiveness of United States-based

1 small- and medium-sized manufacturing compa-
2 nies in the global marketplace; and

3 “(B) give a preference to any application
4 described under subparagraph (A) to the extent
5 the Director considers appropriate, taking into
6 account the purpose under paragraph (3).

7 “(10) DURATION.—Awards under this sub-
8 section shall last no longer than 3 years.

9 “(11) PERMISSIBLE USES.—

10 “(A) IN GENERAL.—A participant under
11 paragraph (2) may use an award under this
12 subsection to assist—

13 “(i) United States-based small- or me-
14 dium-sized construction companies; and

15 “(ii) United States-based manufac-
16 turing companies eligible to participate in
17 the Centers program under subsection (a).

18 “(B) REIMBURSEMENTS.—A participant
19 under paragraph (2) may be reimbursed under
20 the program under this subsection for the costs
21 incurred in working with the companies de-
22 scribed in subparagraph (A).

23 “(12) AUTHORIZATION OF APPROPRIATIONS.—

24 In addition to any amounts otherwise authorized or
25 appropriated to carry out this section, there are au-

1 thorized to be appropriated to the Secretary of Com-
2 merce \$10,000,000 for each of the fiscal years au-
3 thorized in this Act.

4 “(f) INNOVATIVE SERVICES INITIATIVE.—

5 “(1) IN GENERAL.—The Director shall estab-
6 lish, within the Hollings Manufacturing Extension
7 Partnership program under this section, an innova-
8 tive services initiative to assist United States-based
9 small- and medium-sized manufacturing companies
10 in—

11 “(A) reducing their energy usage, green-
12 house gas emissions, and environmental waste
13 to improve profitability;

14 “(B) accelerating the domestic commer-
15 cialization of new product technologies, includ-
16 ing components for renewable energy and en-
17 ergy efficiency systems; and

18 “(C) identifying and diversifying to new
19 markets, including support for transitioning to
20 the production of components for renewable en-
21 ergy and energy efficiency systems.

22 “(g) DEFINITIONS.—In this section:

23 “(1) PROGRAM UNDER THIS SECTION.—The
24 term ‘program under this section’ means the Hol-

1 lings Manufacturing Extension Partnership program
2 established by this section.

3 “(2) CENTER.—The term ‘Center’ means a
4 Hollings Manufacturing Extension Center estab-
5 lished under subsection (a).

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

10 “(4) COMMUNITY COLLEGE.—The term ‘com-
11 munity college’ means an institution of higher edu-
12 cation (as defined under section 101 of the Higher
13 Education Act of 1965 (20 U.S.C. 1001)) at which
14 the highest degree that is predominately awarded to
15 students is an associate’s degree.

16 “(h) EVALUATION OF OBSTACLES UNIQUE TO
17 UNITED STATES-BASED SMALL-SIZED MANUFACTURING
18 COMPANIES.—The Director shall—

19 “(1) identify and evaluate obstacles that are
20 unique to United States-based small-sized manufac-
21 turing companies and that prevent the companies
22 from effectively competing in the global market;

23 “(2) implement a comprehensive plan to train
24 the Centers to address the obstacles under para-
25 graph (1); and

1 “(3) facilitate improved communication between
2 the Centers to assist the companies described in
3 paragraph (1) in implementing appropriate, targeted
4 solutions to the obstacles under paragraph (1).”.

5 (b) **TECHNICAL AND CONFORMING AMENDMENTS.—**

6 (1) **ARMED FORCES; SUPPORT OF SCIENCE,**
7 **MATHEMATICS, AND ENGINEERING EDUCATION.—**
8 Section 2199 of title 10, United States Code, is
9 amended by striking “means a regional center for
10 the transfer of manufacturing technology referred to
11 in section 25(a)” and inserting “means a center for
12 the transfer of manufacturing technology and the
13 dissemination of best business practices referred to
14 in section 25”.

15 (2) **ENTERPRISE INTEGRATION INITIATIVE.—**
16 Section 3(a) of the Enterprise Integration Act of
17 2002 (15 U.S.C. 278g–5(a)) is amended by inserting
18 “Hollings” before “Manufacturing Extension Part-
19 nership program”.

20 **SEC. 403. EDUCATION AND OUTREACH.**

21 The National Institutes of Standards and Technology
22 Act (15 U.S.C. 271 et seq.) is amended—

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

24 (2) by striking section 19 (15 U.S.C. 278g–2);

1 (3) by striking section 19A (15 U.S.C. 278g–
2 2a); and

3 (4) by inserting after section 17 (15 U.S.C.
4 278g) the following:

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

6 “(a) IN GENERAL.—The Director, in furthering the
7 Institute’s mission, is authorized to expend appropriated
8 funds to support, promote, and coordinate education and
9 outreach efforts to enhance the awareness and under-
10 standing of measurement sciences, standards, and tech-
11 nology among the general public, industry, and academia.

12 “(b) BROADENING PARTICIPATION.—In evaluating
13 an application for any fellowship under this section, the
14 Director shall consider the goal of promoting the partici-
15 pation of underrepresented minorities in research areas
16 supported by the Institute.

17 “(c) RESEARCH FELLOWSHIPS AND OTHER ASSIST-
18 ANCE.—

19 “(1) IN GENERAL.—The Director is authorized
20 to expend funds appropriated for activities of the In-
21 stitute in any fiscal year, as the Director considers
22 necessary, for awards of research fellowships and
23 other financial and logistical assistance to—

24 “(A) students at institutions of higher edu-
25 cation within the United States who show

1 promise as present or future contributors to the
2 mission of the Institute; and

3 “(B) U.S. citizens for research and tech-
4 nical activities of the Institute, including pro-
5 grams.

6 “(2) SELECTION.—The Director shall select re-
7 cipients for fellowships and assistance based on the
8 potential recipient’s ability to complete the proposed
9 work and on the relevance of the proposed work to
10 the mission and programs of the Institute.

11 “(3) DEFINITIONS.—In this subsection:

12 “(A) INSTITUTION OF HIGHER EDU-
13 CATION.—The term ‘institution of higher edu-
14 cation’ has the meaning given the term in sec-
15 tion 101 of the Higher Education Act of 1965
16 (20 U.S.C. 1001).

17 “(B) OTHER FINANCIAL AND LOGISTICAL
18 ASSISTANCE.—The term ‘other financial and
19 logistical assistance’ includes—

20 “(i) direct stipend awards; and

21 “(ii) notwithstanding section 1345 of
22 title 31, United States Code or any other
23 contrary provision of law, temporary hous-
24 ing and transportation to and from the In-
25 stitute facilities.

1 “(d) MANUFACTURING FELLOWSHIP PROGRAM.—

2 “(1) ESTABLISHMENT.—To promote the devel-
3 opment of a robust research community working at
4 the leading edge of manufacturing sciences, the Di-
5 rector shall establish a program to award—

6 “(A) postdoctoral research fellowships at
7 the Institute for research activities related to
8 manufacturing sciences; and

9 “(B) senior research fellowships to estab-
10 lished researchers in industry or at institutions
11 of higher education who wish to pursue studies
12 related to the manufacturing sciences at the In-
13 stitute.

14 “(2) APPLICATIONS.—To be eligible for an
15 award under this subsection, an individual shall sub-
16 mit an application to the Director at such time, in
17 such manner, and containing such information as
18 the Director may require.

19 “(3) STIPEND LEVELS.—The Director shall
20 provide stipends for postdoctoral research fellow-
21 ships at a level consistent with the postdoctoral re-
22 search fellowship program under subsection (e), and
23 senior research fellowships at levels consistent with
24 support for a faculty member in a sabbatical posi-
25 tion.

1 “(e) POSTDOCTORAL FELLOWSHIP PROGRAM.—The
2 Director, in consultation with the National Academy of
3 Sciences, shall establish and conduct a postdoctoral fellow-
4 ship program. The postdoctoral fellowship program shall
5 include not less than 20 new fellows per fiscal year.

6 “(f) TEACHER SCIENCE AND TECHNOLOGY EN-
7 HANCEMENT INSTITUTE PROGRAM.—

8 “(1) IN GENERAL.—The Director shall establish
9 within the Institute a teacher science and technology
10 enhancement program to provide for professional de-
11 velopment of STEM teachers at elementary, middle,
12 and secondary schools (as those terms are defined by
13 the Director), including helping to increase the
14 teachers’ understanding of STEM and the impacts
15 of STEM on commerce.

16 “(2) FOCUS.—In carrying out the program
17 under this subsection, the Director shall focus on the
18 following areas:

19 “(A) Scientific measurements.

20 “(B) Tests and standards development.

21 “(C) Industrial competitiveness and qual-
22 ity.

23 “(D) Manufacturing.

24 “(E) Engineering design.

25 “(F) Technology transfer.

1 “(G) Any other area of expertise of the In-
2 stitute that the Director considers appropriate.

3 “(3) SELECTION.—The Director shall develop
4 and issue procedures and selection criteria for par-
5 ticipants in the program under this subsection. The
6 Director shall give special consideration to an appli-
7 cation from a teacher from a high-need school (as
8 defined in section 200 of the Higher Education Act
9 of 1965 (20 U.S.C. 1021)).

10 “(4) TIMING.—The program under this sub-
11 section shall be conducted on an annual basis during
12 the period of time when a majority of elementary,
13 middle, and secondary schools have not commenced
14 a school year, such as the months of June, July, or
15 August.

16 “(5) EQUIPMENT.—The program under this
17 subsection shall—

18 “(A) provide for teachers’ participation in
19 activities at the laboratory facilities of the Insti-
20 tute; or

21 “(B) utilize other means of accomplishing
22 the goals of the program, as the Director con-
23 siders appropriate, such as the Internet, video
24 conferencing and recording, and workshops and
25 conferences.”.

1 **SEC. 404. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
2 **NOLOGY FOUNDATION.**

3 (a) IN GENERAL.—The Secretary of Commerce, act-
4 ing through the Director, may establish or enter into an
5 agreement with a nonprofit organization to establish a Na-
6 tional Institute of Standards and Technology Foundation.
7 The Foundation shall not be an agency or instrumentality
8 of the United States Government.

9 (b) PURPOSE.—The purpose of the Foundation shall
10 be to support the National Institute of Standards and
11 Technology in its mission.

12 (c) ACTIVITIES.—Activities of the Foundation may
13 include the solicitation and acceptance of funds—

14 (1) to support international metrology and
15 standards engagement activities;

16 (2) to conduct education and outreach activi-
17 ties; and

18 (3) to offer direct support to NIST associates,
19 including through activities such as the provision of
20 fellowships, grants, and occupational safety and
21 awareness training.

22 (d) TRANSFER OF FUNDS.—The Director may au-
23 thorize, under the agreement under subsection (a), the
24 transfer of funds from the National Institute of Standards
25 and Technology to the nonprofit organization to offset any
26 administrative costs of the Foundation.

1 (e) LIABILITY.—The United States shall not be liable
2 for any debts, defaults, acts, or omissions of the Founda-
3 tion. The full faith and credit of the United States shall
4 not extend to any obligations of the Foundation.

5 (f) DEFINITIONS.—In this section:

6 (1) DIRECTOR.—The term “Director” means
7 the Under Secretary of Commerce for Standards
8 and Technology.

9 (2) NIST ASSOCIATE.—The term “NIST asso-
10 ciate” means any guest researcher, research asso-
11 ciate, facility user, or volunteer who conducts re-
12 search at a National Institute of Standards and
13 Technology facility, but is not an employee of the
14 National Institute of Standards and Technology or
15 of another Federal department or agency.

16 **SEC. 405. IMPLEMENTATION ACTIVITIES.**

17 Subsection 2(c) of the National Institute of Stand-
18 ards and Technology Act (15 U.S.C. 272(c)) is amended—

19 (1) by redesignating paragraphs (18) through
20 (22) as paragraphs (19) through (23), respectively;
21 and

22 (2) by adding after paragraph (17) the fol-
23 lowing:

24 “(18) host, participate in, and support scientific
25 and technical conferences, and collect and retain

1 conference fees for the payment of related expenses,
2 including, notwithstanding section 1345 of title 31,
3 United States Code, subsistence expenses;”.

4 **SEC. 406. STANDARDS AND CONFORMITY ASSESSMENT.**

5 Subsection 2(b) of the National Institute of Stand-
6 ards and Technology Act (15 U.S.C. 272(b)) is amend-
7 ed—

8 (1) by striking “is authorized to” and inserting
9 “is authorized to serve as the President’s principal
10 advisor on standards pertaining to the Nation’s in-
11 novation and technological competitiveness and to”;

12 (2) by amending paragraph (3) to read as fol-
13 lows:

14 “(3) to compare standards used in scientific in-
15 vestigation, engineering, manufacturing, commerce,
16 industry, and education with the standards adopted
17 or recognized by the Federal Government;”;

18 (3) by inserting after paragraph (3) the fol-
19 lowing:

20 “(3A) to facilitate standards-related informa-
21 tion sharing and cooperation between Federal agen-
22 cies and to coordinate the use by Federal agencies
23 of private sector standards, emphasizing if possible
24 the use of standards developed by private, consensus
25 organizations;”;

1 (4) by amending paragraph (13) to read as fol-
2 lows:

3 “(13) to coordinate the technical standards and
4 conformity assessment activities of Federal, State,
5 and local governments with those of the private sec-
6 tor, with the goal of eliminating unnecessary dupli-
7 cation and complexity in the development and pro-
8 mulgation of conformity assessment requirements
9 and measures;” and

10 (5) by renumbering paragraphs (3A) through
11 (13) as paragraphs (4) through (14), respectively.

12 **SEC. 407. VISITING COMMITTEE ON ADVANCED TECH-**
13 **NOLOGY.**

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

16 (1) by striking “15” and inserting “not fewer
17 than 9”; and

18 (2) by striking “at least 10” and inserting “a
19 majority”.

20 **SEC. 408. GRANTS AND COOPERATIVE AGREEMENTS.**

21 Section 8 of the Stevenson-Wydler Technology Inno-
22 vation Act of 1980 (15 U.S.C. 3706) is amended by
23 amending subsection (a) to read as follows:

24 “(a) IN GENERAL.—The Secretary may make grants
25 and enter into cooperative agreements according to the

1 provisions of this section in order to assist any activity
 2 consistent with this Act, including activities performed by
 3 individuals.”.

4 **SEC. 409. CONSUMER PRODUCT SAFETY COMMISSION.**

5 Section 4 of the Federal Emergency Management Im-
 6 provement Act of 1988 (15 U.S.C. 5001) is amended—

7 (1) by striking “Secretary of Commerce” each
 8 place it appears and inserting “Consumer Product
 9 Safety Commission”; and

10 (2) by striking “Secretary” each place it ap-
 11 pears and inserting “Consumer Product Safety
 12 Commission”.

13 **TITLE V—SCIENCE, TECH-**
 14 **NOLOGY, ENGINEERING, AND**
 15 **MATHEMATICS SUPPORT**
 16 **PROGRAMS**
 17 **Subtitle A—National Science**
 18 **Foundation**

19 **SEC. 501. DEFINITIONS.**

20 In this subtitle:

21 (1) **DIRECTOR.**—The term “Director” means
 22 the Director of the National Science Foundation.

23 (2) **FOUNDATION.**—The term “Foundation”
 24 means the National Science Foundation.

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

5 (4) STATE.—The term “State” means 1 of the
6 several States, the District of Columbia, the Com-
7 monwealth of Puerto Rico, the Virgin Islands,
8 Guam, American Samoa, the Commonwealth of the
9 Northern Mariana Islands, or any other territory or
10 possession of the United States.

11 **SEC. 502. AUTHORIZATION OF APPROPRIATIONS.**

12 (a) FISCAL YEAR 2015.—

13 (1) IN GENERAL.—There are authorized to be
14 appropriated to the Foundation \$7,649,310,000 for
15 fiscal year 2015.

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

18 (A) \$6,227,160,000 shall be authorized for
19 research and related activities;

20 (B) \$888,825,000 shall be authorized for
21 education and human resources;

22 (C) \$201,000,000 shall be authorized for
23 major research equipment and facilities con-
24 struction;

1 (D) \$312,900,000 shall be authorized for
2 agency operations and award management;

3 (E) \$4,515,000 shall be authorized for the
4 Office of the National Science Board; and

5 (F) \$14,910,000 shall be authorized for
6 the Office of Inspector General.

7 (b) FISCAL YEAR 2016.—

8 (1) IN GENERAL.—There are authorized to be
9 appropriated to the Foundation \$8,157,724,000 for
10 fiscal year 2016.

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

13 (A) \$6,675,516,000 shall be authorized for
14 research and related activities;

15 (B) \$933,266,000 shall be authorized for
16 education and human resources;

17 (C) \$200,000,000 shall be authorized for
18 major research equipment and facilities con-
19 struction;

20 (D) \$328,545,000 shall be authorized for
21 agency operations and award management;

22 (E) \$4,741,000 shall be authorized for the
23 Office of the National Science Board; and

24 (F) \$15,656,000 shall be authorized for
25 the Office of Inspector General.

1 (c) FISCAL YEAR 2017.—

2 (1) IN GENERAL.—There are authorized to be
3 appropriated to the Foundation \$8,702,471,000 for
4 fiscal year 2017.

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

7 (A) \$7,156,153,000 shall be authorized for
8 research and related activities;

9 (B) \$979,930,000 shall be authorized for
10 education and human resources;

11 (C) \$200,000,000 shall be authorized for
12 major research equipment and facilities con-
13 struction;

14 (D) \$344,972,000 shall be authorized for
15 agency operations and award management;

16 (E) \$4,978,000 shall be authorized for the
17 Office of the National Science Board; and

18 (F) \$16,438,000 shall be authorized for
19 the Office of Inspector General.

20 (d) FISCAL YEAR 2018.—

21 (1) IN GENERAL.—There are authorized to be
22 appropriated to the Foundation \$9,285,030,000 for
23 fiscal year 2018.

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

1 (A) \$7,671,396,000 shall be authorized for
2 research and related activities;

3 (B) \$1,028,926,000 shall be authorized for
4 education and human resources;

5 (C) \$200,000,000 shall be authorized for
6 major research equipment and facilities con-
7 struction;

8 (D) \$362,221,000 shall be authorized for
9 agency operations and award management;

10 (E) \$5,227,000 shall be authorized for the
11 Office of the National Science Board; and

12 (F) \$17,260,000 shall be authorized for
13 the Office of Inspector General.

14 (e) FISCAL YEAR 2019.—

15 (1) IN GENERAL.—There are authorized to be
16 appropriated to the Foundation \$9,908,051,000 for
17 fiscal year 2019.

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

20 (A) \$8,223,736,000 shall be authorized for
21 research and related activities;

22 (B) \$1,080,372,000 shall be authorized for
23 education and human resources;

1 (C) \$200,000,000 shall be authorized for
2 major research equipment and facilities con-
3 struction;

4 (D) \$380,332,000 shall be authorized for
5 agency operations and award management;

6 (E) \$5,488,000 shall be authorized for the
7 Office of the National Science Board; and

8 (F) \$18,123,000 shall be authorized for
9 the Office of Inspector General.

10 **SEC. 503. SENSE OF CONGRESS ON NATIONAL SCIENCE**

11 **FOUNDATION BASIC RESEARCH INVEST-**
12 **MENTS.**

13 (a) FINDINGS.—Congress finds that—

14 (1) basic research investments support eco-
15 nomic development and national security by—

16 (A) creating a base of scientific knowledge
17 and understanding critical to innovation and to
18 the creation of new industries and jobs;

19 (B) training and attracting a community
20 of scientific and engineering experts; and

21 (C) enabling technological advances that
22 can respond to intractable or unexpected soci-
23 etal or security challenges;

24 (2) established by Congress in 1950, the Foun-
25 dation supports basic research activities in a wide

1 range of fields, including the mathematical, physical,
2 biological, geological, and social sciences, as well as
3 in fundamental engineering;

4 (3) the Foundation's basic research investments
5 have provided novel solutions to societal challenges
6 and created the scientific and engineering knowledge
7 important to commercial successes in areas such as
8 fiber optics, DNA fingerprinting, barcode readers,
9 and Internet browsers;

10 (4) the Foundation's investments in social, be-
11 havioral, and economic research have addressed chal-
12 lenges, including—

13 (A) in medicine, matching organ donors to
14 patients, leading to a dramatic growth in paired
15 kidney transplants;

16 (B) in policing, implementing predictive
17 models that help to yield significant reductions
18 in crime;

19 (C) in resource allocation, developing the
20 theories underlying the Federal Communica-
21 tions Commission spectrum auction, which has
22 generated over \$60,000,000,000 in revenue;

23 (D) in disaster preparation and recovery,
24 identifying barriers to effective disaster evacu-
25 ation strategies;

1 (E) in national defense, assisting U.S.
2 troops in cross-cultural communication and in
3 identifying threats; and

4 (F) in areas such as economics, education,
5 cybersecurity, transportation, and the national
6 defense, supporting informed decisionmaking in
7 foreign and domestic policy;

8 (5) through its research support, the Founda-
9 tion has proven critical to the development of the
10 Nation's scientific and engineering workforce;

11 (6) having recognized the benefits of research
12 investments to their economies and workforce, the
13 Nation's economic competitors have vastly increased
14 their research efforts; and

15 (7) the economic benefits related to basic re-
16 search investments tend to accrue within the region
17 where the research is conducted.

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

20 (1) basic research investments across a wide
21 range of disciplines are crucial to the Foundation's
22 mission and essential to the scientific progress of the
23 Nation;

24 (2) the Foundation's basic research investments
25 continue to support long-term national economic

1 competitiveness by expanding the potential for prac-
2 tical innovations in science and technology and by
3 attracting and training a knowledgeable workforce;

4 (3) the private sector's emphasis on investments
5 in late applied research and product development
6 relative to international competitors highlights the
7 Foundation's critical role in funding for basic and
8 early applied research; and

9 (4) if the United States is to remain innovative
10 and globally competitive, the Foundation must con-
11 tinue to meet its legislative mandate through—

12 (A) robust support for basic research
13 across a wide range of science and engineering
14 fields, including the social, behavioral, and eco-
15 nomic sciences;

16 (B) continued support for engagement be-
17 tween scientists, particularly through scientific
18 conferences; and

19 (C) funding for the education and training
20 of the U.S. scientific and technical workforce.

21 **SEC. 504. NATIONAL SCIENCE FOUNDATION MERIT REVIEW.**

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

24 (1) the Foundation's Intellectual Merit and
25 Broader Impacts criteria remain appropriate for

1 evaluating grant proposals, as concluded by the
2 2011 National Science Board Task Force on Merit
3 Review;

4 (2) evaluating proposals on the basis of the
5 Foundation's Intellectual Merit and Broader Im-
6 pacts criteria assures that—

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

10 (B) the Foundation's overall funding port-
11 folio addresses societal needs through research
12 findings or through related activities; and

13 (3) as evidenced by the Foundation's contribu-
14 tions to scientific advancement, economic develop-
15 ment, human health, and national security, its peer
16 review and merit review processes have successfully
17 identified and funded scientifically and societally rel-
18 evant research and must be preserved.

19 (b) CRITERIA.—The Foundation shall maintain the
20 Intellectual Merit and Broader Impacts criteria as the
21 basis for evaluating grant proposals in the merit review
22 process.

23 (c) REPORT.—

24 (1) IN GENERAL.—Not later than 180 days
25 after the date of enactment of this Act, the Director

1 shall submit to the appropriate committees of Con-
2 gress a report detailing—

3 (A) steps taken to improve the merit-re-
4 view process, the justification for any changes,
5 and the effect of these steps on funding recipi-
6 ents;

7 (B) recent efforts by the Foundation to
8 improve transparency and accountability in the
9 merit-review process; and

10 (C) efforts to better understand and ad-
11 dress implicit bias in the merit-review process.

12 (2) CHANGES.—The Director shall update and
13 resubmit the report under paragraph (1) if there are
14 any changes to the merit-review criteria.

15 **SEC. 505. NATIONAL SCIENCE FOUNDATION STEM EDU-**
16 **CATION PROGRAM CONTRIBUTION AND RE-**
17 **SEARCH DISSEMINATION.**

18 (a) FINDINGS.—Congress makes the following find-
19 ings:

20 (1) The Foundation’s Directorate for Education
21 and Human Resources, in collaboration, where ap-
22 propriate, with other Foundation directorates, sup-
23 ports STEM education by—

24 (A) funding research into student learning,
25 to include learning in informal environments;

1 (B) supporting programs to improve peda-
2 gogy and to increase the participation of under-
3 represented groups in the STEM workforce;

4 (C) providing financial support for stu-
5 dents pursuing STEM degrees and encouraging
6 students to become STEM educators; and

7 (D) promoting the adoption of validated
8 teaching practices and encouraging broad
9 STEM literacy.

10 (2) External evaluations of the Foundation's
11 education programs demonstrate that the education
12 programs produce more highly qualified teachers, in-
13 crease interest in STEM careers and in higher edu-
14 cation, broaden the participation of underrep-
15 resented minorities in STEM fields, and support the
16 development of the STEM workforce.

17 (b) POLICY.—It is the policy of the United States
18 that—

19 (1) the Foundation should maintain robust in-
20 vestments in STEM education at all levels, in teach-
21 er education, and in identifying and adapting prom-
22 ising STEM learning projects for broader use; and

23 (2) the Foundation's educational initiatives
24 should—

1 (A) develop, evaluate, and promote new or
2 transformative approaches to STEM education
3 both inside and outside of the classroom;

4 (B) balance support for research into edu-
5 cation, with transforming promising research
6 into innovative educational approaches, tools,
7 and programs, and with disseminating peda-
8 gogical best practices; and

9 (C) consider the needs of the educational
10 community, including academia, informal edu-
11 cational providers, and non-profit, industry, and
12 local, State, and Federal education agencies.

13 (c) EVALUATION.—The Director shall ensure that the
14 Foundation’s education programs have measurable objec-
15 tives and clear, documented metrics for evaluating pro-
16 grams. The Director, for each education program or port-
17 folio of similar programs, shall—

18 (1) include measurable objectives and mile-
19 stones within program solicitations;

20 (2) encourage the collection of evidence as rel-
21 evant to the measurable objectives and milestones in
22 paragraph (1);

23 (3) engage external evaluators, which may in-
24 clude Foundation-funded researchers, in evaluating
25 the program or portfolio against the objectives and

1 milestones in paragraph (1) and not just the inputs
2 or activities completed; and

3 (4) wherever relevant, conduct longitudinal or
4 comparison group studies.

5 (d) BEST PRACTICES.—The Director shall support
6 activities to disseminate and catalyze the adoption of evi-
7 dence-based best practices in STEM education content
8 and pedagogy. In conducting these activities, the Director,
9 at a minimum, shall—

10 (1) identify those best practices that have been
11 validated through peer-reviewed research efforts;

12 (2) establish collaborations with organizations
13 involved in teacher training, to include other Federal
14 science agencies, professional associations, institu-
15 tions of higher education, and private sector entities,
16 including informal education providers, as appro-
17 priate; and

18 (3) through collaboration with organizations in-
19 volved in teacher training, transmit best practice in-
20 formation to educators.

21 (e) PROGRAM SCALING GRANTS.—The Director shall
22 incentivize and support the widespread adoption of evi-
23 dence-based education practices and initiatives.

24 (1) AWARDS.—Grants under this subsection
25 shall be competitively awarded to propagate and im-

1 plement practices that improve student learning and
2 increase participation and retention in STEM fields.

3 (2) ELIGIBILITY.—The following organizations
4 may be eligible for grants under this subsection:

5 (A) Institutions of higher education.

6 (B) State, local, and nonprofit educational
7 organizations.

8 (C) Other educational groups as identified
9 by the Director.

10 (3) USE OF FUNDS.—Activities supported by
11 grants under this subsection may include—

12 (A) expanding promising education
13 projects and initiatives; and

14 (B) supporting professional development or
15 community outreach efforts, as required to en-
16 courage a commitment to educational reforms.

17 **SEC. 506. STEM TEACHER TRAINING.**

18 (a) REAFFIRMATION.—Congress reaffirms its sup-
19 port, as expressed in the America COMPETES Act (Pub-
20 lic Law 110–69; 121 Stat. 572) and the America COM-
21 PETES Reauthorization Act of 2010 (Public Law 111–
22 358; 124 Stat. 3982), for developing, implementing, and
23 replicating programs at institutions of higher education to
24 recruit and prepare STEM educators.

1 (b) PURPOSE.—The purpose of this section is to fur-
2 ther encourage the development, implementation, and
3 adoption of projects to recruit, prepare, and provide for
4 the training and professional development of STEM edu-
5 cators. The projects may be established, administered, or
6 conducted in cooperation with institutions of higher edu-
7 cation, public, nonprofit, or professional groups, and Fed-
8 eral, State, or local entities involved in education.

9 (c) IN GENERAL.—The Director shall provide grants
10 to fund projects, including workshops, in order to provide
11 teacher training and professional development for current
12 and potential K–12 STEM educators.

13 (d) AREAS OF FOCUS.—In carrying out this section,
14 the Director shall focus on—

15 (1) synthesizing the results of the Foundation’s
16 efforts in the training and professional development
17 of STEM educators;

18 (2) disseminating evidence-based content, peda-
19 gogy, tools, and best practices, as supported by
20 Foundation-sponsored education research, in areas
21 including active STEM education;

22 (3) assisting teachers in integrating evidence-
23 based content, pedagogy, tools, and best practices
24 into student instruction; and

1 (4) increasing teacher comfort with teaching
2 scientific concepts and engineering practices, as well
3 as with inquiry-based learning methods.

4 (e) FEDERAL COORDINATION.—The Director,
5 through collaboration with the National Science and Tech-
6 nology Council Committee on Science, Technology, Engi-
7 neering, and Math Education, shall ensure that Federal
8 support for teacher training and professional development
9 activities under this section are coordinated across Federal
10 science agencies and jointly supported, as appropriate.

11 (f) COLLABORATION.—Funded workshops and teach-
12 er training activities may occur in collaboration with in-
13 dustry, professional associations, nonprofit organizations,
14 and institutions of higher education, including community
15 colleges. Potential collaborations may include—

16 (1) professional development activities that fa-
17 cilitate teacher access to academic, government, and
18 industry STEM professionals;

19 (2) establishing or expanding projects designed
20 to recruit and train STEM educators; and

21 (3) industry, organization, or State or local
22 agency co-funding for teacher professional develop-
23 ment activities.

24 (g) REPORT.—The Director shall include, in the
25 Foundation annual budget report to Congress, a summary

1 of teacher training projects funded by the Foundation dur-
2 ing the previous fiscal year and the needs addressed by
3 each funded project.

4 **SEC. 507. ROBERT NOYCE TEACHER SCHOLARSHIP PRO-**
5 **GRAM.**

6 (a) FINDINGS.—Congress finds that—

7 (1) the Robert Noyce Teacher Scholarship Pro-
8 gram supports the development and dissemination of
9 evidence-based teacher preparation models and the
10 recruitment, preparation, and retention of STEM
11 educators;

12 (2) as a result of awards granted between fiscal
13 years 2002 and 2013, the Robert Noyce Teacher
14 Scholarship Program will support over 12,000 new
15 math and science teachers, including in high-need
16 districts; and

17 (3) independent evaluation suggests that the
18 Robert Noyce Teacher Scholarship Program im-
19 proves recruitment of underrepresented and STEM-
20 trained students into teaching, encourages teachers
21 to work in high-need areas, and can improve rela-
22 tionships between teacher preparation programs and
23 industry.

24 (b) RETENTION.—Section 10 of the National Science
25 Foundation Authorization Act of 2002 (42 U.S.C. 1862n–

1 1) is amended by amending subsection (k) to read as fol-
2 lows:

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

4 The Director shall develop and implement practices for in-
5 creasing the retention of STEM teachers funded under
6 this section in high-need districts, including rural areas.

7 Potential actions may include—

8 “(1) conducting research to better understand
9 factors relevant to teacher retention;

10 “(2) increasing the recruitment from high-need
11 districts;

12 “(3) partnering with nonprofit or professional
13 associations to provide teachers funded under this
14 section with more opportunities for professional de-
15 velopment and mentorship;

16 “(4) establishing a system to better collect,
17 track, and respond to data on the career decisions
18 of teachers funded under this section; and

19 “(5) conducting pilot programs to improve
20 teacher retention.”.

21 (c) EXPANSION.—Section 10 of the National Science
22 Foundation Authorization Act of 2002 (42 U.S.C. 1862n-
23 1) is amended by adding at the end the following:

1 “(m) EXPANSION.—The Director shall encourage the
2 expansion of the Robert Noyce Teacher Scholarship Pro-
3 gram by—

4 “(1) actively recruiting participation among and
5 providing proposal drafting assistance to institutions
6 of higher education that do not grant doctoral de-
7 grees, including associate-degree granting institu-
8 tions and community colleges;

9 “(2) encouraging a broad geographic distribu-
10 tion of funding recipients under this section through
11 increased outreach to geographic regions that have
12 been traditionally underfunded by the Robert Noyce
13 Teacher Scholarship Program, relative to other re-
14 gions; and

15 “(3) soliciting grant proposals that incorporate
16 technology into teacher training, including the devel-
17 opment of distance learning techniques to support
18 teacher training in rural areas.”.

19 **SEC. 508. EARLY UNDERGRADUATE RESEARCH OPPORTU-**
20 **NITIES.**

21 (a) FINDINGS.—Congress finds that—

22 (1) fewer than 40 percent of students who enter
23 college intending to pursue a STEM degree complete
24 a STEM degree;

1 (2) evaluations of the Foundation’s Research
2 Experiences for Undergraduates Program, which en-
3 gages undergraduate students in research activities,
4 suggest that research experiences increase partici-
5 pant awareness, confidence, and interest in research
6 fields; and

7 (3) providing research experiences, particularly
8 during the first 2 years of undergraduate education,
9 improves both persistence and performance in
10 STEM fields.

11 (b) GRANT AWARDS.—The Director shall support in-
12 novation in early undergraduate education, with a focus
13 on students in the first 2 years of undergraduate STEM
14 education. Potential awards may include grants to institu-
15 tions—

16 (1) to facilitate the expanded participation of
17 first or second year undergraduate students at re-
18 search sites designated by the Director to provide re-
19 search experiences for undergraduate students under
20 section 514 of the America COMPETES Reauthor-
21 ization Act of 2010 (42 U.S.C. 1862p–6) if the re-
22 quirements under paragraphs (1) through (6) of
23 subsection (a) of that section are met; and

24 (2) to implement innovative research and engi-
25 neering design courses, including those focusing on

1 mentorship or discovery-based learning, for first or
2 second year undergraduate students.

3 **SEC. 509. INFORMAL STEM EDUCATION.**

4 (a) IN GENERAL.—Subject to subsections (h) and (j),
5 the Director shall maintain a grant program to support
6 STEM learning activities in informal educational settings.
7 The purpose of the grant program shall be to improve
8 STEM engagement and outcomes, including among stu-
9 dents in kindergarten through twelfth grade.

10 (b) USE OF FUNDS.—Grants under this section may
11 support—

12 (1) research to identify best practices in infor-
13 mal STEM learning;

14 (2) designing, developing, implementing, evalu-
15 ating, or expanding innovative or promising informal
16 STEM learning activities, tools, or models;

17 (3) implementing, expanding, or evaluating evi-
18 dence-based informal STEM learning activities that
19 promote STEM education;

20 (4) developing communities of practice in infor-
21 mal STEM learning;

22 (5) improving the STEM and educational ex-
23 pertise of informal STEM educators; and

24 (6) creating a national network of institutions
25 involved in informal STEM learning.

1 (c) NATIONAL NETWORK.—The Director shall award,
2 in supporting the national network under subsection (b),
3 grants to foster partnerships between institutions involved
4 in informal science learning, institutions of higher edu-
5 cation, and education research centers. Funded activities
6 may include developing, adapting, and making available
7 informal STEM education activities and educational mate-
8 rials for broad implementation.

9 (d) KINDERGARTEN THROUGH EIGHTH GRADE INI-
10 TIATIVE FOR UNDERREPRESENTED GROUPS.—Within the
11 grant program established under subsection (a), the Direc-
12 tor shall support an initiative to engage underrepresented
13 students in kindergarten through the eighth grade in in-
14 formal STEM education activities. Activities funded
15 through the initiative may include—

16 (1) exposing underrepresented students to role
17 models and near-peer mentors in the STEM fields;

18 (2) providing for underrepresented students to
19 attend STEM-related events, competitions, and pro-
20 grams;

21 (3) providing information regarding STEM ca-
22 reer opportunities to underrepresented students and
23 their parents;

1 (4) training informal educators in the use of
2 evidence-based methods for engaging underrep-
3 resented students in STEM;

4 (5) engaging girls in STEM, including through
5 single-gender learning environments and hands-on,
6 inquiry-based learning programs; and

7 (6) any other activities described under sub-
8 section (b) that the Director considers relevant to
9 underrepresented students.

10 (e) ELIGIBILITY.—Grants under this section shall be
11 competitively awarded to organizations that provide infor-
12 mal STEM education activities to students in kinder-
13 garten through the twelfth grade, such as—

14 (1) State, local, and nonprofit or nongovern-
15 mental educational organizations;

16 (2) institutions of higher education;

17 (3) other education-oriented organizations, as
18 identified by the Director; and

19 (4) consortia of any institutions or organiza-
20 tions listed in paragraphs (1) through (3).

21 (f) APPLICATIONS.—An application for funding
22 under this section shall be submitted at such time and
23 in such manner and contain such information as the Di-
24 rector considers necessary. An application shall include,
25 at a minimum—

1 (1) a description of the student population to be
2 served by the activity;

3 (2) a description of the process for attracting,
4 recruiting, or selecting student participants;

5 (3) a description of how funded activities would
6 support research into engaging students, including
7 underrepresented students, in STEM and into pro-
8 moting their academic achievement;

9 (4) an evaluation plan consistent with the re-
10 quirements under subsection (g);

11 (5) a description of the applicant's experience
12 and expertise in providing informal education activi-
13 ties; and

14 (6) if an application is relevant to the initiative
15 in subsection (d), a description of the applicant's ex-
16 perience and expertise in increasing the participation
17 of underrepresented students in STEM.

18 (g) EVALUATIONS.—The Director shall require each
19 grant recipient under this section to submit an evaluation
20 at the conclusion of each fiscal year during which funds
21 are received under this section. The evaluation shall—

22 (1) include both formative and summative eval-
23 uations of the funded activity, using methods appro-
24 priate to the programs;

25 (2) be in a form prescribed by the Director; and

1 (3) be submitted to the Director.

2 (h) RESEARCH IMPACTS.—Each grant under this sec-
3 tion shall be relevant to research on student engagement
4 in STEM fields. In ensuring that grants help identify, de-
5 velop, implement, or propagate best practices in informal
6 STEM education, the Director may establish, as nec-
7 essary, additional reporting requirements for a grant re-
8 cipient under this section.

9 (i) BROADER IMPACTS.—The Director may encour-
10 age all Foundation research grant recipients, in satisfying
11 the Foundation’s Broader Impacts criterion, to dedicate
12 a portion of awarded funds to public engagement activities
13 conducted through sustained collaboration with an infor-
14 mal STEM education organization or initiative.

15 (j) LIMITATIONS.—A grant under this section may
16 not be used for construction of infrastructure.

17 (k) COORDINATION.—In carrying out this section, the
18 Director shall consult with other relevant Federal agen-
19 cies, and cooperate and coordinate with those Federal
20 agencies, as necessary, to avoid duplication with the pro-
21 grams and policies of those Federal agencies.

22 (l) ACCOUNTABILITY AND DISSEMINATION.—

23 (1) IN GENERAL.—Not later than 3 years after
24 the date of enactment of this Act, the Director shall
25 evaluate the grants under this section and, to the ex-

1 tent practicable, identify any research outputs, best
2 practices, and materials developed or demonstrated.

3 (2) REPORT.—Not later than 180 days after
4 the date the evaluation is complete, the Director
5 shall submit to the appropriate committees of Con-
6 gress and make widely available to the public a re-
7 port that includes—

8 (A) the results of the evaluation; and

9 (B) any recommendations for improving
10 informal STEM education, STEM engagement,
11 and STEM education outcomes among students
12 in kindergarten through twelfth grade.

13 **SEC. 510. BROADENING PARTICIPATION.**

14 (a) IN GENERAL.—The Director shall invest in
15 broadening the participation of underrepresented groups,
16 including minorities, women, and students from rural
17 areas, in STEM fields. Investments shall include competi-
18 tively awarded grants—

19 (1) to support institutions of higher education
20 in providing academic and social support for under-
21 represented groups;

22 (2) to facilitate student research activities;

23 (3) to establish, maintain, and expand partner-
24 ships, including research collaborations, between na-
25 tional research laboratories, Federal agencies, indus-

1 try, and minority-serving institutions (as described
2 in section 371 of title III of the Higher Education
3 Act of 1965 (20 U.S.C. 1067q(a))), including com-
4 munity colleges;

5 (4) to promote activities to improve, among
6 parents and students in underrepresented groups,
7 awareness of educational and career opportunities in
8 STEM fields;

9 (5) to conduct data collection and research ac-
10 tivities relevant to recruitment, retention, instruc-
11 tion, and curriculum development in STEM fields;
12 and

13 (6) to expand those projects that broaden the
14 participation of underrepresented groups in STEM
15 fields.

16 (b) USE OF FUNDS.—Grants to broaden the partici-
17 pation of underrepresented groups in STEM fields shall
18 support activities such as—

19 (1) mentoring programs that partner STEM
20 professionals with students;

21 (2) internships for undergraduate and graduate
22 students in STEM;

23 (3) outreach programs that provide elementary
24 and secondary school students with exposure to
25 STEM fields; and

1 (4) additional programs as the Director may
2 determine.

3 (c) EVALUATION.—The Director, for each broadening
4 participation program or portfolio of programs, shall—

5 (1) identify and include measurable objectives
6 and milestones in each program’s solicitation;

7 (2) encourage the collection of quantitative data
8 as relevant to the measurable objectives and mile-
9 stones under paragraph (1);

10 (3) engage external analysts in evaluating the
11 program or portfolio against the objectives and mile-
12 stones under paragraph (1);

13 (4) ensure that program or portfolio evaluations
14 focus on the educational outcomes and not just the
15 inputs, activities completed, or number of partici-
16 pants; and

17 (5) whenever relevant, conduct longitudinal or
18 comparison group studies.

19 **SEC. 511. PRIZES AND CHALLENGES FOR BROADENING**
20 **PARTICIPATION.**

21 (a) IN GENERAL.—In order to encourage the partici-
22 pation of underrepresented students in STEM fields, the
23 Director may establish a prize or challenge under the
24 America COMPETES Reauthorization Act of 2010 (Pub-

1 lie Law 111–358; 124 Stat. 3982) or under any other pro-
2 vision of law, as appropriate.

3 (b) PURPOSES.—The purpose of a prize or challenge
4 under this section, among other possible purposes, may
5 be—

6 (1) to recognize institutions of higher education
7 that have achieved sustained improvements in the
8 recruitment, retention, and graduation rates of
9 underrepresented students in STEM fields;

10 (2) to encourage innovation by institutions of
11 higher education in improving the recruitment, re-
12 tention, and graduation rates of underrepresented
13 students in STEM fields;

14 (3) to develop, identify, and broadly distribute
15 best practices in the recruitment, retention, and
16 graduation rates of underrepresented students in
17 STEM fields; or

18 (4) to address other issues related to the par-
19 ticipation of underrepresented groups in the STEM
20 fields, as the Director considers necessary.

21 (c) SELECTION.—Each prize award made under this
22 section shall be determined based on proven outcomes for
23 underrepresented students in STEM fields, as dem-
24 onstrated through rigorous, data-driven evaluation.

1 **SEC. 512. COMMERCIALIZATION GRANTS.**

2 (a) IN GENERAL.—The Director shall continue to
3 award grants to promote the translation of Foundation-
4 sponsored research discoveries into the marketplace.

5 (b) USE OF FUNDS.—Commercialization grants
6 awarded under this section may be used to fund activities
7 such as—

8 (1) identifying Foundation-sponsored research
9 and technologies that have the potential for acceler-
10 ated commercialization;

11 (2) supporting prior or current Foundation-
12 sponsored investigators in developing early-stage
13 proofs-of-concept and prototypes of technologies that
14 are derived from Foundation-sponsored research and
15 have potential market value;

16 (3) promoting sustainable partnerships between
17 Foundation-funded institutions, industry, and other
18 organizations within academia and the private sector
19 with the purpose of accelerating technology transfer;

20 (4) developing multi-disciplinary innovation eco-
21 systems which involve and are responsive to specific
22 needs of academia and industry; and

23 (5) providing professional development, men-
24 toring, and advice in entrepreneurship, project man-
25 agement, and technology and business development
26 to innovators.

1 (c) ELIGIBILITY.—

2 (1) IN GENERAL.—The following organizations
3 may be eligible for grants under this section:

4 (A) Institutions of higher education.

5 (B) Public technology transfer organiza-
6 tions.

7 (C) Nonprofit technology transfer organi-
8 zations.

9 (D) A consortia of 2 or more of the organi-
10 zations described under subparagraphs (A)
11 through (C).

12 (2) LEAD ORGANIZATIONS.—Any eligible orga-
13 nization under paragraph (1) may apply as a lead
14 organization.

15 (d) APPLICATIONS.—An organization seeking a grant
16 under this section shall be required to meet such require-
17 ments and to submit an application to the Director at such
18 time, in such manner, and containing such information as
19 the Director may require. The Director shall—

20 (1) solicit applications from Foundation grants
21 recipients who have developed technologies with the
22 potential for commercialization; and

23 (2) seek from Foundation offices and divisions
24 recommendations on outstanding Foundation-spon-

1 sored research with clear potential for commer-
2 cialization within a 3- to 10-year period.

3 (e) REPORT.—Not later than 3 years after the date
4 of enactment of this Act, the Director shall—

5 (1) report to the appropriate committees of
6 Congress on the impact of commercialization grants
7 described under subsections (a) and (b); and

8 (2) make recommendations on whether and how
9 a technology commercialization mechanism could be
10 adopted by other Federal science agencies.

11 **SEC. 513. NATIONAL SCIENCE FOUNDATION INNOVATION**
12 **CORPS.**

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

15 (1) The National Science Foundation Innova-
16 tion Corps (referred to in this section as the “I-
17 Corps”) was established to foster a national innova-
18 tion ecosystem by encouraging institutions, sci-
19 entists, engineers, and entrepreneurs to identify and
20 explore the potential of Foundation-funded research
21 well beyond the laboratory.

22 (2) Through I-Corps, the Foundation invests in
23 entrepreneurship and commercialization education,
24 training, and mentoring that can ultimately lead to
25 the practical deployment of technologies, products,

1 processes, and services that improve the Nation's
2 competitiveness and benefit society.

3 (b) SENSE OF CONGRESS.—It is the sense of Con-
4 gress that, in order to promote a strong, lasting founda-
5 tion for the American innovation ecosystem, I-Corps
6 should continue to build a network of entrepreneurs, edu-
7 cators, mentors, and institutions and support specialized
8 education and training.

9 (c) EXPANSION OF I-CORPS AND SIMILAR PRO-
10 GRAMS.—

11 (1) IN GENERAL.—The Director shall encour-
12 age the development and expansion of I-Corps and
13 of other training programs that focus on graduate
14 student professional development, including edu-
15 cation in product commercialization and entrepre-
16 neurship. To facilitate this development and expan-
17 sion, the Director may establish agreements with
18 other Federal agencies that fund scientific research
19 and development to allow researchers funded by
20 those agencies to participate in the I-Corps program.

21 (2) TWENTY-FIRST CENTURY GRADUATE EDU-
22 CATION.—Sections 527(b) of the America COM-
23 PETES Reauthorization Act of 2010 (42 U.S.C.
24 1862p-15(b)) is amended—

1 (A) by striking paragraphs (6) and (7);
2 and

3 (B) by inserting after paragraph (5) the
4 following:

5 “(6) development and implementation of semi-
6 nars, workshops, and other professional development
7 activities that increase the ability of graduate stu-
8 dents to engage in innovation, technology transfer,
9 research commercialization, and entrepreneurship;

10 “(7) development and implementation of semi-
11 nars, workshops, and other professional development
12 activities that increase the ability of graduate stu-
13 dents to effectively communicate their research find-
14 ings to technical audiences outside of their own dis-
15 cipline and to nontechnical audiences, including po-
16 tential commercial partners and investors;”.

17 **SEC. 514. GRADUATE TRAINEESHIP GRANT PROGRAM.**

18 (a) ESTABLISHMENT.—Not later than 1 year after
19 the date of enactment of this Act, the Director shall estab-
20 lish a grant program to incentivize the establishment, im-
21 provement, or expansion of qualifying traineeship pro-
22 grams for graduate students.

23 (b) AWARDS TO ELIGIBLE INSTITUTIONS.—

24 (1) IN GENERAL.—The Director may award a
25 grant under this section, in an amount determined

1 by the Director, to an eligible institution for the es-
2 tablishment, improvement, or expansion of a quali-
3 fying traineeship program.

4 (2) PARTNERSHIP.—An eligible institution may
5 partner with 1 or more nonprofit education or re-
6 search organizations, including scientific and engi-
7 neering societies, for the purposes of carrying out
8 the activities authorized under this section.

9 (3) USE OF FUNDS.—A grant to an eligible in-
10 stitution may be used—

11 (A) to provide up to 5 years of student
12 support to trainees, including stipends, tuition
13 and fees, education allowances, and support for
14 ancillary needs; and

15 (B) to fund permissible activities.

16 (4) PERMISSIBLE ACTIVITIES.—Activities sup-
17 ported by grants to eligible institutions under this
18 section may include—

19 (A) designing curricula that combine edu-
20 cational content with professional skill develop-
21 ment relevant to a diversity of career pathways;

22 (B) advancing a multi-disciplinary focus
23 that applies advanced knowledge to problem
24 solving in multiple areas;

1 (C) providing opportunities for graduate
2 students to gain teamwork, oral communication,
3 planning and project management, writing,
4 presentation, and entrepreneurial skills;

5 (D) creating advisory committees of em-
6 ployers to provide input and expertise in design-
7 ing or modifying graduate education programs;

8 (E) providing graduate students with re-
9 sources and guidance for a variety of career
10 pathways; and

11 (F) implementing an accountability and re-
12 porting system which tracks enrollment, com-
13 pletion rates, and job placement information for
14 the trainees supported under the traineeship
15 program.

16 (5) NON-FEDERAL MATCHING.—An eligible in-
17 stitution receiving funding under this section for the
18 establishment, improvement, or expansion of a quali-
19 fying traineeship program may be required to con-
20 tribute non-Federal funds to the effort in an amount
21 that is significant and specified by the Director.

22 (c) AWARDS TO INDIVIDUALS.—The Director may
23 award a grant under this section to a Foundation-sup-
24 ported principal investigator, graduate student, or post-
25 doctoral fellow, in an amount determined by the Director,

1 to support professional skills development through partici-
2 pation in a qualifying traineeship program.

3 (d) MERIT REVIEW.—

4 (1) IN GENERAL.—Each grant awarded under
5 this section shall be provided on a competitive,
6 merit-reviewed basis.

7 (2) CONSIDERATIONS.—In selecting an eligible
8 institution to receive a grant under subsection (b),
9 the Director shall consider at a minimum—

10 (A) the likelihood of success in under-
11 taking the proposed effort at the eligible insti-
12 tution submitting the application;

13 (B) the evidence of long-term organiza-
14 tional support for the existing or proposed
15 traineeship program; and

16 (C) the inclusion of plans for the assess-
17 ment of the existing or proposed traineeship
18 program and for the dissemination of best prac-
19 tices.

20 (e) EVALUATION.—The Director shall evaluate the
21 traineeship grant program established under this section
22 not later than 6 years after the date the program is estab-
23 lished. At a minimum, the Director shall evaluate the ex-
24 tent to which the program has achieved the objective of
25 supporting career development among graduate students.

1 (f) DEFINITIONS.—In this section:

2 (1) ELIGIBLE INSTITUTION.—The term “eligi-
3 ble institution” means an institution of higher edu-
4 cation.

5 (2) QUALIFYING TRAINEESHIP PROGRAM.—The
6 term “qualifying traineeship program” means a
7 traineeship program designed—

8 (A) to provide graduate students with ca-
9 reer experience related to the graduate stu-
10 dents’ fields of study;

11 (B) to increase the relevance of academic
12 preparation to national workforce needs, includ-
13 ing the needs of industry or Federal, State, or
14 local government;

15 (C) to support education and experience in
16 entrepreneurship and commercialization; and

17 (D) to provide for tuition and fees and
18 such stipends and allowances, including travel
19 and subsistence expenses and dependency allow-
20 ances, for the trainees as the Director considers
21 necessary.

1 **SEC. 515. THE EXPERIMENTAL PROGRAM TO STIMULATE**
2 **COMPETITIVE RESEARCH.**

3 (a) FINDINGS.—Section 517(a) of the America COM-
4 PETES Reauthorization Act of 2010 (42 U.S.C. 1862p-
5 9(a)) is amended—

6 (1) in paragraph (1)—

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

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

11 (2) in paragraph (2), by striking “with 27
12 States and 2 jurisdictions, taken together, receiving
13 only about 10 percent of all NSF’ research funding”
14 and inserting “with 28 States and 3 jurisdictions,
15 taken together, receiving only about 12 percent of all
16 National Science Foundation research funding”;

17 (3) by striking paragraph (3); and

18 (4) by inserting after paragraph (2) the fol-
19 lowing:

20 “(3) first established at the National Science
21 Foundation in 1979, the Experimental Program to
22 Stimulate Competitive Research (referred to in this
23 section as ‘EPSCoR’) assists States and jurisdic-
24 tions historically underserved by Federal research
25 and development funding in strengthening their re-
26 search and innovation capabilities;

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

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

11 “(6) EPSCoR proposals are evaluated through
12 rigorous and competitive merit-review processes to
13 ensure that awarded research and development ef-
14 forts meet high scientific standards; and

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

20 (b) SENSE OF CONGRESS.—

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

23 (A) since maintaining the Nation’s sci-
24 entific and economic leadership requires the
25 participation of talented individuals nationwide,

1 EPSCoR investments into State research and
2 education capacities are in the Federal interest
3 and should be sustained; and

4 (B) EPSCoR should maintain its experi-
5 mental component by supporting innovative
6 methods for improving research capacity and
7 competitiveness.

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

13 (c) CONTINUATION OF EPSCOR.—Section 517(b) of
14 the America COMPETES Reauthorization Act of 2010
15 (42 U.S.C. 1862p–9(b)) is amended to read as follows:

16 “(b) CONTINUATION OF PROGRAM.—The Director
17 shall continue to carry out EPSCoR, with the objective
18 of helping the eligible States to develop the research infra-
19 structure that will make them more competitive for Foun-
20 dation research funding. The program shall continue to
21 increase at least as the National Science Foundation fund-
22 ing increases.”.

23 (d) AWARD STRUCTURE STUDY.—Section 517 of the
24 America COMPETES Reauthorization Act of 2010 (42

1 U.S.C. 1862p–9) is amended by adding at the end the fol-
2 lowing:

3 “(g) AWARD STRUCTURE PLAN.—In implementing
4 its mandate to maximize the impact of Federal EPSCoR
5 support on building competitive research infrastructure,
6 and based on the inputs and recommendations of previous
7 EPSCoR reviews, the EPSCoR Interagency Coordinating
8 Committee shall develop a plan that, at a minimum—

9 “(1) considers modifications to EPSCoR pro-
10 posal solicitation, award type, and project evalua-
11 tion—

12 “(A) to better reflect current agency prior-
13 ities;

14 “(B) to focus EPSCoR funding on achiev-
15 ing critical scientific, infrastructure, and edu-
16 cational needs of participating agencies and ju-
17 risdictions;

18 “(C) to encourage collaboration between
19 EPSCoR-eligible institutions and researchers,
20 including with institutions and researchers in
21 other States and jurisdictions;

22 “(D) to improve communication between
23 State and Federal agency proposal reviewers;
24 and

1 “(E) to continue to reduce administrative
2 burdens associated with EPSCoR;

3 “(2) considers modifications to EPSCoR award
4 structures—

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

9 “(B) to allow participating agencies,
10 States, and jurisdictions to experiment with
11 new research and development funding models;
12 and

13 “(3) considers modifications to the mechanisms
14 used to monitor and evaluate EPSCoR awards—

15 “(A) to increase collaboration between
16 EPSCoR-funded researchers and agency staff,
17 including by providing opportunities for men-
18 toring young researchers and for the use of
19 Federal facilities;

20 “(B) to identify and disseminate best prac-
21 tices; and

22 “(C) to harmonize metrics across partici-
23 pating agencies, as appropriate.”.

24 (e) REPORTS.—

1 (1) CONGRESSIONAL REPORTS.—Section 517 of
2 the America COMPETES Reauthorization Act of
3 2010 (42 U.S.C. 1862p–9), as amended, is further
4 amended—

5 (A) by striking subsection (c);

6 (B) by redesignating subsections (d)
7 through (g) as subsections (c) through (f), re-
8 spectively; and

9 (C) by amending subsection (d), as redes-
10 ignated, to read as follows:

11 “(d) FEDERAL AGENCY REPORTS.—Each Federal
12 agency that administers an EPSCoR program, as part of
13 its Federal budget submission, shall submit to the appro-
14 priate committees of Congress—

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

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

19 “(A) the total amount made available, by
20 State, under EPSCoR;

21 “(B) if applicable, the amount of co-fund-
22 ing made available to each EPSCoR State;

23 “(C) the total amount of agency funding
24 made available to all institutions and entities
25 within each EPSCoR State;

1 “(D) the efforts and accomplishments to
2 more fully integrate the EPSCoR States in
3 major agency activities and initiatives;

4 “(E) the percentage of reviewers and num-
5 ber of new reviewers from EPSCoR States;

6 “(F) the percentage of new investigators
7 from EPSCoR States; and

8 “(G) the number of programs or large col-
9 laborator awards involving a partnership of or-
10 ganizations and institutions from EPSCoR and
11 non-EPSCoR States; and

12 “(3) an analysis of the gains in academic re-
13 search quality and competitiveness, and in science
14 and technology human resource development,
15 achieved by the program over the last 5 fiscal
16 years.”.

17 (2) RESULTS OF AWARD STRUCTURE PLAN.—In
18 its first annual report after the date of enactment of
19 this Act, the EPSCoR Interagency Coordinating
20 Committee shall submit to the appropriate commit-
21 tees of Congress the results of the plan under 517(f)
22 of the America COMPETES Reauthorization Act of
23 2010 (42 U.S.C. 1862p–9(f)).

24 (f) DEFINITION OF EPSCoR.—Section 502 of the
25 America COMPETES Reauthorization Act of 2010 (42

1 U.S.C. 1862p note) is amended by amending paragraph
2 (2) to read as follows:

3 “(2) EPSCoR.—The term ‘EPSCoR’ means—

4 “(A) the Experimental Program to Stimu-
5 late Competitive Research; or

6 “(B) a program similar to the Experi-
7 mental Program to Stimulate Competitive Re-
8 search at another Federal agency.”.

9 **SEC. 516. ASSESSING NATIONAL K-12 SCIENCE AND ENGI-**
10 **NEERING PROFICIENCY.**

11 (a) METRICS.—The National Science Board shall as-
12 sess, for inclusion in the biennial report to the President
13 and Congress under section 4(j) of the National Science
14 Foundation Act of 1950 (42 U.S.C. 1863(j)), potential
15 metrics for evaluating science and engineering comprehen-
16 sion for grades K–12. In conducting its assessment, the
17 National Science Board shall consider including metrics
18 that—

19 (1) assess student understanding of science and
20 engineering practices and their application to real-
21 world situations;

22 (2) address student comprehension of core
23 science and engineering principles;

24 (3) emphasize student engagement in and expo-
25 sure to science and engineering practices; and

1 (4) measure student ability to develop and use
2 science and engineering knowledge.

3 (b) CONSULTATION.—In conducting its assessment,
4 the National Science Board shall consult Federal, State,
5 local, and private sector experts and draw upon available
6 studies relevant to science and engineering education and
7 assessment.

8 (c) REPORT.—Not later than 1 year after the date
9 of enactment of this Act, the National Science Board shall
10 transmit to the appropriate committees of Congress a re-
11 port detailing potential methodologies for assessing trends
12 in national science and engineering proficiency for grades
13 K–12. At a minimum, the report shall include—

14 (1) a detailed list of recommended metrics for
15 evaluating science and engineering proficiency;

16 (2) an assessment of any potential costs and
17 challenges in assessing science and engineering pro-
18 ficiency nationally; and

19 (3) a recommendation on how best, if at all, to
20 integrate the science and engineering proficiency
21 metrics into the report required under section 4(j) of
22 the National Science Foundation Act of 1950 (42
23 U.S.C. 1863(j)).

1 **SEC. 517. INTEGRATIVE GRADUATE EDUCATION AND RE-**
2 **SEARCH TRAINEESHIP PROGRAM.**

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

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

7 “(1) RATE OF FUNDING INCREASE.—Beginning
8 in the first fiscal year after the date of enactment
9 of the America COMPETES Reauthorization Act of
10 2014 and each fiscal year thereafter, the Director
11 may only increase funding for the Foundation’s
12 Graduate Research Fellowship program (or any suc-
13 cessor thereto), relative to the previous fiscal year’s
14 funding level, at the same rate as a corresponding
15 funding increase to the Foundation’s Integrative
16 Graduate Education and Research Traineeship pro-
17 gram (or any successor thereto).

18 “(2) ESSENTIAL ELEMENTS OF IGERT.—The
19 essential elements of the Foundation’s Integrative
20 Graduate Education and Research Traineeship pro-
21 gram (or any successor thereto) shall be maintained,
22 including—

23 “(A) collaborative research that transcends
24 traditional disciplinary boundaries to solve large
25 and complex research problems of significant
26 scientific and societal importance;

1 “(B) providing students the opportunity to
2 become leaders in the science and engineering
3 of the future; and

4 “(C) that U.S. academic institutions in the
5 United States, its territories, or possessions
6 that grant a Ph.D. degree in science, tech-
7 nology, engineering, or mathematics are eligible
8 to be lead institutions.”.

9 **SEC. 518. STEM EDUCATION PARTNERSHIPS.**

10 Section 9 of the National Science Foundation Au-
11 thorization Act of 2002 (42 U.S.C. 1862n) is amended—

12 (1) in the section heading, by striking “**MATH-**
13 **EMATICS AND SCIENCE**” and inserting “**STEM**”;

14 (2) in subsection (a)—

15 (A) by striking “mathematics and science”
16 each place it appears and inserting “STEM”;

17 (B) by striking “mathematics or science”
18 each place it appears in and inserting “STEM”;

19 (C) by striking “mathematics, science, and
20 technology” each place it appears and inserting
21 “STEM”;

22 (D) in paragraph (2)(B), by striking
23 “mathematics, science, or engineering” and in-
24 serting “STEM”;

25 (E) in paragraph (3)—

1 (i) in subparagraph (F), by striking
2 “professional mathematicians, scientists,
3 and engineers” and inserting “STEM pro-
4 fessionals”;

5 (ii) in subparagraph (J), by striking
6 “mathematicians, scientists, and engi-
7 neers” and inserting “STEM profes-
8 sionals”;

9 (iii) in subparagraph (K), by striking
10 “science, technology, engineering, and
11 mathematics” each place it appears and in-
12 sserting “STEM”; and

13 (iv) in subparagraph (M), by striking
14 “mathematicians, scientists, and engi-
15 neers” and inserting “STEM profes-
16 sionals”;

17 (F) in paragraph (5)—

18 (i) by striking “SCIENCE” in the
19 heading and inserting “STEM”;

20 (ii) by striking “science, mathematics,
21 engineering, and technology” each place it
22 appears and inserting “STEM”; and

23 (iii) by striking “science, mathe-
24 matics, engineering, or technology” and in-
25 sserting “STEM”;

1 (G) in paragraph (8), by striking “sci-
2 entists, technologists, engineers, or mathemati-
3 cians” and inserting “STEM professionals”;
4 and

5 (H) in paragraph (10)—

6 (i) by striking “science, technology,
7 engineering, and mathematics” each place
8 it appears and inserting “STEM”; and

9 (ii) in subparagraph (A)(ii)(II), by
10 striking “science, technology, engineering,
11 or mathematics” and inserting “STEM”;

12 (3) in subsection (b)—

13 (A) by striking “mathematics and science”
14 each place it appears and inserting “STEM”;

15 (B) in paragraphs (1)(B)(iv), by striking
16 “mathematics, science, engineering, and tech-
17 nology” and inserting “STEM”; and

18 (C) in paragraph (2)(G), by striking
19 “mathematics, science, engineering, and tech-
20 nology” and inserting “STEM”; and

21 (4) by amending subsection (d) to read as fol-
22 lows:

23 “(d) DEFINITIONS.—In this section:

1 “(1) STEM.—The term ‘STEM’ means science,
2 technology, engineering, and mathematics, including
3 computing and computer science.

4 “(2) STEM TEACHER.—The term ‘STEM
5 teacher’ means a science, technology, engineering,
6 mathematics, or computing teacher at the elemen-
7 tary school or secondary school level.

8 “(3) SCIENCE.—In the context of elementary
9 and secondary education, the term ‘science’ includes
10 technology and pre-engineering.”.

11 **Subtitle B—STEM Secondary** 12 **Schools**

13 **SEC. 521. REPORT ON STEM SECONDARY SCHOOLS.**

14 (a) DATABASE.—The Secretary of Education, in co-
15 ordination with the Director of the National Science Foun-
16 dation, shall develop a database to identify existing STEM
17 secondary schools.

18 (b) REPORT.—Not later than 1 year after the date
19 of enactment of this Act, the Secretary of Education, in
20 coordination with the Director of the National Science
21 Foundation, shall submit a report to Congress with rec-
22 ommendations on how to replicate existing successful
23 STEM secondary schools.

1 **SEC. 522. FUNDING FOR STEM SECONDARY SCHOOLS.**

2 (a) PURPOSE.—The purpose of this section is to in-
3 crease the number of STEM secondary schools in the
4 United States.

5 (b) PROGRAM AUTHORIZED.—

6 (1) IN GENERAL.—The Secretary of Education,
7 in coordination with the Director of the National
8 Science Foundation, shall award grants, on a com-
9 petitive basis, to State educational agencies to en-
10 able the State educational agencies to carry out the
11 purpose of this section by establishing or expanding
12 STEM secondary schools.

13 (2) GEOGRAPHIC DISTRIBUTION.—The Sec-
14 retary of Education shall award grants under this
15 section in a manner that ensures geographic diver-
16 sity, including awarding grants to State educational
17 agencies serving rural areas.

18 (c) APPLICATION.—A State educational agency desir-
19 ing to receive a grant under this section shall submit an
20 application to the Secretary of Education at such time,
21 in such manner, and containing such information as the
22 Secretary may require.

23 (d) USE OF FUNDS.—A State educational agency re-
24 ceiving funds under this section shall use such funds to
25 award subgrants, on a competitive basis, to local edu-
26 cational agencies in the State to enable the local edu-

1 cational agencies to establish and maintain new STEM
2 secondary schools, which may include repurposing an ex-
3 isting secondary school to become a STEM secondary
4 school.

5 **TITLE VI—INNOVATION**
6 **Subtitle A—Innovation Ecosystems**

7 **SEC. 611. REGIONAL INNOVATION PROGRAM.**

8 (a) LOAN GUARANTEES FOR SCIENCE PARK INFRA-
9 STRUCTURE.—Section 27(d) of the Stevenson-Wydler
10 Technology Innovation Act of 1980 (15 U.S.C. 3722(d))
11 is amended—

12 (1) by striking paragraphs (1) and (2) and in-
13 serting the following:

14 “(1) IN GENERAL.—Subject to paragraph (2),
15 the Secretary may guarantee 1 or more loans for
16 projects for the construction or expansion, including
17 renovation and modernization, of science park infra-
18 structure.

19 “(2) LIMITATIONS.—

20 “(A) TYPE.—In guaranteeing a loan under
21 paragraph (1), the Secretary may only guar-
22 antee 1 of the following:

23 “(i) Payment of up to 80 percent of
24 the loan principal.

1 “(ii) Not more than 3 years of debt
2 service payments on the loan.

3 “(B) SIZE.—The maximum amount of
4 loan principal guaranteed under this subsection
5 may not exceed—

6 “(i) \$50,000,000 with respect to any
7 single project; and

8 “(ii) \$300,000,000 with respect to all
9 projects.”;

10 (2) in paragraph (4)—

11 (A) by striking subparagraph (D); and

12 (B) by redesignating subparagraphs (E)
13 through (G) as subparagraphs (D) through (F),
14 respectively;

15 (3) by striking paragraph (7) and inserting the
16 following:

17 “(7) TAX TREATMENT.—Section 149(b) of the
18 Internal Revenue Code of 1986 shall not apply to
19 bonds guaranteed under this subsection.”; and

20 (4) by amending paragraph (8) to read as fol-
21 lows:

22 “(8) AUTHORIZATION OF APPROPRIATIONS.—

23 “(A) IN GENERAL.—There is authorized to
24 be appropriated for the cost (as defined in sec-
25 tion 502 of the Congressional Budget Act of

1 1974 (2 U.S.C. 661a)) of guaranteeing loans
2 under this section, \$7,000,000 for each of fiscal
3 years 2015 through 2019.

4 “(B) AVAILABILITY.—Amounts appro-
5 priated or otherwise made available under sub-
6 paragraph (A) shall remain available for guar-
7 anteeing loans as described in such subpara-
8 graph until expended.”.

9 (b) AUTHORIZATION OF APPROPRIATIONS FOR RE-
10 GIONAL INNOVATION PROGRAM FOR FISCAL YEARS 2015
11 THROUGH 2019.—Section 27(i) of the Stevenson-Wydler
12 Technology Innovation Act of 1980 (15 U.S.C. 3722(i))
13 is amended to read as follows:

14 “(i) AUTHORIZATION OF APPROPRIATIONS.—Except
15 as provided in subsection (d)(8), there is authorized to be
16 appropriated to carry out this section, other than for loan
17 guarantees under subsection (d), \$25,000,000 for each of
18 fiscal years 2015 through 2019.”.

19 (c) REPORT ON REGIONAL INNOVATION CLUS-
20 TERS.—Not later than 1 year after the date of the enact-
21 ment of this Act, the Secretary of Commerce shall submit
22 to the Committee on Commerce, Science, and Transpor-
23 tation of the Senate and the Committee on Energy and
24 Commerce of the House of Representatives a report de-
25 scribing—

1 (1) the achievements of the regional innovation
2 clusters formed or developed with the support of
3 grants awarded under section 27(i) of the Steven-
4 son-Wydler Technology Innovation Act of 1980 (15
5 U.S.C. 3722(i)); and

6 (2) the economic benefits and job creation at-
7 tributable to such regional innovation clusters with,
8 to the extent practical, quantifiable data.

9 **SEC. 612. WORKFORCE STUDIES.**

10 (a) REPORT ON THE STEM WORKFORCE.—

11 (1) IN GENERAL.—Not later than 90 days after
12 the date of enactment of this Act, the Secretary of
13 Commerce, in consultation with the Chair of the Na-
14 tional Science and Technology Council Committee on
15 STEM Education, shall conduct a study of the cur-
16 rent and projected state of the Nation’s available
17 STEM workforce.

18 (2) CONTENT.—The study shall include—

19 (A) an assessment of demands for and the
20 availability of STEM professionals within the
21 U.S. workforce, currently and as projected over
22 the next decade, with data categorized by indus-
23 try or industry sector, as practicable;

24 (B) an assessment of the availability of
25 STEM professionals within the U.S. workforce,

1 currently and as projected over the next decade,
2 as required to meet the demand for STEM pro-
3 fessionals within industry, academia, and the
4 Federal Government;

5 (C) an assessment of the most common
6 STEM-skill requirements within industry, aca-
7 demia, and the Federal Government, currently
8 and as projected over the next decade;

9 (D) an identification of—

10 (i) the STEM skills that are most
11 needed in the current and projected avail-
12 able STEM workforce; and

13 (ii) the industries or industry sectors
14 most likely to be affected, over the next
15 decade, by the needs identified under
16 clause (i); and

17 (E) priorities for STEM training, as in-
18 formed by the assessments and identifications
19 under this section.

20 (3) INPUT.—The study shall draw on previous
21 data collection and reports related to STEM work-
22 force needs in the United States, as appropriate.

23 (4) REPORT.—Not later than 540 days after
24 the date enactment of this Act, the Secretary of
25 Commerce shall report to the appropriate commit-

1 tees of Congress the findings of the study, including
2 any recommendations to update the Federal 5-year
3 STEM education strategic plan to develop the avail-
4 able STEM workforce based on the assessment
5 under this subsection.

6 (b) REPEAL.—Section 303 of the America COM-
7 PETES Reauthorization Act of 2010 (33 U.S.C. 893c)
8 is repealed.

9 **SEC. 613. NATIONAL STRATEGIC PLAN FOR ADVANCED**
10 **MANUFACTURING.**

11 Section 102 of the America COMPETES Reauthor-
12 ization Act of 2010 (42 U.S.C. 6622) is amended—

13 (1) in subsection (a), by adding at the end the
14 following: “In furtherance of the Committee’s work,
15 the Committee shall consult with the National Eco-
16 nomic Council.”;

17 (2) in subsection (b), by striking paragraph (7)
18 and inserting the following:

19 “(7) develop and update a national strategic
20 plan for advanced manufacturing in accordance with
21 subsection (c).”; and

22 (3) by striking subsection (c) and inserting the
23 following:

24 “(c) NATIONAL STRATEGIC PLAN FOR ADVANCED
25 MANUFACTURING.—

1 “(1) IN GENERAL.—The President shall submit
2 to Congress, and publish on an Internet website that
3 is accessible to the public, the strategic plan devel-
4 oped under paragraph (2).

5 “(2) DEVELOPMENT.—The Committee shall de-
6 velop and update as required under paragraph (4),
7 in coordination with the National Economic Council,
8 a strategic plan to improve Government coordination
9 and provide long-term guidance for Federal pro-
10 grams and activities in support of United States
11 manufacturing competitiveness, including advanced
12 manufacturing research and development.

13 “(3) CONTENTS.—The strategic plan described
14 in paragraph (2) shall—

15 “(A) specify and prioritize near-term and
16 long-term objectives, including research and de-
17 velopment objectives, the anticipated timeframe
18 for achieving the objectives, and the metrics for
19 use in assessing progress toward the objectives;

20 “(B) describe the progress made in achiev-
21 ing the objectives from prior strategic plans, in-
22 cluding a discussion of why specific objectives
23 were not met;

24 “(C) specify the role, including the pro-
25 grams and activities, of each relevant Federal

1 agency in meeting the objectives of the strategic
2 plan;

3 “(D) describe how the Federal agencies
4 and federally funded research and development
5 centers supporting advanced manufacturing re-
6 search and development will foster the transfer
7 of research and development results into new
8 manufacturing technologies and United States
9 based manufacturing of new products and proc-
10 esses for the benefit of society to ensure na-
11 tional, energy, and economic security;

12 “(E) describe how such Federal agencies
13 and centers will strengthen all levels of manu-
14 facturing education and training programs to
15 ensure an adequate, well-trained workforce;

16 “(F) describe how such Federal agencies
17 and centers will assist small- and medium-sized
18 manufacturers in developing and implementing
19 new products and processes;

20 “(G) analyze factors that impact innova-
21 tion and competitiveness for United States ad-
22 vanced manufacturing, including—

23 “(i) technology transfer and commer-
24 cialization activities;

1 “(ii) the adequacy of the national se-
2 curity industrial base;

3 “(iii) the capabilities of the domestic
4 manufacturing workforce;

5 “(iv) export opportunities and trade
6 policies;

7 “(v) financing, investment, and tax-
8 ation policies and practices;

9 “(vi) emerging technologies and mar-
10 kets; and

11 “(vii) advanced manufacturing re-
12 search and development undertaken by
13 competing nations; and

14 “(H) elicit and consider the recommenda-
15 tions of a wide range of stakeholders, including
16 representatives from diverse manufacturing
17 companies, academia, and other relevant orga-
18 nizations and institutions.

19 “(4) UPDATES.—Not later than May 1, 2018,
20 and not less frequently than once every 4 years
21 thereafter, the President shall submit to Congress,
22 and publish on an Internet website that is accessible
23 to the public, an update of the strategic plan sub-
24 mitted under paragraph (1). Such updates shall be

1 developed in accordance with the procedures set
2 forth under this subsection.

3 “(5) REQUIREMENT TO CONSIDER STRATEGY IN
4 THE BUDGET.—In preparing the budget for a fiscal
5 year under section 1105(a) of title 31, United States
6 Code, the President shall include information re-
7 garding the consistency of the budget with the goals
8 and recommendations included in the strategic plan
9 developed under this subsection applying to that fis-
10 cal year.

11 “(6) AMP STEERING COMMITTEE INPUT.—The
12 Advanced Manufacturing Partnership Steering Com-
13 mittee of the President’s Council of Advisors on
14 Science and Technology shall provide input, perspec-
15 tive, and recommendations to assist in the develop-
16 ment and updates of the strategic plan under this
17 subsection.”.

18 **SEC. 614. SENSE OF CONGRESS; OPTICS AND PHOTONICS**

19 **INNOVATIONS.**

20 It is the sense of Congress that—

21 (1) optics and photonics research and tech-
22 nologies promote U.S. global competitiveness in in-
23 dustry sectors, including telecommunications and in-
24 formation technology, energy, healthcare and medi-
25 cine, manufacturing, and defense;

1 (2) Federal science agencies, industry, and aca-
2 demia should seek partnerships to develop basic re-
3 search in optics and photonics into more mature
4 technologies and capabilities; and

5 (3) Federal science agencies, as appropriate,
6 should—

7 (A) identify optics and photonics-related
8 programs within their agencies; and

9 (B) partner with the private sector and
10 academia to leverage knowledge and resources
11 and to promote innovation in optics and
12 photonics.

13 **Subtitle B—National** 14 **Nanotechnology Initiative**

15 **SEC. 621. SHORT TITLE.**

16 This subtitle may be cited as the “National Nano-
17 technology Initiative Amendments Act of 2014”.

18 **SEC. 622. FINDINGS.**

19 Congress makes the following findings:

20 (1) The National Nanotechnology Initiative is a
21 multiagency Federal Government research and devel-
22 opment program established in 2001.

23 (2) As of the date of the enactment of this Act,
24 more than \$18,000,000,000 has been invested in

1 nanoscience and nanotechnology through the Na-
2 tional Nanotechnology Initiative.

3 (3) Of the 20 agencies participating in the Na-
4 tional Nanotechnology Initiative, 11 have budgets
5 for nanotechnology-related research and develop-
6 ment.

7 (4) Research supported by the National Nano-
8 technology Initiative is advancing our fundamental
9 understanding and techniques to enable the meas-
10 urement, manipulation, and control of matter at the
11 nanoscale.

12 (5) In order for U.S. companies and society to
13 benefit from this research, the National Nanotech-
14 nology Initiative needs to support the engineering,
15 scale-up, and commercialization of nanotechnology-
16 enabled materials, devices, systems, and products.

17 (6) An important achievement of the National
18 Nanotechnology Initiative is the development of an
19 extensive infrastructure of interdisciplinary research,
20 development, and education centers, networks, and
21 user facilities that should be continued, supported,
22 and expanded.

23 (7) The field of nanotechnology is expanding
24 rapidly and is projected to develop closely with other
25 emerging and converging bio and information tech-

1 nologies, creating new science and engineering do-
2 mains and manufacturing paradigms.

3 (8) The United States is the world leader in
4 nanoscience and nanotechnology and the creation of
5 nanotechnology knowledge as measured by the num-
6 ber and quality of scientific papers and patents.
7 However, international indicators, such as foreign
8 government and corporate funding and publications
9 and patent applications, suggest that the United
10 States is facing increasing global competition in
11 nanotechnology.

12 (9) The National Nanotechnology Initiative is
13 making important contributions to research, respon-
14 sible development, and infrastructure relating to
15 nanotechnology and in the commercialization of
16 nanotechnology.

17 **SEC. 623. ENHANCEMENT OF MANAGEMENT OF NATIONAL**
18 **NANOTECHNOLOGY INITIATIVE.**

19 (a) ESTABLISHMENT OF NANOTECHNOLOGY SIGNA-
20 TURE INITIATIVES; QUADRENNIAL STRATEGIC PLAN.—

21 Section 2 of the 21st Century Nanotechnology Research
22 and Development Act (15 U.S.C. 7501) is amended—

23 (1) in subsection (c)—

1 (A) by redesignating paragraphs (3)
2 through (10) as paragraphs (4) through (11),
3 respectively;

4 (B) by inserting after paragraph (2) the
5 following:

6 “(3) establish nanotechnology signature initia-
7 tives in focused areas of national importance (as de-
8 scribed in subsection (d));” and

9 (C) by amending paragraph (5), as redesi-
10 gnated, to read as follows:

11 “(5) develop, not later than 1 year after the
12 date of the enactment of the National Nanotechnol-
13 ogy Initiative Amendments Act of 2014, and update
14 not less frequently than once every 4 years there-
15 after, a strategic plan to guide the Program activi-
16 ties described under subsection (b) that—

17 “(A) specifies—

18 “(i) the overarching goals for the Pro-
19 gram;

20 “(ii) near-term and long-term objec-
21 tives for the Program; and

22 “(iii) the metrics to be used for as-
23 sessing progress toward such objectives;

24 “(B) describes how the Program will—

1 “(i) allocate funding for interagency
2 nanotechnology projects;

3 “(ii) encourage and support inter-
4 disciplinary research and development in
5 nanotechnology; and

6 “(iii) support the engineering, scale-
7 up, and commercialization of nanotechnol-
8 ogy necessary to move results out of the
9 laboratory and into applications for the
10 benefit of society, including through co-
11 operation and collaboration with nanotech-
12 nology research, development, and tech-
13 nology transition initiatives supported by
14 the States;

15 “(C) includes—

16 “(i) recommendations for research
17 and technology development that could be
18 met through joint industry and government
19 partnership; and

20 “(ii) plans of participating agencies
21 for categorizing and tracking investments
22 in nanotechnology; and

23 “(D) addresses recommendations of the
24 Advisory Panel and the National Academy of
25 Sciences concerning the Program;”;

1 (2) by redesignating subsection (d) as sub-
2 section (e);

3 (3) by inserting after subsection (c) the fol-
4 lowing:

5 “(d) NANOTECHNOLOGY SIGNATURE INITIATIVES.—

6 “ (1) TEAMS.—The Council shall establish
7 multiagency teams to carry out the nanotechnology
8 signature initiatives established under subsection
9 (c)(3).

10 “(2) JOINT SOLICITATIONS AND COLLABO-
11 RATIVE NETWORKS.—Each team established under
12 paragraph (1) shall encourage joint agency solicita-
13 tions and the establishment of collaborative nano-
14 technology research and development, user facilities,
15 and education networks.”;

16 (4) in subsection (e), as redesignated by sub-
17 paragraph (B)—

18 (A) in the matter preceding paragraph (1),
19 by striking “Senate Committee on Commerce,
20 Science, and Transportation and the House of
21 Representatives Committee on Science” and in-
22 serting “Committee on Commerce, Science, and
23 Transportation of the Senate and the Com-
24 mittee on Science, Space, and Technology of
25 the House of Representatives”;

1 (B) by redesignating paragraphs (3)
2 through (5) as paragraphs (4) through (6), re-
3 spectively;

4 (C) by inserting after paragraph (2) the
5 following:

6 “(3) the Program budget for the current fiscal
7 year and the proposed Program budget for the next
8 fiscal year for each nanotechnology signature initia-
9 tive, including a description of each initiative’s re-
10 search goals, strategic plan, expected outcomes for
11 the next fiscal year, and accomplishments;” and

12 (D) in paragraph (6), as redesignated, by
13 striking “the plan described in subsection
14 (c)(7),” and inserting “the plan described in
15 subsection (c)(8),”; and

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

17 “(f) DESIGNATION AS NATIONAL NANOTECHNOLOGY
18 INITIATIVE.—The Program shall also be known as the
19 ‘National Nanotechnology Initiative’.”

20 (b) APPOINTMENT OF DIRECTOR OF NATIONAL
21 NANOTECHNOLOGY COORDINATION OFFICE AS COCHAIR
22 OF SUBCOMMITTEE ON NANOSCALE SCIENCE, ENGINEER-
23 ING, AND TECHNOLOGY OF NATIONAL SCIENCE AND
24 TECHNOLOGY COUNCIL.—Section 3 of the 21st Century
25 Nanotechnology Research and Development Act (15

1 U.S.C. 7502) is amended by adding at the end the fol-
2 lowing:

3 “(d) COCHAIR OF SUBCOMMITTEE ON NANOSCALE
4 SCIENCE, ENGINEERING, AND TECHNOLOGY.—The Direc-
5 tor of the Office of Science and Technology Policy shall
6 appoint the Director of the National Nanotechnology Co-
7 ordination Office as a cochair of the Subcommittee on
8 Nanoscale Science, Engineering, and Technology of the
9 Council.”.

10 (c) NANOTECHNOLOGY SIGNATURE INITIATIVE DE-
11 FINED.—Section 10 of the 21st Century Nanotechnology
12 Research and Development Act (15 U.S.C. 7509) is
13 amended—

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

17 (2) by inserting after paragraph (4), as redesign-
18 dated, the following:

19 “(5) NANOTECHNOLOGY SIGNATURE INITIA-
20 TIVE.—The term ‘nanotechnology signature initia-
21 tive’ means a Program initiative established under
22 section 2(c)(3).”.

23 (d) SENSE OF CONGRESS ON WORKING GROUPS OF
24 THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL.—

1 It is the sense of Congress that the National Science and
2 Technology Council should—

3 (1) regularly assess the working groups of the
4 National Science and Technology Council to ensure
5 that each working group is serving a useful manage-
6 ment and coordination role related to the goals and
7 objectives of the strategic plan of the National
8 Nanotechnology Initiative required under section
9 2(c)(5) of the 21st Century Nanotechnology Re-
10 search and Development Act (15 U.S.C.
11 7501(c)(5)), as amended by subsection (a)(1)(C);

12 (2) redefine or eliminate working groups that
13 are no longer useful and form new working groups
14 as needed;

15 (3) consider creating new working groups in the
16 areas of user facility oversight and coordination and
17 education and workforce development; and

18 (4) consider expanding the charters of the
19 Nanomanufacturing, Industry Liaison and Innova-
20 tion Working Group and the Nanotechnology Envi-
21 ronment and Health Implications Working Group to
22 enable the groups to address more broadly cross-
23 agency nanotechnology-related areas, such as
24 informatics, modeling and simulation, regulatory
25 science, and instrument development.

1 **SEC. 624. QUADRENNIAL REPORTS BY NATIONAL NANO-**
2 **TECHNOLOGY ADVISORY PANEL.**

3 Section 4(d) of the 21st Century Nanotechnology Re-
4 search and Development Act (15 U.S.C. 7503(d)) is
5 amended to read as follows:

6 “(d) QUADRENNIAL REPORTS.—Not later than 1
7 year after the date on which the National Science and
8 Technology Council develops the strategic plan required
9 under section 2(e)(5) and not less frequently than once
10 every 4 years thereafter, the Advisory Panel shall submit
11 a report to the President and Congress that includes—

12 “(1) the assessments of the Advisory Panel
13 under subsection (c); and

14 “(2) the recommendations of the Advisory
15 Panel for ways to improve the Program.”.

16 **SEC. 625. QUADRENNIAL EXTERNAL REVIEW OF NATIONAL**
17 **NANOTECHNOLOGY INITIATIVE.**

18 Section 5 of the 21st Century Nanotechnology Re-
19 search and Development Act (15 U.S.C. 7504) is amended
20 to read as follows:

21 **“SEC. 5. QUADRENNIAL EXTERNAL REVIEW OF NATIONAL**
22 **NANOTECHNOLOGY PROGRAM.**

23 “(a) IN GENERAL.—The Director of the National
24 Nanotechnology Coordination Office shall seek to enter
25 into an arrangement with the National Academy of
26 Sciences to conduct a quadrennial review of the Program.

1 The Director shall ensure that the arrangement with the
2 National Research Council is concluded in order to allow
3 sufficient time to comply with the reporting requirements
4 under subsection (c).

5 “(b) SCOPE OF WORK.—The Director shall negotiate
6 with the National Academy of Sciences regarding the
7 scope of work to be performed, which shall include—

8 “(1) a review of the research priorities of the
9 Program, including whether the amount and alloca-
10 tion of funding among program component areas
11 and nanotechnology signature initiatives is appro-
12 priate to accomplish the Program’s goals and objec-
13 tives;

14 “(2) an evaluation of the Program’s manage-
15 ment and coordination across agencies and dis-
16 ciplines, including the effectiveness of the National
17 Nanotechnology Coordination Office in providing
18 technical and administrative support to the Pro-
19 gram; and

20 “(3) an assessment of the Program’s success in
21 transferring technology to the private sector and rec-
22 ommendations for improving technology demonstra-
23 tion, transfer, and commercialization.

24 “(c) QUADRENNIAL REPORTS.—Not later than 913
25 days after the date on which the development of the stra-

1 tegic plan required under section 2(c)(5) is completed and
 2 not less frequently than once every 4 years thereafter, the
 3 Director of the National Nanotechnology Coordination Of-
 4 fice shall submit a report to the Advisory Panel and Con-
 5 gress that describes the results of the most recent quad-
 6 rennial review carried out under subsection (a).”.

7 **SEC. 626. NANOTECHNOLOGY TRANSFER, COMMERCIALIZA-**
 8 **TION, AND ROADMAPS.**

9 (a) TECHNOLOGY TRANSFER AND COMMERCIALIZA-
 10 TION.—The 21st Century Nanotechnology Research and
 11 Development Act (15 U.S.C. 7501 et seq.) is amended—

12 (1) by redesignating section 10 as section 13;

13 and

14 (2) by inserting after section 9 the following:

15 **“SEC. 10. TECHNOLOGY TRANSFER AND COMMERCIALIZA-**
 16 **TION.**

17 **“(a) PUBLIC OUTREACH AND EDUCATION.—**

18 **“(1) BY PARTICIPATING AGENCIES.—**The Coun-
 19 cil shall encourage agencies participating in the Pro-
 20 gram to inform the public about—

21 **“(A) the science, technology, and benefits**
 22 **of nanotechnology; and**

23 **“(B) the commercial products enabled by**
 24 **nanotechnology.**

1 “(2) NATIONAL NANOTECHNOLOGY COORDINA-
2 TION OFFICE.—The Director of the National Nano-
3 technology Coordination Office shall inform the pub-
4 lic about the matters described in paragraph (1).

5 “(b) ACCESS TO FACILITIES.—

6 “(1) IN GENERAL.—The Council shall encour-
7 age the head of each agency that participates in the
8 Program and supports a federally owned or operated
9 nanotechnology research center or designated user
10 facility as part of the Program to provide access to
11 such center or facility to a representative of indus-
12 try, academia, or other potential user of such center
13 or facility for the purpose of—

14 “(A) transferring research results;

15 “(B) demonstrating models of nanoscale-
16 or nanotechnology-enabled products or devices;
17 or

18 “(C) demonstrative processes for deter-
19 mining proof of concept.

20 “(2) POLICY.—The head of each agency de-
21 scribed in paragraph (1) shall develop a policy on
22 providing access to the centers and facilities de-
23 scribed in such paragraph, which shall include
24 whether such access necessitates imposing a user
25 fee.

1 “(c) SUPPORT OF STANDARDS DEVELOPMENT.—

2 “(1) IN GENERAL.—The head of an agency par-
3 ticipating in the Program shall support the develop-
4 ment of domestic and international standards for
5 nanotechnology.

6 “(2) TRAVEL EXPENSES.—The head of an
7 agency participating in the Program may reimburse
8 the travel expenses of an employee of the agency
9 who participates in activities relating to development
10 under paragraph (1).”.

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

13 (1) the National Science and Technology Coun-
14 cil should encourage groups in nanotechnology-en-
15 abled industries to participate in developing tech-
16 nology roadmaps and in partnering to address long-
17 term research and development needs;

18 (2) when appropriate, agencies participating in
19 the National Nanotechnology Initiative should use
20 the prize authority granted under section 24 of the
21 Stevenson-Wydler Technology Innovation Act of
22 1980 (15 U.S.C. 3719) to conduct prize competi-
23 tions in order to spur innovation, solve difficult
24 problems, and advance their core mission; and

1 (3) to the greatest extent practical, agencies
2 participating in the National Nanotechnology Initia-
3 tive that conduct a Small Business Innovation Re-
4 search program or a Small Business Technology
5 Transfer program should—

6 (A) encourage the submission of applica-
7 tions for nanoscience- and nanotechnology-re-
8 lated projects to such programs; and

9 (B) utilize authorities under subsections
10 (cc) and (gg) of section 9 of the Small Business
11 Act (15 U.S.C. 638) to accelerate the commer-
12 cialization of Small Business Innovation Re-
13 search program and Small Business Technology
14 Transfer program nanoscience and nanotechnol-
15 ogy research.

16 **SEC. 627. PUBLICATION OF DATA CONCERNING NANOTECH-**
17 **NOLOGY.**

18 The 21st Century Nanotechnology Research and De-
19 velopment Act (15 U.S.C. 7501 et seq.) is amended by
20 inserting after section 10, as added by section 626(a)(2),
21 the following:

22 **“SEC. 11. PUBLICATION OF DATA.**

23 “The National Nanotechnology Coordination Office
24 shall serve as a central repository to collect, track, analyze,
25 and report data regarding—

- 1 “(1) the impact of nanotechnology on the U.S.
2 economy;
3 “(2) publications concerning nanotechnology;
4 “(3) patents relating to nanotechnology;
5 “(4) educational activities relating to nanotech-
6 nology; and
7 “(5) matters concerning the U.S. workforce and
8 nanotechnology.”.

9 **SEC. 628. NATIONAL SCIENCE FOUNDATION EVALUATION**
10 **OF INVESTMENTS OF NATIONAL NANOTECH-**
11 **NOLOGY INITIATIVE IN EDUCATION AND**
12 **WORKFORCE TRAINING.**

13 Not later than 2 years after the date of the enact-
14 ment of this Act, the National Science Foundation, in co-
15 operation with the Secretary of Education and the Sec-
16 retary of Labor and working with the Director of the Na-
17 tional Nanotechnology Coordination Office, shall—

- 18 (1) evaluate the investments of the National
19 Nanotechnology Initiative in education and work-
20 force training; and
21 (2) submit to Congress a report on the findings
22 of the National Science Foundation with respect to
23 the evaluation carried out under paragraph (1).

1 **SEC. 629. SHARING OF BEST PRACTICES OF CENTERS, NET-**
2 **WORKS, AND USER FACILITIES.**

3 The 21st Century Nanotechnology Research and De-
4 velopment Act (15 U.S.C. 7501 et seq.) is amended by
5 inserting after section 11, as added by section 627, the
6 following:

7 **“SEC. 12. SHARING OF BEST PRACTICES OF CENTERS, NET-**
8 **WORKS, AND USER FACILITIES.**

9 “The Council, working with the Director of the Na-
10 tional Nanotechnology Coordinating Office, shall periodi-
11 cally convene meetings for nanotechnology related centers,
12 networks, and user facilities to share best practices re-
13 garding—

14 “(1) strategic planning;

15 “(2) intellectual property management;

16 “(3) outreach to industry; and

17 “(4) technology demonstration, transfer, and
18 commercialization.”.

19 **SEC. 630. SENSE OF CONGRESS REGARDING ENVIRON-**
20 **MENT, HEALTH, AND SAFETY MATTERS CON-**
21 **CERNING NANOTECHNOLOGY.**

22 (a) SENSE OF CONGRESS ON COORDINATION RE-
23 GARDING ENVIRONMENT, HEALTH, AND SAFETY RE-
24 SEARCH RELATING TO NANOTECHNOLOGY.—It is the
25 sense of Congress that the National Science and Tech-
26 nology Council should—

1 (1) coordinate the development by the agencies
2 participating in the National Nanotechnology Initia-
3 tive of performance measures, targets, timeframes,
4 cost estimates and available resources for nanotech-
5 nology environment, health, and safety research that
6 align with the research needs of the Initiative, con-
7 sistent with the agencies' respective statutory au-
8 thorities; and

9 (2) include the information described in para-
10 graph (1) in publicly available reports.

11 (b) SENSE OF CONGRESS ON FUNDING CROSS-AGEN-
12 CY ACTIVITIES.—It is the sense of Congress that the head
13 of each agency participating in the National Nanotechnol-
14 ogy Initiative should consider funding cross-agency activi-
15 ties of the environment, health, and safety program com-
16 ponent area, such as partnerships, informatics, regulatory
17 science, nanotoxicology, models, and instrument develop-
18 ment.

○